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## Optimization of Chemical Cleaning of Organic-Fouled Reverse Osmosis Membranes



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# **Optimization of Chemical Cleaning of Organic-Fouled Reverse Osmosis Membranes**

*by*

**Wui Seng Ang  
Menachem Elimelech**

**Department of Chemical Engineering  
Environmental Engineering Program  
Yale University  
New Haven, Connecticut**



**U.S. Department of the Interior  
Bureau of Reclamation  
Technical Service Center  
Water and Environmental Resources Division  
Water Treatment Engineering Research Group  
Denver, Colorado**

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# Acronyms and Abbreviations

<b>AFM</b>	atomic force microscopy
<b>ATR-FTIR</b>	attenuated total reflection Fourier infrared spectroscopy
<b>BOD</b>	biodegradable oxygen demand
<b>BSA</b>	bovine serum albumin
<b>CMC</b>	critical micelle concentration
<b>CML</b>	carboxylate modified latex
<b>cm</b>	centimeter
<b>cm/s</b>	centimeter per second
<b>DI</b>	dionized (usually refers to water)
<b>DLS</b>	dynamic light scattering
<b>EDTA</b>	disodium ethylenediaminetetraacetate
<b>EfOM</b>	effluent organic matter
<b>HCl</b>	hydrochloric acid
<b>L</b>	liter
<b>M</b>	molar
<b>MF</b>	microfiltration
<b>mg/L</b>	milligrams per liter
<b>mL</b>	milliliter
<b>mM</b>	millimolar
<b>mN/m</b>	millinewton per meter
<b>NaCl</b>	sodium chloride
<b>NaOH</b>	sodium hydroxide
<b>NF</b>	nanofiltration
<b>nM</b>	nanomolar
<b>nM/m</b>	nanomolar per meter
<b>NOM</b>	natural organic matter
<b>OA</b>	octanoic acid
<b>RO</b>	reverse osmosis
<b>SA</b>	sodium alginate
<b>SDS</b>	sodium dodecyl sulfate
<b>SEM</b>	scanning electron microscope
<b>SRNOM</b>	Suwannee River natural organic matter
<b>UF</b>	ultrafiltration
<b>UV</b>	ultraviolet

## Acronyms and Abbreviations (continued)

UV-Vis	ultraviolet-visible
%	percent
$\mu\text{m}$	micrometer
$\mu\text{m/s}$	micrometer per second

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# 1. Executive Summary

Effluent organic matter (EfOM) has been known to contribute significantly to organic fouling in waste water reclamation. Sodium alginate (SA), bovine serum albumin (BSA), Suwannee River natural organic matter (SRNOM), and octanoic acid (OA) have been selected as model foulants representing, respectively, polysaccharides, proteins, humic acids, and fatty acids in EfOM. The effects of each individual organic foulant and mixtures containing several types of organic foulants in the absence and presence of calcium ions ( $\text{Ca}^{2+}$ ) on the fouling of RO membranes are systematically investigated. It is observed that membrane fouling is severe when alginate is present in the feed as a co-foulant in the presence of  $\text{Ca}^{2+}$ .

Sodium hydroxide (NaOH), sodium chloride (NaCl), disodium ethylenediaminetetraacetate (EDTA), and sodium dodecyl sulfate (SDS) have been selected as cleaning agents to represent an alkaline solution, a salt solution, a metal chelating agent, and an anionic surfactant, respectively. In attempting to determine optimal procedures for chemical cleaning of organic-fouled membranes, our approach was to investigate the chemical reactivity of a cleaning agent with foulants in the fouling layer, using atomic force microscopy (AFM). Results were then used to determine the optimum concentration of cleaning agent to be used for cleaning fouled membrane. The AFM results suggest that NaCl, SDS, and EDTA have good chemical reactivity with the foulants, whereas NaOH has less favorable chemical reactivity.

For membranes fouled by waste water effluent, chemical cleaning by dual or combined cleaning agents, when used appropriately, is more effective than membrane cleaning by individual cleaning agents. Membrane cleaning with dual cleaning agents is more efficient when there is a change in cleaning solution pH, than when the solution pH of the cleaning agents remains constant at neutral pH. In dual cleaning, when the two cleaning agents have different cleaning efficiencies, applying the less effective cleaning agent first generally has a higher overall cleaning efficiency than applying the more effective cleaning agent first. This observation could be attributed to the proposed step-by-step approach in removing the top fouling layer by the less effective cleaning agent, followed by removing the accumulated foulants within the 'valley' regions of the membrane by the more effective cleaning agent.

## 2. Background

To provide the world's increasing population with potable water, the use of reverse osmosis (RO) membranes in advanced waste water reclamation using secondary treated waste water effluent to produce water for indirect potable use has increased over the past few years (Drewes et al., 2003; Shannon et al., 2008). However, the efficient application of RO membranes in advanced waste water reclamation is hampered significantly by the phenomenon of membrane fouling, whereby secondary treated effluent from waste water treatment plants is introduced to the RO membrane processes as feed water. The effluent contains dissolved organic matter, commonly known as effluent organic matter (EfOM), which contributes to organic fouling (Barker et al., 2000). EfOM comprises polysaccharides, proteins, aminosugars, nucleic acids, humic and fulvic acids, organic acids, and cell components (Barker et al., 2000).

Most advanced waste water reclamation plants have a pretreatment process for the secondary effluent via microfiltration (MF) or ultrafiltration (UF) to remove suspended and colloidal matter prior to the RO membrane process. However, the EfOM is generally smaller than the pore size of MF or UF membranes, such that a fraction of the EfOM passes through these pretreatment membranes and can contribute significantly to organic fouling of the RO membranes. The presence of calcium ions ( $\text{Ca}^{2+}$ ) in the feed source for the RO membranes has been reported to form complexes with the constituents of EfOM, such as polysaccharides (Lee et al., 2006) and natural organic matter (Hong and Elimelech, 1997), and to increase significantly membrane fouling.

Although membrane properties for minimizing fouling have improved and fouling control strategies have been developed in waste water reclamation, fouling is still inevitable. Consequently, chemical cleaning is a necessary process and a long-term solution to ensure sustainable operation of RO membrane systems (Liikanen et al., 2002; Mohammadi et al., 2003). In this study, alkaline solutions, metal chelating agents, surfactants, and salt cleaning are used to clean organic-fouled membranes. We have chosen sodium hydroxide (NaOH), disodium ethylenediaminetetraacetate (EDTA), sodium dodecyl sulfate (SDS), and sodium chloride (NaCl) as models for these classes of cleaning agents.

Alkaline solutions clean organic-fouled membranes by hydrolysis and solubilization. Alkaline solutions also increase the solution pH and, therefore, increase the negative charges and solubility of the organic foulant. It is reported that NaOH generally is effective at removing whey protein based products (Vaisanen et al., 2002). Metal chelating agents, such as EDTA, remove divalent cations from the complexed organic molecules and improve the cleaning of the fouled membrane (Hong and Elimelech, 1997). Surfactants are compounds that have both hydrophilic and hydrophobic groups and are semisoluble in both

organic and aqueous solvents. Surfactants can solubilize macromolecules by forming micelles around them (Rosen, 1989) and help to clean the surface of the fouled membrane. In our earlier study on salt cleaning of organic-fouled RO membranes (Lee and Elimelech, 2007), NaCl and other common inert salts can be used as an effective alternative for cleaning RO membranes fouled by gel-forming hydrophilic organic foulants. The proposed cleaning mechanisms involved during salt cleaning involve gel layer swelling and ion-exchange reaction. In the presence of salt solution, the fouling layer swells and becomes more porous. As a result, this would facilitate the diffusion of  $\text{Na}^+$  into the fouling layer and breakup of  $\text{Ca}^{2+}$ -alginate bonds by ion exchange.

Increasing cleaning agent concentration and enhancing the physical aspects of cleaning may aid in removing foulants from the membrane surface, but the result of overdosing a cleaning agent can have adverse implications. First, the membrane selectivity and properties may be impacted. A cleaning agent, when added in excess concentration, can raise the cleaning solution pH to beyond the recommended range. The cleaning operation at a higher temperature can further damage the membrane. Second, the cost associated because of overdosing with a cleaning agent can be significant. More money is spent on the cleaning agent, membrane replacement, and other overhead costs of running the membrane plant (e.g., effluent disposal, electricity on raising the temperature, and pumping) (Bird and Bartlett, 1995). Third, the environment may be impacted. The discharge of EDTA, which is nonbiodegradable, into receiving waters and the environment can remobilize toxic heavy metal ions from soil (Pihko et al., 2004). Thus, systematic studies on chemical cleaning of RO membranes are critical to minimize the possible adverse impacts to the permeate quality, operational cost, and environment via process optimization (by controlling chemical and physical aspects of cleaning) (Ang et al., 2006; Trägårdh, 1989).

Atomic force microscopy (AFM), attenuated total reflection Fourier infrared (ATR-FTIR) spectroscopy, and dynamic light scattering (DLS) experiments are used in this research to supplement the bench-scale fouling/cleaning experiments. AFM has been used in membrane research to quantify intermolecular forces (Ang et al., 2006; Lee et al., 2006; Li and Elimelech, 2004), as it is able to measure interaction forces in liquids at the pico- or nano-Newton level. Our research has shown that foulant-foulant interactions could be determined by performing force measurements using a carboxylate-modified latex colloid probe in an AFM fluid cell (Ang et al., 2006; Li and Elimelech, 2004). The technique has been used to quantify the fouling behavior of a nanofiltration membrane by humic acid, as well as the cleaning efficiency of several chemical cleaning agents (Li and Elimelech, 2004), and has been extended to study RO membrane fouling by organic foulant in the form of alginate (Ang et al., 2006), bovine serum albumin (BSA) (Ang and Elimelech, 2007), and octanoic acid (OA) (Ang and Elimelech, 2008). In this research, we have used the AFM as an alternative tool for indicating the concentration of cleaning agent to be used for cleaning membranes fouled by foulant mixtures and have modified the AFM protocol to investigate the intermolecular adhesion force between different foulants.



ATR-FTIR spectroscopy analysis has been performed on both virgin membranes fouled by foulant mixtures simulating waste water effluent and by real waste water effluent, as well as the fouled membranes after cleaning with cleaning agents. The ATR-FTIR spectroscopy is able to detect functional groups on the membrane surface and, thus, can be used to determine the presence of foulant composition after chemical cleaning. The ATR-FTIR has been shown to be an effective supplementary tool to investigate the extent of membrane fouling by organic foulants and the extent of cleaning by a cleaning agent. The multidetector light scattering unit is used to perform DLS experiments on foulant solution in the presence of  $\text{Ca}^{2+}$  so as to measure the effective diameters of foulant aggregates. The analysis aids in investigating the fouling mechanisms of membranes fouled by the foulant mixtures. The DLS also is used to determine the effective diameters of foulant aggregates in the presence of a cleaning agent to better understand the cleaning mechanism for foulant removal on membrane surface.

The objectives of this research were to explore the mechanisms governing the chemical cleaning of organic-fouled RO membranes for a complex and more realistic mixture of organic foulants and to develop a general methodology for selection of optimal combination of cleaning agents and chemical/physical conditions for efficient cleaning. The general approach was to first investigate the influence of feed solution chemistry on the fouling of the RO membranes by each type of organic foulant. Next, the study of the physical and chemical aspects of chemical cleaning was performed on RO membranes fouled by alginate. In these studies, the AFM was used to study the interaction forces between the foulant in the bulk solution and the foulant accumulated on the membrane surfaces. The results from the bench-scale crossflow fouling/cleaning experiments and the relevant adhesion force profiles from AFM force measurements were used to explain the cleaning mechanisms involved. Next, cleaning experiments were performed on RO membranes fouled by foulant mixtures simulating waste water effluent. The cleaning data were verified with cleaning experiments on membranes fouled by real waste water effluents. The concept of cleaning with single and dual cleaning agents was explored with membranes fouled by real waste water effluent. In these latter studies, the AFM protocol was slightly modified to account for the possibility of investigating intermolecular adhesion force between different foulants. The DLS experiments were used to investigate the sizes of foulant aggregates in the absence and presence of a cleaning agent, so as to further understand the fouling and cleaning mechanisms of RO membranes in waste water reclamation.

### 3. Conclusions and Recommendations

To develop a methodology for the cleaning of RO membranes fouled with waste water effluent, we have to understand the governing membrane fouling mechanisms. As organic fouling by waste water effluent is contributed to significantly by EfOM, a complex mixture of organic foulants, fouling studies are performed on membranes fouled by various organic foulants mixtures. The model organic foulants are alginate, BSA, Suwannee River natural organic matter (SRNOM), and OA, which, respectively, represent the polysaccharides, proteins, humic acids, and fatty acids in EfOM. We found that membrane fouling is severe when alginate is present in the feed as a co-foulant in the presence of  $\text{Ca}^{2+}$ . From the salt rejection data, it appears that the resultant fouling layer is compact and improves the ability of the fouling layer to act as a barrier against the transport of salt across the membrane.

In chapter 4, on the chemical and physical aspects of cleaning of organic-fouled membranes, we propose that an effective membrane cleaning involves the coupling between (1) *chemical reaction* of the cleaning agent with the foulants in the fouling layer and (2) *mass transfer* of the cleaning agent from the bulk solution to the fouling layer and of foulants from the fouling layer to the bulk solution. We have also shown that when a cleaning agent has a favorable chemical reactivity with the foulants in the fouling layer, its cleaning efficiency can be improved significantly by optimizing the physical conditions, which are mainly responsible for the mass transfer of the cleaning agent and the foulants. However, when a cleaning agent does not have a favorable chemical reactivity, adjusting the physical conditions will not enhance the cleaning efficiency of the cleaning agent. While the physical cleaning conditions are more direct and standardized (most membrane plants perform cleaning under favorable physical conditions—high crossflow velocity, long cleaning time, and high cleaning temperature), the chemical reactivity of a cleaning agent, on the other hand, might not be as direct and varies according to the concentration of the cleaning agent and the solution pH. Therefore, the first approach to optimize chemical cleaning would be to investigate the chemical reactivity of a cleaning agent by keeping the physical cleaning conditions constant for all cleaning experiments.

NaOH, NaCl, EDTA, and SDS are effective in cleaning membranes fouled by a mixture of alginate, BSA, SRNOM, and OA (simulating waste water effluent). With increased alginate content in the foulant mixture, it is proposed that the resultant fouling layer matrix has a higher porosity than the fouling layer matrix formed from a feed solution containing a lower content of alginate while maintaining the same total foulant concentrations. As a result, the cleaning efficiencies of NaOH and EDTA are higher than those on membranes fouled with lesser alginate content. AFM is a useful tool to indicate the concentration of a cleaning agent to be used for the cleaning of a fouled membrane. We observe an increase in the reduction of the foulant intermolecular adhesion force with

increasing cleaning agent concentration. With the exception of NaOH, we observe significant increases in reducing the adhesion force with increasing concentration. The adhesion force reduction does not increase above a certain cleaning agent concentration, which would indicate the optimum cleaning agent to adopt for the cleaning runs. The results suggest that NaCl, SDS, and EDTA have good chemical reactivity with organic foulants whereas NaOH has relatively poor chemical reactivity. However, the relatively poor chemical reactivity of NaOH is compensated by the favorable physical conditions during chemical cleaning.

It is further proposed that fouling is governed by the foulant aggregate size and conformation in the bulk solution. In the study on membrane fouling by alginate as a co-foulant, the smaller and tighter the foulant aggregates, the more significant the flux decline is due to the formation of a more compact and tighter fouling layer. The state of the fouling layer would also affect the transfer of a cleaning agent into the fouling layer.

For membranes fouled by waste water effluent, it is proposed that the structural integrity of the fouling layer matrix is supported mainly by the polysaccharide-calcium complexes, as the intermolecular adhesion force among alginate molecules in the presence of  $\text{Ca}^{2+}$  is the most significant among the various foulant-foulant interactions. Furthermore, the permeate flux profile is similar to that of alginate-fouled membranes in the presence of  $\text{Ca}^{2+}$ . However, based on the ATR-FTIR analysis, polysaccharide complexation with calcium in the fouling layer matrix is not as extensive as that in the case of membrane fouled by alginate as a single foulant or as a co-foulant.

Membrane cleaning by dual or combined cleaning agents, when used appropriately, is more effective than membrane cleaning by individual cleaning agents. Membrane cleaning with dual cleaning agents is more efficient when there is a change in solution pH of the cleaning agents (i.e., when one of the cleaning agents is NaOH) than when the solution pH of the cleaning agents remains relatively constant at pH 7. In dual cleaning when the two cleaning agents differ significantly in the cleaning efficiency, applying the less effective cleaning agent first generally has a higher overall cleaning efficiency than applying the more effective cleaning agent first. This observation could be due to the presence of a top fouling layer that is relatively easier to remove while the accumulated foulants within the 'valley' regions of the membrane can only be removed by effective cleaning agents.

## 4. Chemical and Physical Aspects of Cleaning of Polysaccharide-fouled RO Membranes

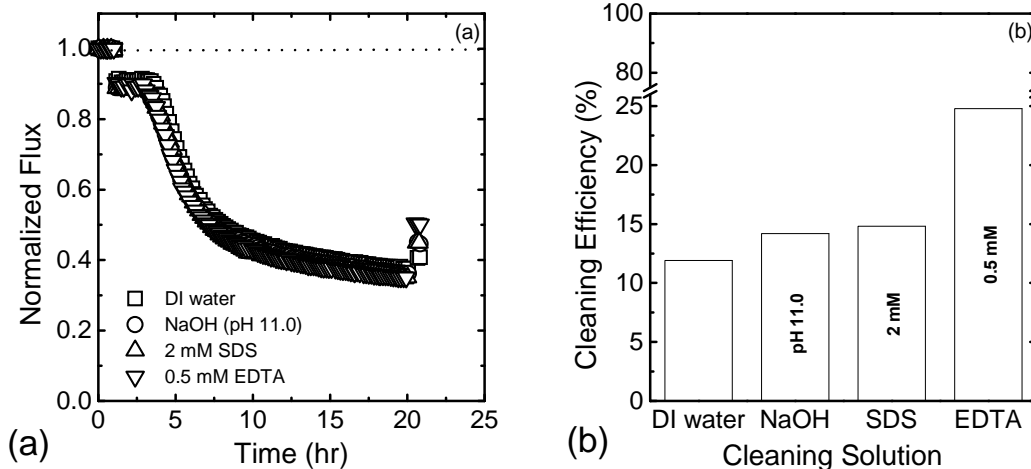
### 4.1 Chemical Aspects of Cleaning

The chemical aspects of cleaning—cleaning solution type, cleaning solution pH, and cleaning agent dose—have been systematically investigated to find out the favorable cleaning conditions in terms of chemical reaction between the cleaning agent and foulants. In addition, the influence of fouling layer composition on cleaning efficiency is examined with feed waters containing both alginate and SRNOM with different mass ratios. Cleaning experiments presented in this section were performed at fixed physical conditions so that only the chemical aspects of cleaning could be investigated.

#### 4.1.1 Effect of Cleaning Solution Type

The cleaning efficiency with different cleaning solutions — NaOH (pH 11), SDS, and EDTA—is compared in figure 4-1. Deionized (DI) water was also used to serve as a baseline for comparison with the cleaning solutions. Because fouling runs prior to each cleaning experiment were performed under identical conditions, the flux behavior of each run was almost identical, except the pure water flux obtained after cleaning. Therefore, the flux profiles for subsequent fouling/cleaning experiments will not be shown, unless different concentrations and types of organic foulants were used, which would result in flux decline profiles different from those shown in figure 4-1.

Figure 4-1(a) clearly shows that permeate flux during fouling runs decreased dramatically since alginate fouling of the RO membrane was accelerated in the presence of calcium ions (0.5 millimolar [mM]). As described earlier, calcium ions bind with carboxylic groups of alginate and bridge between adjacent alginate molecules, leading to the formation of a cross-linked alginate fouling layer on the membrane surface. This alginate fouling layer can also be explained by the gel formation of alginate in presence of calcium ions as commonly described by the ‘egg-box’ model (Grant et al., 1973). Based on this model, divalent cations (such as calcium ions) induce gelation of alginate through binding with and bridging between alginate molecules in a highly cooperative manner, leading to the ‘egg-box’ shaped gel network. In fact, visual inspection of the membrane surface at the end of the fouling runs confirmed the presence of a thick alginate gel layer. Therefore, the efficiency of a cleaning agent depends on the ability of the cleaning agent to break down the alginate gel network in the fouling layer through chemical reaction of the cleaning agent with the fouling layer.



**Figure 4-1. Influence of cleaning solution type on cleaning of organic-fouled RO membranes: (a) flux behavior during the fouling/cleaning experiments and (b) variation in cleaning efficiency with respect to cleaning solution type. Conditions for fouling experiments: alginate concentration = 20 milligrams per liter (mg/L), calcium concentration = 0.5 mM, total ionic strength = 10 mM (i.e., 0.5 mM  $\text{Ca}^{2+}$  plus 8.5 mM NaCl), pH =  $5.90 \pm 0.05$ , initial flux = 20 micrometers per second ( $\mu\text{m/s}$ ), crossflow velocity = 8.56 centimeters per second (cm/s), and temperature =  $20.0 \pm 0.2$  degrees Celsius ( $^{\circ}\text{C}$ ). Conditions for cleaning experiments: time = 15 minutes, temperature =  $20.0 \pm 0.2$   $^{\circ}\text{C}$ , crossflow velocity = 42.8 cm/s. Cleaning solutions were used without pH adjustment (ambient pH) except for the NaOH cleaning. Note that the last data points in figure 4-1(a) are for flux measured with DI water after the corresponding cleaning**

Figure 4-1(a) presents the efficiency of each cleaning solution, determined by comparing the pure water fluxes before fouling and after cleaning (the initial and final water fluxes are shown in figure 4-1(a)). The cleaning efficiencies with NaOH (pH 11) and 2 mM SDS were 14 and 15 percent (%), respectively. This points out that NaOH and SDS cleaning performed at these experimental conditions was ineffective since the cleaning efficiency with DI water was already 12%. Cleaning with 0.5 mM EDTA was relatively more effective compared to NaOH and SDS, and the cleaning efficiency (25%) was two times higher than that of DI water. This is attributed to the preferential EDTA-calcium complexation compared to alginate-calcium complexation.

In the case of NaOH cleaning, it is inferred that chemical reaction between NaOH and alginate-calcium complexes in the alginate gel layer was limited and, thus, resulting in a poor cleaning efficiency. There are two possible ways to increase NaOH cleaning efficiency: increasing NaOH concentration (i.e., higher pH) and/or using more favorable physical conditions. The former, however, is not applicable in real world applications since most polymeric RO membranes tolerate a limited pH range (i.e., pH 3–12). Therefore, the latter possibility has been investigated, and the results will be shown later in this chapter.

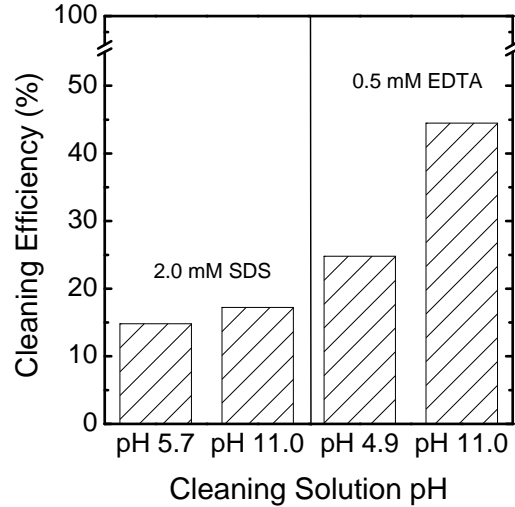
The ineffective SDS cleaning is attributed to the low SDS concentration applied during cleaning. The 2-mM concentration was much lower than the critical micelle concentration (CMC) of SDS, reported as 8.36 mM in DI water (Mukerjee and Mysels, 1970). At this low SDS concentration, the interaction of the adsorbed SDS molecules with alginate-calcium complexes was not strong enough to break the intermolecular bridging formed with calcium ions. Li and Elimelech (Li and Elimelech, 2004) demonstrated that a marked increase in cleaning efficiency of a natural-organic-matter- (NOM) fouled nanofiltration (NF) membrane was observed when SDS concentration was higher than the CMC. The influence of SDS concentration on cleaning efficiency will be discussed later.

In the case of EDTA cleaning, cleaning efficiency is quite sensitive to solution pH. The chelating ability of EDTA to remove complexed calcium ions from alginate-calcium complexes through a ligand exchange reaction increases at higher pH where more carboxylic groups of EDTA are deprotonated. This will be confirmed when the effect of cleaning solution pH on cleaning efficiency is reported.

For the above runs, visual inspection of the membranes after cleaning by all tested solutions revealed that there was still substantial alginate gel layer on the membrane surface. This observation is not surprising since the cleaning efficiency was less than 25% for all cases shown in figure 4-1(a).

#### **4.1.2 Effect of Cleaning Solution pH**

The influence of solution pH on the cleaning efficiency of SDS and EDTA is illustrated in figure 4-2. It is shown that cleaning efficiency increased noticeably (i.e., from 25 to 44%) with increasing pH from 4.9 to 11.0 for EDTA, while there was only a slight increase for SDS at higher pH. At pH 11.0, essentially all the carboxylic functional groups of EDTA are deprotonated ( $pK_a$  values are 1.99, 2.67, 6.16, and 10.26 (Budavari, 1989; Dean, 1987)). The increase in the chelating ability of EDTA at pH 11.0 resulted in a more effective ligand exchange reaction between EDTA and alginate-calcium complexes within the alginate gel layer. Consequently, the alginate gel layer was broken down relatively more easily compared to lower pH and, thus, resulted in a higher cleaning efficiency. On the other hand, solution pH showed very little effect on SDS cleaning, because the  $pK_a$  of the sulfate functional group of SDS is 2.12 (Hong and Elimelech, 1997; Li and Elimelech, 2004), implying that SDS is in its ionic form at both pH values examined. The results imply that cleaning solution pH is a governing factor affecting chemical reaction between EDTA and deposited foulants, while chemical reaction between SDS and foulants is less influenced by cleaning solution pH.

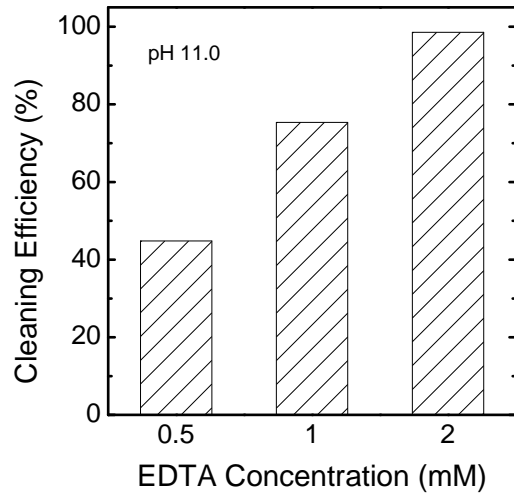


**Figure 4-2. Variation in SDS and EDTA cleaning efficiencies as a function of cleaning solution pH. Cleaning experiments were performed following fouling runs carried out at the same conditions as those in figure 4-1(a). Conditions for cleaning experiments were identical to those in figure 4-1(b), except for the cleaning solution pH as indicated in this figure.**

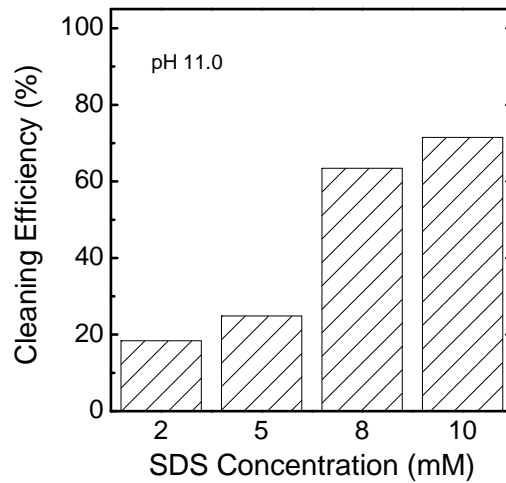
It is noteworthy that the efficiency of the 0.5-mM EDTA cleaning solution at pH 11 was relatively low (less than 45%) compared to the results of other studies on EDTA cleaning of NOM-fouled NF membranes. These studies showed that EDTA treatment was effective (almost 100% cleaning efficiency) in cleaning NOM-fouled NF membranes in the presence of calcium ions when the molar EDTA concentration (cleaning solution) was the same as the calcium concentration used during the fouling runs. Note that, in our study, both EDTA and calcium concentrations during the cleaning and fouling experiments were 0.5 mM. The reason for this discrepancy is attributed to the structural difference in the fouling layers as well as the different extent of foulant accumulation on the membrane surface for these two cases. The fouling layer of the other studies comprised hydrophobic NOM with smaller molecular weight, whereas the fouling layer in this study comprised hydrophilic alginate with larger molecular weight. This argument will be discussed later in this chapter.

#### **4.1.3 Effect of Cleaning Chemical Dose**

Cleaning experiments were also performed with cleaning solutions containing different doses of EDTA or SDS (both at the pH 11), as presented in figures 4-3 and 4-4, respectively. The results clearly show that cleaning efficiency with EDTA and SDS cleaning increased with increasing cleaning agent dose. For EDTA, cleaning efficiency increased proportionally with EDTA concentration and reached near 100% efficiency at 2.0 mM EDTA. Note that this molar EDTA concentration is four times higher than the calcium concentration



**Figure 4-3. Variation of EDTA cleaning efficiency with EDTA concentration.** EDTA cleaning experiments were performed at pH 11.0 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b).



**Figure 4-4. Variation in SDS cleaning efficiency with SDS concentration.** SDS cleaning experiments were performed at pH 11 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b).

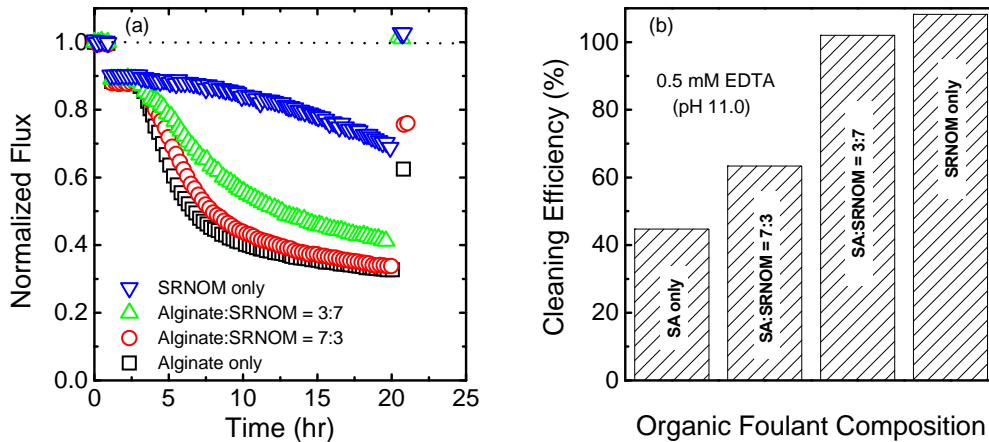


employed during fouling. For SDS cleaning, there was a notable increase in cleaning efficiency when SDS concentration increased from 5 to 8 mM. We note that an 8-mM SDS concentration is close to the CMC of SDS, reported as 8.36 mM in DI water (Mukerjee and Mysels, 1970). Therefore, it is concluded that cleaning with SDS above the CMC is the critical factor for efficient SDS cleaning, allowing adequate chemical reaction between SDS and the foulants to break down the alginate gel network. A similar mechanism of SDS cleaning of fouled NF membranes by humic acid in the presence of calcium ions has been discussed in our recent work (Li and Elimelech, 2004).

#### **4.1.4 Effect of Organic Foulant Composition**

As discussed in previous sections, the fouling layer structure as well as the extent of foulant accumulation on the membrane surface are expected to affect cleaning efficiency for a given cleaning agent under the same cleaning conditions. To investigate the influence of structural difference of the organic fouling layer on cleaning efficiency, fouling runs were performed with feed waters containing different mass ratios of alginate to SRNOM. Several feed water foulant compositions were examined with the total foulant concentration maintained at 20 mg/L: (i) 20 mg/L alginate and no SRNOM, (ii) 14 mg/L alginate plus 6 mg/L-SRNOM, (iii) 6 mg/L alginate plus 14 mg/L SRNOM, and (iv) 20 mg/L SRNOM and no alginate. It is expected that the difference in feed water organic composition will result in the formation of organic fouling layers which are structurally different from one another, thus resulting in different cleaning efficiencies with the same cleaning solution. Following the fouling runs, each cleaning experiment was performed with 0.5 mM EDTA (pH 11). The flux profiles of these fouling runs and the cleaning efficiencies determined from the subsequent cleaning experiments are presented in figure 4-5.

The flux behaviors depicted in figure 4-5(a) varied, indicating that the structure and/or amount of fouling layer were different for each foulant composition. A more severe flux decline was observed with increasing alginate concentration, and there was a significant difference in the flux profiles for alginate (i.e., absence of SRNOM) and SRNOM (i.e., absence of alginate) fouling runs. This implies that the alginate fouling layer produced greater hydraulic resistance to permeate flow than the SRNOM fouling layer. This is attributed to the formation of gel-type alginate fouling layer as described earlier based on the 'egg-box' model. The gelation of charged macromolecules in the presence of calcium ions is predominant for hydrophilic organic macromolecules (such as acidic polysaccharides) compared to hydrophobic organic macromolecules (such as humic acids) (Grant et al., 1973). However, it should be noted that NOM fouling in presence of calcium ions also results in severe flux decline during nanofiltration and tight-ultrafiltration (Cho et al., 2000; Hong and Elimelech, 1997; Seidel and Elimelech, 2002). The reason for the less pronounced flux decline with SRNOM observed in this study is that the additional hydraulic resistance of the SRNOM fouling layer to permeate flow is relatively much smaller than that of the RO membrane used in this study.



**Figure 4-5. Influence of feed water organic composition on cleaning of organic-fouled RO membranes: (a) flux behavior during the fouling/cleaning experiments and (b) variation in cleaning efficiency with respect to feed water organic composition. Fouling experiments were performed with feed waters containing: alginate = 20 mg/L (i.e., alginate only); alginate = 14 mg/L and SRNOM = 6 mg/L (i.e., alginate: SRNOM = 7:3); alginate = 6 mg/L and SRNOM = 14 mg/L (i.e., alginate: SRNOM = 3:7); or SRNOM = 20 mg/L (i.e., SRNOM only). Other fouling conditions were identical to those in figure 4-1(a). Cleaning experiments were performed with 0.5-mM EDTA cleaning solutions at pH 11.0. Other cleaning conditions were identical to those in figure 4-1(b). Note that the last data points in figure 4-5(a) are for flux measured with DI water after the corresponding cleaning.**

It is also noteworthy that, in the case of alginate fouling, the flux declined rapidly in the initial stage and, then, declined gradually. On the other hand, for SRNOM fouling, the fouling rate increased as fouling progressed (i.e., flux declined more rapidly with filtration time). This implies that the alginate gel layer was denser and more compact than the SRNOM fouling layer, leading to a substantial hydraulic resistance upon gel formation. However, this alginate fouling layer was likely less compressible than the SRNOM fouling layer that became more compact during filtration, resulting in a higher fouling rate as fouling progressed. In addition, the flux decline behavior with the higher SRNOM proportion (i.e., alginate:SRNOM = 3:7) was more similar to that for alginate fouling (i.e., 20 mg/L alginate and absence of SRNOM) than that for SRNOM fouling (i.e., 20 mg/L SRNOM and absence of alginate). This suggests that a small amount of alginate (6 mg/L alginate and 14 mg/L SRNOM) was enough to form alginate gel layer on the membrane surface, and the alginate molecules more easily accumulated on the membrane surface compared to SRNOM molecules.

Figure 4-5b clearly shows that the cleaning efficiency with 0.5 mM EDTA (pH 11) increased when the fouling runs were performed with feed waters containing a higher proportion SRNOM to alginate. The SRNOM-fouled membrane (i.e., absence of alginate) achieved the highest cleaning efficiency (108 %), while the alginate-fouled membrane (i.e., absence of SRNOM) had the lowest efficiency (44%). The combined organic fouling with alginate to SRNOM ratios of 3:7 and 7:3 had cleaning efficiencies of 102 and 64%,

respectively. These values were expected as they were within the range of the cleaning efficiencies for the alginate-fouled and SRNOM-fouled membranes. The high-cleaning efficiency of SRNOM-fouled membrane was in agreement with our recent study on EDTA cleaning of NOM-fouled NF membrane (Hong and Elimelech, 1997). A cleaning efficiency of over 100% suggests that the recovered flux after EDTA cleaning was higher than the flux of the original clean membrane, probably due to the presence of a small amount of EDTA and/or NOM on the membrane surface, making the membrane more hydrophilic and, thus, enhancing the partitioning and passage of water molecules (Hong and Elimelech, 1997).

The difference in the EDTA cleaning efficiency for the alginate-fouled and SRNOM-fouled membranes can be attributed to one or more of the following: (i) the stronger binding and bridging of calcium to alginate than SRNOM, (ii) the gel-forming nature of alginate which yields a denser and more compact fouling layer compared to SRNOM, and (iii) the larger mass of alginate accumulating on the membrane surface compared to SRNOM. The first explanation is not likely since a strong chelating agent, such as EDTA, can easily remove the complexed calcium from both alginate-calcium and SRNOM-calcium complexes via a ligand-exchange reaction. The second explanation is based on the observation that, in the presence of divalent cations, the alginate gel layer produced more resistance to permeate flow than the SRNOM fouling layer. This behavior suggests that the alginate fouling layer is much denser and more compact than the SRNOM fouling layer due to the gel-like structure of the alginate fouling layer. Consequently, during EDTA cleaning, EDTA molecules diffused more easily into the looser SRNOM fouling layer. Thus, a more rigorous ligand-exchange reaction is likely to occur within the SRNOM fouling layer than within the alginate fouling layer; and, consequently, this has more impact on breaking up the intermolecular bridging of SRNOM induced by calcium ions than that of alginate. A third possible explanation for the difference in cleaning of the alginate-fouled and SRNOM-fouled membranes is the variation in the amount of accumulated foulant on the membrane surface. At the given hydrodynamic conditions (i.e., initial flux and crossflow velocity), the larger alginate macromolecules may accumulate more effectively on the RO membrane surface compared to the smaller SRNOM molecules because of the lower back-diffusion experienced by larger macromolecules. In the previous results (figure 4-2), an almost 100% cleaning efficiency was demonstrated for the alginate-fouled RO membrane when 2.0 mM EDTA was used. This suggests that 0.5 mM EDTA was not enough to react with all the alginate-calcium complexes in the gel layer (within the 15-minute cleaning time), while this dose was sufficient to react with all the SRNOM-calcium complexes in the fouling layer (over 100% cleaning efficiency). Thus, to better understand the cleaning mechanisms, the “stoichiometry” between the cleaning agent dose and amount of foulant on the membrane surface must be considered.

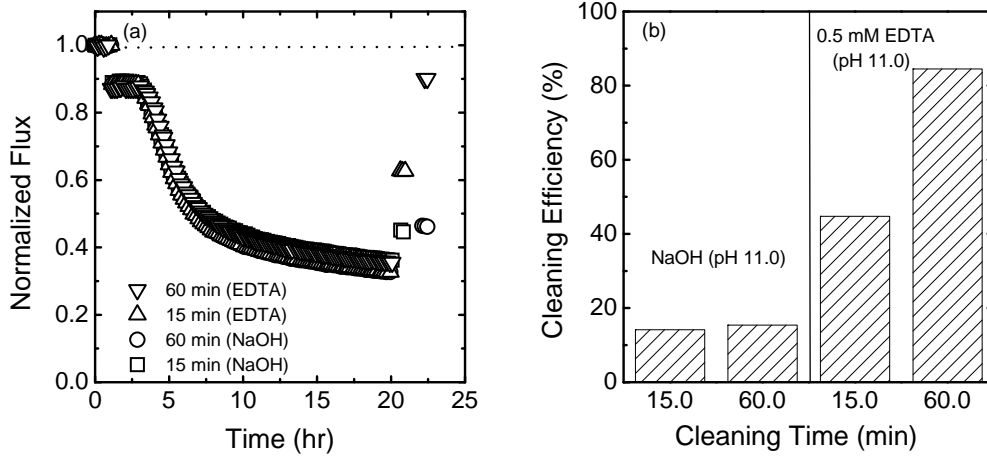
## 4.2 Physical Aspects of Cleaning

In this section, we investigate the physical aspects of cleaning—crossflow velocity, cleaning time, and temperature—to determine the favorable conditions for effective mass transfer. During cleaning, mass transfer of foulants from the fouling layer to the bulk solution takes place after the chemical reaction between the cleaning agent and deposited foulants have weakened the structural integrity of the fouling layer. Crossflow velocity in the membrane cell mainly controls the mass transfer, and cleaning time and temperature affect the overall mass transfer since the rate and extent of solute transport are functions of time and temperature. Cleaning experiments—following fouling runs carried out under identical conditions—were performed at fixed chemical conditions, thus focusing on the physical aspects of cleaning. However, it is important to note that cleaning time and temperature also affect chemical reaction between cleaning agent and foulants since contact time (between cleaning agent and fouling layer) and solution temperature influence the extent and rate of reaction. While investigating the influence of a certain physical factor on the efficiency of a cleaning agent, all other physical factors are kept constant.

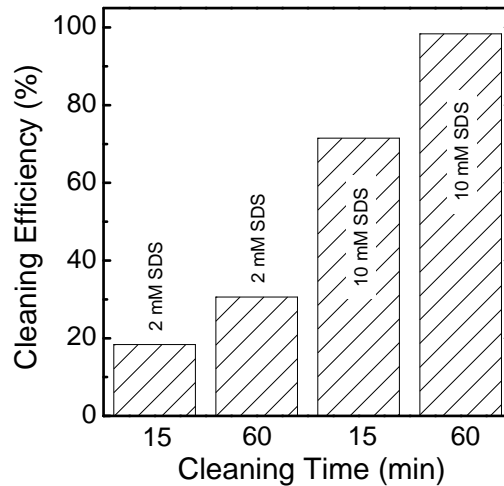
### 4.2.1 Effect of Cleaning Time

The influence of cleaning time on the efficiency of each cleaning agent was investigated. The flux behaviors during the fouling/cleaning runs and the resulting cleaning efficiencies with NaOH (pH 11) and 0.5 mM EDTA (pH 11) are shown in figure 4-6. The influence of cleaning time on cleaning efficiency is also compared for two different SDS concentrations (2 and 10 mM; both at pH 11) as shown in figure 4-7. In all cases, the results are compared for cleaning performed for 15 and 60 minutes.

For NaOH (pH 11) cleaning, an increase in cleaning time from 15 to 60 minutes resulted in negligible difference in cleaning efficiency (figure 4-6). This is attributed to the limited chemical reaction between NaOH and foulants in the alginate gel layer. In other words, a longer contact time did not contribute to enhancing cleaning efficiency, unless there was a favorable chemical reaction between the cleaning agent and foulants in the fouling layer to lessen foulant-foulant interactions. Therefore, we conclude that NaOH is not a suitable cleaning agent for membranes fouled by organic matter in presence of calcium ions. Besides, as mentioned earlier, increasing the NaOH concentration and, hence, resulting in a pH higher than 12, is not applicable for most polymeric RO membranes. In the case of EDTA cleaning, there was a twofold increase in cleaning efficiency when the cleaning time was increased from 15 to 60 minutes. Contrary to NaOH, EDTA is a favorable cleaning agent since EDTA reacts specifically within the fouling layer through a ligand-exchange reaction.



**Figure 4-6. Variation in NaOH and EDTA cleaning efficiencies with respect to cleaning time: (a) flux behavior during fouling/cleaning experiments and (b) cleaning efficiency. Cleaning experiments were performed at pH 11.0 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b) except the cleaning time as indicated in the figure. Note that the last data points in figure 4-6(a) are for flux measured with DI water after the corresponding cleaning.**



**Figure 4-7. Variation in SDS cleaning efficiency with respect to cleaning time at different SDS concentrations. Cleaning experiments were performed at pH 11 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b), except the cleaning time and SDS concentration as indicated in the figure.**

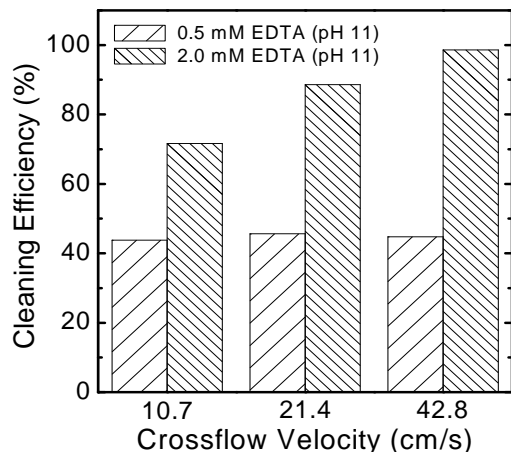
Previous results (figure 4-4) demonstrated that the efficiency of SDS cleaning is significantly influenced by SDS concentration with respect to its CMC. As shown in figure 4-7, increasing cleaning time from 15 to 60 minutes resulted in nearly 100% cleaning efficiency when 10 mM SDS was used. However, cleaning with 2 mM SDS for 60 minutes was still ineffective (less than 30% cleaning efficiency). This observation is closely related to the previous results for NaOH and EDTA cleaning performed for different cleaning times. Similar to NaOH, cleaning with 2 mM SDS was, to some extent, limited in terms of chemical reaction; and, thus, increasing cleaning time did not significantly enhance the cleaning efficiency. However, increasing cleaning time for the 10-mM SDS solution led to an almost complete cleaning of the fouled membrane since cleaning with 10 mM SDS was favorable in terms of chemical reaction between SDS and the foulants within the fouling layer. Therefore, while considering the chemical aspects of cleaning (e.g., deciding the cleaning agent dose), optimization of cleaning time should be taken into account since increasing cleaning time does not always result in a corresponding increase in cleaning efficiency.

#### **4.2.2 Effect of Crossflow Velocity**

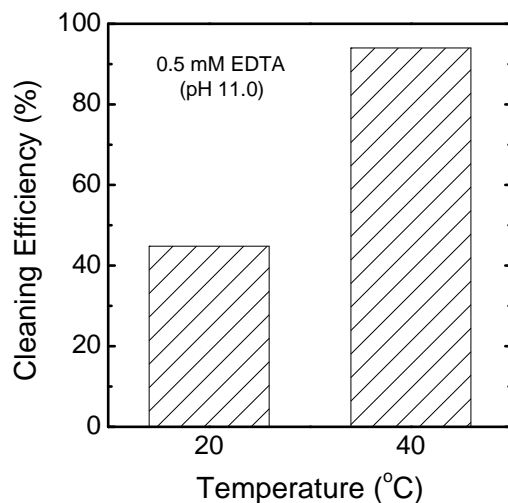
The influence of crossflow velocity (during cleaning) on cleaning efficiency was investigated with solutions containing different doses of EDTA (0.5 and 2.0 mM; both at pH 11), as shown in figure 4-8. It is shown that cleaning efficiency with 0.5 mM EDTA did not improve significantly with increasing crossflow velocity, while there was a discernible increase in cleaning efficiency with 2.0 mM EDTA as crossflow velocity increased. We have shown earlier that, for a cleaning agent to be effective, the chemical reaction with the foulants has to be favorable before physical interaction (due to crossflow velocity) takes place. With 0.5 mM EDTA, the concentration of cleaning agent was not enough to produce a favorable chemical reaction with the foulants in the fouling layer within the 15-minute cleaning time. An increase in crossflow velocity which resulted in an increase in the shear rate did not enhance the mass transfer of foulants in the fouling layer to the bulk solution because the EDTA molecules did not react strongly with the foulants, and the structural integrity was still very much intact. However, with 2.0 mM EDTA, an increase in shear rate enhanced the mass transfer of the foulants from the fouling layer to the bulk solution, as 2.0 mM EDTA is favorable for a rigorous chemical reaction. This led to an increase in cleaning efficiency with increasing crossflow velocity. We conclude that the chemical reaction of the cleaning agent with deposited foulants and the associated mass transfer phenomena are quite important in membrane cleaning.

#### **4.2.3 Effect of Temperature**

The results for EDTA cleaning performed at different temperatures are presented in figure 4-9. We note that, in both cases, the pure water flux after cleaning was determined at 20 °C. The cleaning efficiency with 0.5 mM EDTA (pH 11) increased dramatically with increasing cleaning temperature from 20 to 40 °C.



**Figure 4-8. Variation in EDTA cleaning efficiency with the crossflow velocity during cleaning with different EDTA concentrations. Cleaning experiments were performed at pH 11 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b) except the crossflow velocity and EDTA concentrations as indicated in the figure.**



**Figure 4-9. Variation in EDTA cleaning efficiency with respect to cleaning solution temperature. Cleaning experiments were performed with 0.5-mM EDTA solution at pH 11 following fouling runs carried out at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b) except the temperature as indicated in the figure.**

Both the rate of chemical reaction of EDTA with the deposited foulants and the diffusive transport of foulants from the fouling layer to the bulk solution increased as temperature was increased. At a higher temperature, the swelling of the alginate gel layer might have also contributed to weakening its structural stability (Moe et al., 1992).

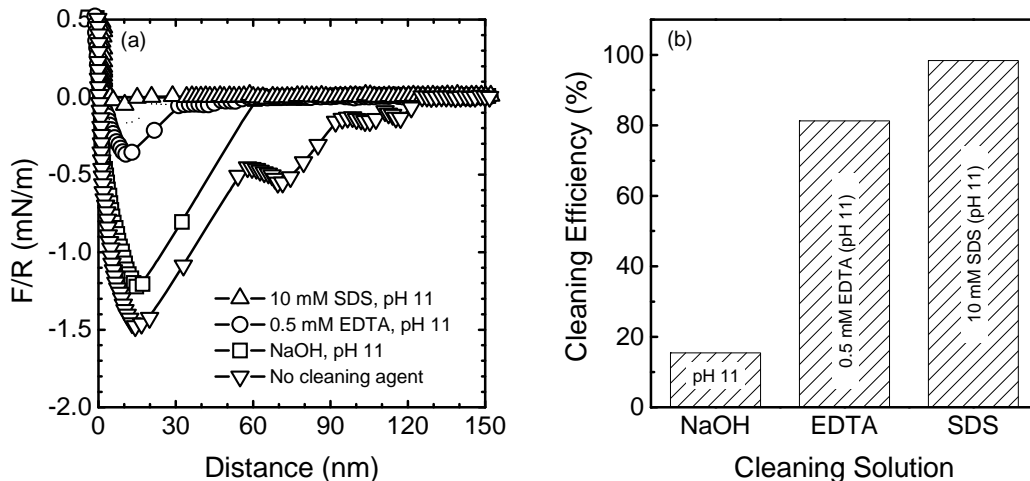
### 4.3 Relating Cleaning Efficiency to Measured Adhesion Forces

Based on the preceding results, it has been shown that chemical reaction of the cleaning agent with the foulants in the fouling layer plays a critical role in determining the overall cleaning efficiency. Determining the intermolecular adhesion forces between foulants in the fouling layer in the presence, or absence, of cleaning solution enables us to predict the capability of chemical reaction between cleaning agent and the foulants. A more favorable (or reactive) cleaning agent will result in less intermolecular adhesion force between foulants in the fouling layer.

The intermolecular adhesion force was first determined in the absence of cleaning solution to serve as a baseline and, then, in the presence of the cleaning agent. In the absence of cleaning solution, the interfacial adhesion force was determined with the same solution used as feed water for the fouling runs (i.e., 20 mg/L alginate, 0.5-mM  $\text{Ca}^{2+}$ , 10-mM total ionic strength, and pH 6.0). The interfacial adhesion forces determined in the presence of cleaning solutions (same solution chemistries as those used in the cleaning experiments) were compared with the cleaning efficiency determined from fouling/cleaning experiments, as shown in figure 4-10.

Figure 4-10(a) shows the intermolecular adhesion forces determined in the presence of different cleaning solutions (i.e., NaOH, 0.5 mM EDTA, and 10 mM SDS, all at pH 11) as well as in the absence of cleaning solution. The maximum adhesion force (corresponds to the minimum in the adhesion force curve) in the absence of cleaning solution was about 1.5 millinewton per meter (mN/m). The addition of SDS to the test solution was the most effective, almost eliminating the adhesion force. The addition of EDTA to the test solution decreased the adhesion force substantially, reducing the maximum adhesion force to 0.4 mN/m. In the presence of NaOH (pH 11), however, a significant adhesion force (1.3 mN/m) was still present. It is also noted that, with the reduction in adhesion force in presence of the cleaning solution, the distance from the fouling layer on the membrane surface to the point where no adhesion force was observed was reduced correspondingly. The reduction in intermolecular adhesion force with each cleaning solution was directly related to the cleaning efficiency as shown in figure 4-10(b). These cleaning efficiencies were determined from experiments with each cleaning solution at fixed physical cleaning conditions (60-minute cleaning time, crossflow velocity of 42.8 cm/s, and 20 °C).





**Figure 4-10. Relationship between intermolecular adhesion forces and cleaning efficiency: (a) variation in foulant-foulant adhesion forces as a function of cleaning solution type (the curve indicated as ‘no cleaning agent’ was determined in the absence of cleaning solution) and (b) variation in cleaning efficiency as a function of cleaning solution type. The test solutions used in the interfacial force measurements were the same as those used during fouling runs and also contained cleaning solutions as indicated in the figure. Cleaning experiments were carried out for 60 minutes following fouling runs performed at the same conditions as those in figure 4-1(a). Other cleaning conditions were identical to those in figure 4-1(b).**

The results in figure 4-10 demonstrate a strong relationship between the efficiency of a cleaning solution and the residual intermolecular adhesion force in the presence of the same cleaning solution. This is because the efficiency of a cleaning solution at fixed physical conditions was mainly governed by the chemical reaction of the cleaning agent with the foulants in the fouling layer. A more favorable chemical reaction would lead to a lower foulant-foulant adhesion force and, hence, higher cleaning efficiency. This general relationship between intermolecular adhesion force and cleaning efficiency has also been demonstrated in our recent study with humic acid-fouled NF membranes (Li and Elimelech, 2004). Therefore, the selection of a favorable cleaning solution in terms of chemical reaction between the cleaning agent and the foulants in the fouling layer can be predicted by measuring the intermolecular adhesion force prior to the fouling/cleaning experiments. Following this prediction, the selected favorable cleaning solution can be used for cleaning experiments to determine the optimal physical cleaning conditions in terms of both cleaning efficiency and operating cost.

#### 4.4 Effective Cleaning Requires Favorable Chemical and Physical Interactions

Membrane cleaning involves both chemical and physical interactions. These interactions include (i) chemical reaction between the cleaning agent and the

foulants in the fouling layer and (ii) mass transfer of cleaning agent from the bulk solution to the fouling layer and the foulants from the fouling layer back to the bulk solution. A schematic representation of the roles of chemical and physical interactions for effective cleaning of organic-fouled RO membranes is shown in figure 4-11. Effective cleaning can be achieved only when both the chemical and physical interactions are favorable as discussed below.

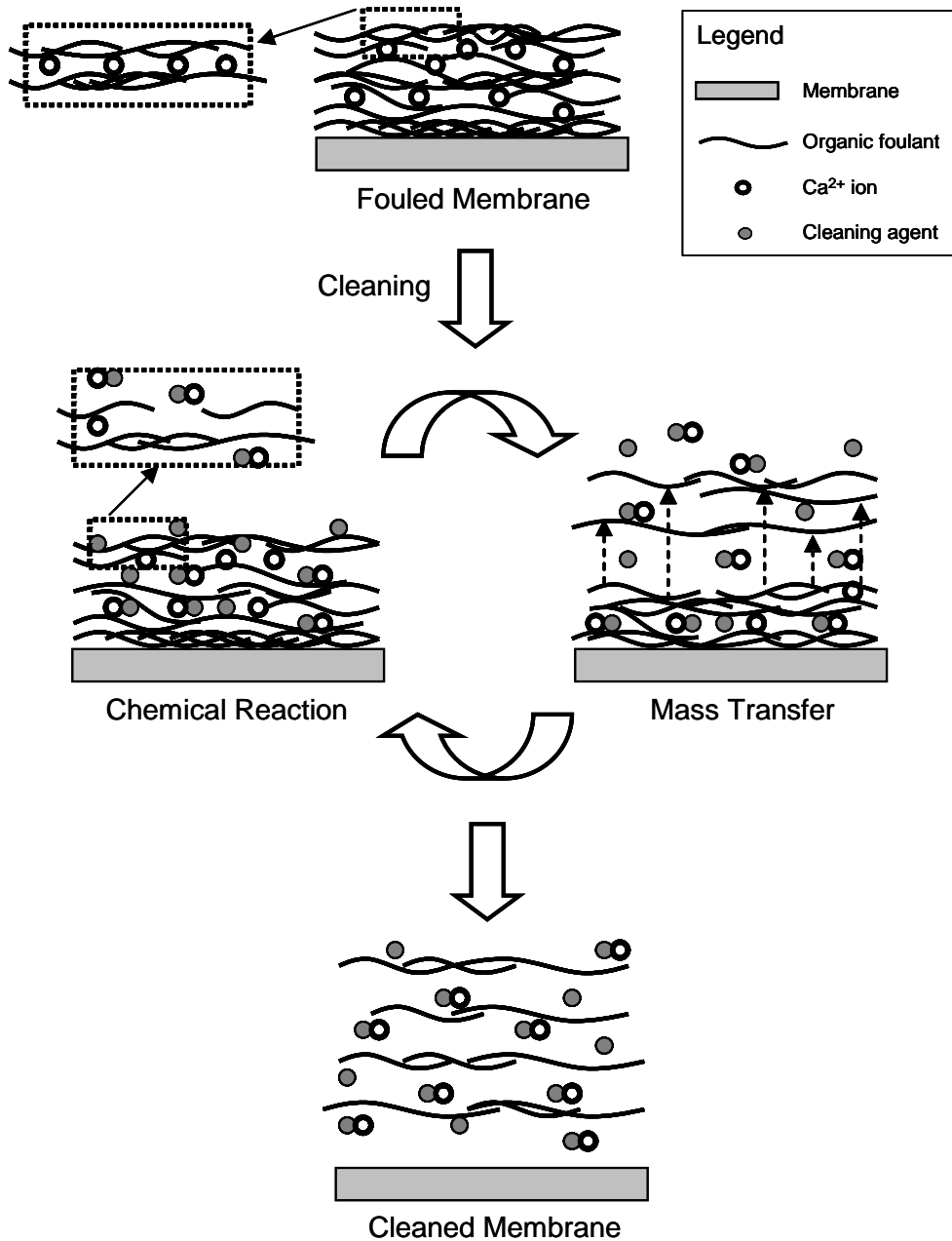
In the presence of a cleaning solution, chemical reaction will occur between the cleaning agent and the foulants in the fouling layer. In this study, we have seen that the effectiveness of cleaning in terms of chemical reactivity depends on the type of cleaning solution, cleaning solution pH, cleaning chemical dose, and the foulant chemical composition. When a cleaning agent has a favorable chemical reactivity, the cleaning agent, upon contact with the foulants, will be able to react with the foulants and weaken the structural integrity of the fouling layer. The physical (hydrodynamic) conditions, which are mainly responsible for the mass transfer of the reaction products, then play an important role in removing the foulants from the fouling layer.

As we have shown earlier, some physical conditions (i.e., cleaning time and temperature) affect the mass transfer and chemical reaction concurrently, unless the cleaning agent is limited in terms of chemical reactivity. When a cleaning agent has a favorable chemical reaction with the foulants in the fouling layer, an optimization of the physical conditions improves its cleaning efficiency significantly, as illustrated for 0.5 mM EDTA and 10-mM SDS solutions when the cleaning time was increased from 15 to 60 minutes. However, improving the physical conditions will not enhance the cleaning efficiency of a cleaning agent that does not have a favorable chemical reaction with the foulants, as shown for NaOH solution when the cleaning time was increased from 15 to 60 minutes. As we emphasized earlier, effective cleaning of organic-fouled RO membranes requires both the physical and chemical interactions to be favorable.

## **4.5 Conclusion**

The cleaning of organic-fouled RO membranes is accomplished by the chemical reaction between cleaning agents and foulants in the fouling layer, followed by the mass transfer of loosened foulants from the fouling layer to the bulk solution. The chemical reaction is greatly influenced by the type and dose of cleaning agent as well as cleaning solution pH. In addition, the fouling layer composition also influences the reactivity of a cleaning agent with foulants in the fouling layer.

EDTA and SDS were quite effective in reacting with organic foulants in the fouling layer formed in the presence of calcium ions, while NaOH cleaning resulted in poor cleaning efficiency due to its limited reactivity with deposited foulants. Cleaning efficiency with EDTA and SDS was improved by optimizing cleaning agent dose and solution pH. However, these chemical factors hardly contributed to improving the efficiency of NaOH cleaning.



**Figure 4-11. Schematic representation for effective cleaning of organic-fouled RO membranes. A cross-linked fouling layer is formed on the membrane surface in presence of calcium ions, which bind to organic foulants and form bridges between adjacent foulant molecules. During cleaning, the cleaning agent reacts with the foulants in the fouling layer yielding loosened foulants. These reaction products are removed from the fouling layer to the bulk solution through the hydrodynamics/mass transfer. Thus, efficient cleaning can be achieved through the coupling between the chemical reaction and mass transfer along with the optimization of cleaning conditions responsible for the favorable chemical reaction and mass transfer.**

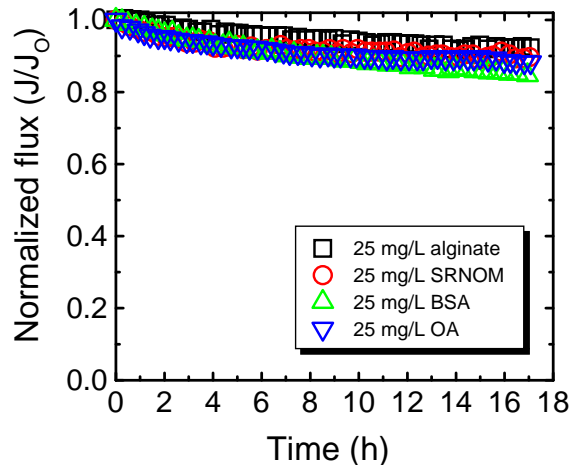
For favorably reactive cleaning agents, cleaning efficiency can be further improved by enhancing the mass transfer of the reaction products from the fouling layer to the bulk solution. Mass transfer of the foulants from the fouling layer to the bulk solution was mainly controlled by the crossflow velocity, whereas cleaning time and temperature affected both the mass transfer and chemical reaction.

The AFM force measurements show that the chemical reaction between cleaning agents and deposited foulants plays an important role in reducing the intermolecular adhesion force between foulants in the fouling layer. A remarkable correlation is noted between the cleaning efficiencies and the magnitudes of the adhesion force measured in the presence of the corresponding cleaning solutions. The cleaning efficiency was inversely related to the residual foulant-foulant adhesion force, implying that favorable cleaning agents are those that are effective in reducing the intermolecular adhesion force. Therefore, it is suggested that AFM force measurements can be used as a tool to predict the effectiveness of the chemical reactivity of a cleaning agent. The selection of reactive cleaning agents is of paramount importance in determining the overall cleaning efficiency since the optimization of physical conditions could improve the cleaning efficiency only when the chemical reaction of the cleaning agent with deposited foulants is favorable.

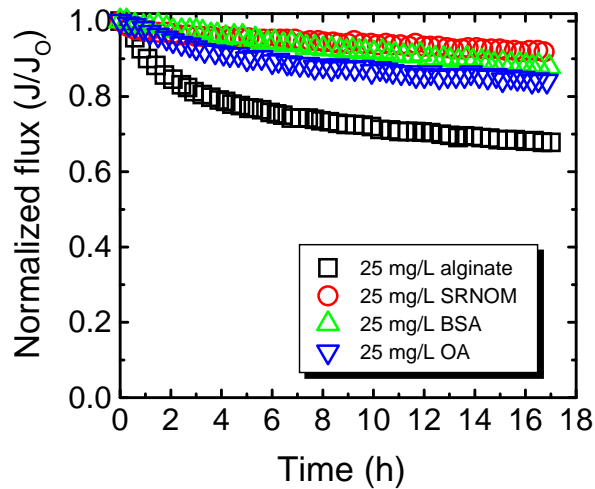
# 5. Cleaning of RO Membranes Fouled by Mixtures of Organic Foulants

## 5.1 Fouling Runs

Figures 5-1 and 5-2 show the normalized flux profiles for LFC-1 membranes fouled by each individual foulant (alginate, BSA, SRNOM, or OA) in the absence and presence of  $\text{Ca}^{2+}$ , respectively. The solution pH was adjusted to 6.0 so as to simulate the pH of waste water effluents. In the absence of  $\text{Ca}^{2+}$ , the flux decline profiles of membranes fouled by the various foulants are insignificant. The effect of  $\text{Ca}^{2+}$  is most significant on membranes fouled by alginate due to the gel formation of alginate in the presence of  $\text{Ca}^{2+}$ . At a relatively low foulant concentration of 25 mg/L, the effect of  $\text{Ca}^{2+}$  on fouling of RO membranes by BSA, SRNOM, or OA is minimal. However, we have observed that the presence of  $\text{Ca}^{2+}$  can affect fouling behavior when the foulant concentrations are higher (300 mg/L BSA; 2 mM or 288 mg/L OA).



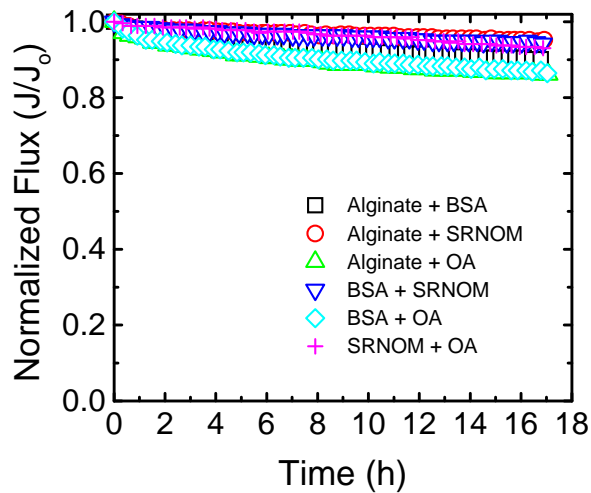
**Figure 5-1. Influence of individual foulant type on fouling of LFC-1 membranes in the absence of  $\text{Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM by adjusting with NaCl, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions: foulant concentration = 25 mg/L, initial permeate flux =  $23 \mu\text{m/s}$  (or  $83 \text{ L m}^{-2} \text{ h}^{-1}$ ), crossflow velocity =  $8.6 \text{ cm/s}$ , and temperature =  $21.0 \pm 0.5 \text{ }^\circ\text{C}$ .**



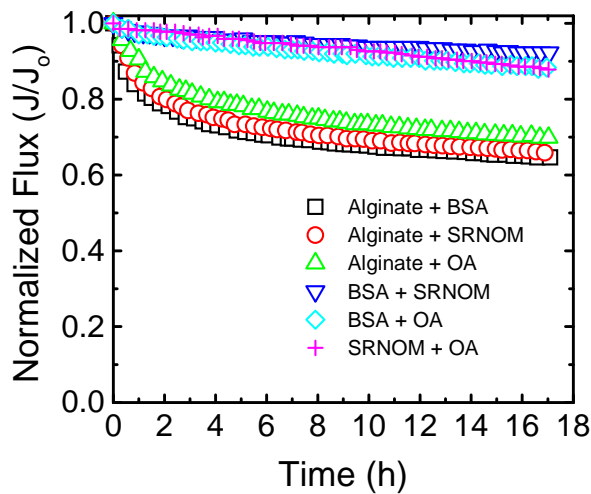
**Figure 5-2. Influence of individual foulant type on fouling of LFC-1 membranes in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM by adjusting with NaCl, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.**

To investigate the implications for waste water reclamation, the effect of  $\text{Ca}^{2+}$  on fouling of RO membranes by all possible combinations of two or more foulant types is investigated. The concentration of each foulant type was maintained at 25 mg/L. Figures 5-3 and 5-4 show the normalized flux profiles of membranes fouled by a mixture of two foulants in the absence and presence of  $\text{Ca}^{2+}$ , respectively. In the absence of  $\text{Ca}^{2+}$ , the flux declines are insignificant, especially for foulant mixtures containing SRNOM. The effect of  $\text{Ca}^{2+}$  is most significant for feed solutions containing alginate as one of the two foulant types. Comparing the flux profiles of membranes fouled by alginate as a co-foulant, the flux-decline profile of membrane fouled by alginate and OA is the least significant due to the formation of octanoic acid-calcium complexes that increase the hydrophilicity of the fouling layer. The relevant data is not shown in this report but has been included in a journal paper titled “Fatty acid fouling of reverse osmosis membranes: Implications for waste water reclamation” which has been submitted for publication.

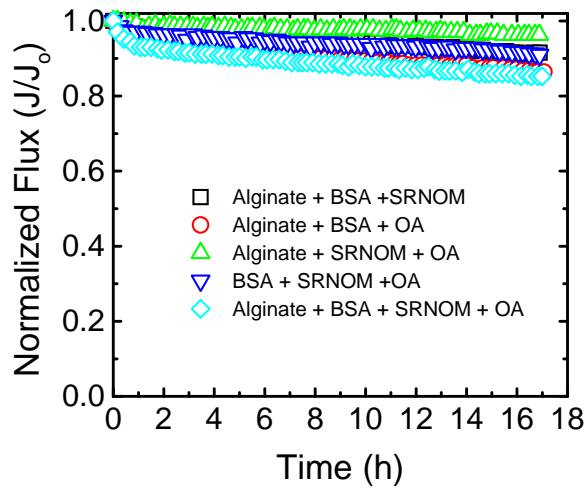
Figures 5-5 and 5-6 show the normalized flux profiles of membranes fouled by a mixture of three foulant types and all foulant types in the absence and presence of  $\text{Ca}^{2+}$ , respectively. In accordance with the membrane fouling behavior observed in figure 5-3, membranes fouled by foulant mixtures containing SRNOM in the absence of  $\text{Ca}^{2+}$  have less significant flux-decline profiles than the membrane fouled by a mixture of alginate, BSA, and OA. Comparing the latter with the flux profile of the membrane fouled by all four foulant types, the addition of SRNOM



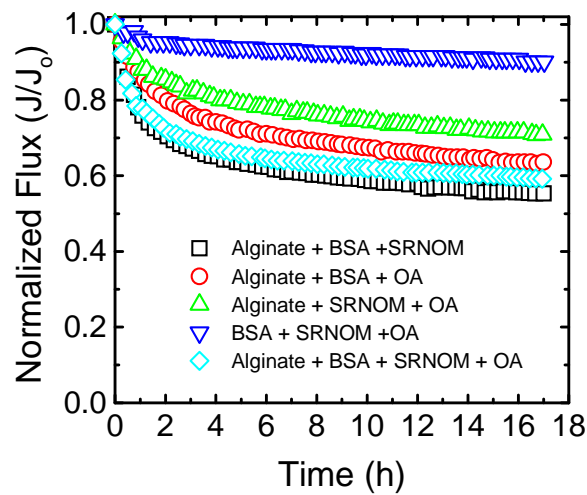
**Figure 5-3. Influence of two-foulant mixture on fouling of LFC-1 membranes in the absence of  $\text{Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM by adjusting with NaCl, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.**



**Figure 5-4. Influence of two-foulant mixture on fouling of LFC-1 membranes in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM by adjusting with NaCl, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.**



**Figure 5-5.** Influence of three-foulant and four-foulant mixtures on fouling of LFC-1 membranes in the absence of  $\text{Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.



**Figure 5-6.** Influence of three-foulant and four-foulant mixtures on fouling of LFC-1 membranes in the presence of  $0.5 \text{ mM Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at 10 mM, and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.



to the foulant mixture did not affect the flux profile. These observations would imply that, among various foulant types, SRNOM plays the least significant role in membrane fouling caused by a combination of foulant types in the absence of  $\text{Ca}^{2+}$ .

In the presence of  $\text{Ca}^{2+}$ , for membranes fouled by mixtures containing alginate, the effect of  $\text{Ca}^{2+}$  on flux profiles is most significant, especially for the membrane fouled by a mixture of alginate, BSA, and SRNOM (without OA). Comparing the latter with the flux profile of the membrane fouled by all four foulant types, an inhibitory effect of OA on the flux-decline profile in the presence of  $\text{Ca}^{2+}$  is observed for the same reason given for the membrane fouling behavior when the feed contains alginate and OA in the presence of  $\text{Ca}^{2+}$ . The inhibitory effect of OA on flux-decline profiles also can be observed from the flux profile by combined foulant types of alginate, SRNOM, and OA in figure 5-6 and the profile by alginate and SRNOM in figure 5-4.

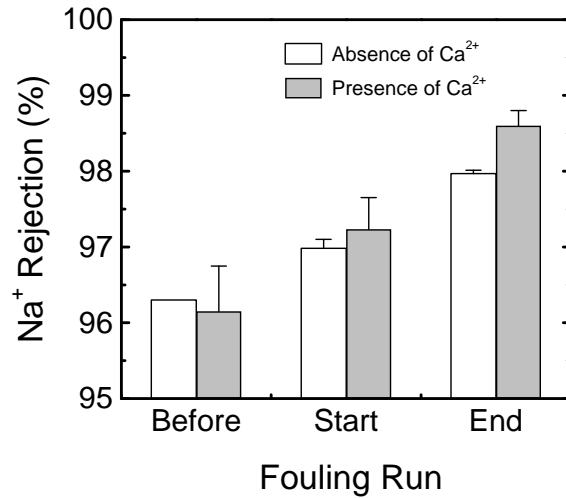
Figure 5-7 shows  $\text{Na}^+$  rejection of RO membranes fouled by combined foulant types of alginate, BSA, SRNOM, and OA in the presence of  $\text{Ca}^{2+}$  determined before, and at the start and end of, the fouling runs. The feed solution pH was adjusted to pH 6.0. The trend of  $\text{Na}^+$  rejections is similar both in the absence and presence of  $\text{Ca}^{2+}$ . At the onset of fouling, the  $\text{Na}^+$  rejections increase due to the instantaneous formation of a fouling layer, which acts like an additional barrier to the RO membrane. Towards the end of the fouling runs, the fouling layer becomes thicker, resulting in higher  $\text{Na}^+$  rejections. The presence of  $\text{Ca}^{2+}$  resulted in a more compact fouling layer, which improves the ability of the fouling layer to act as a barrier against the transport of  $\text{Na}^+$  across the membrane.

## 5.2 Cleaning Data

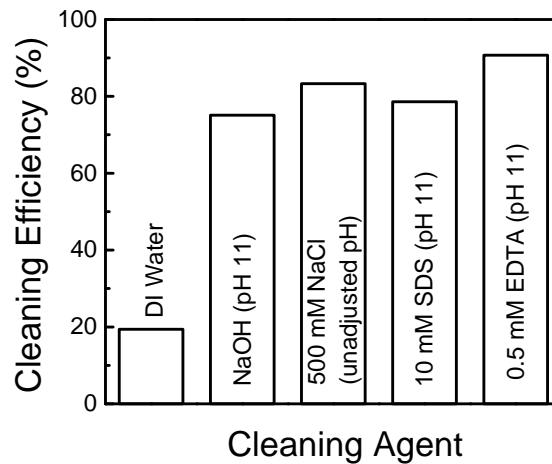
### 5.2.1 Single Cleaning Agent

#### 5.2.1.1 Type of Cleaning Agent

Figure 5-8 shows the cleaning efficiencies of various cleaning agents on membranes fouled by combined foulant types comprising alginate, BSA, SRNOM, and OA, with the concentration of each foulant type at 25 mg/L, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . Cleaning was performed for 15 minutes without an operating pressure (i.e., no permeate) and at a crossflow velocity five times as high as that during fouling. Cleaning the fouled membrane with DI water resulted in 19% cleaning efficiency, which implies that the fouling layer on the membrane surface is largely irreversible. Conventional cleaning agents, such as NaOH (pH 11), 10 mM SDS (pH 11), and 0.5 mM EDTA (pH 11), are effective in removing the fouling layer, as the cleaning efficiencies of the respective cleaning agents measure 75, 79, and 91%. 500 mM NaCl (at unadjusted pH), which was proven to be effective in cleaning alginate-fouled RO membranes (Lee and Elimelech, 2007), is also effective in cleaning the membrane fouled by the combined foulant types.



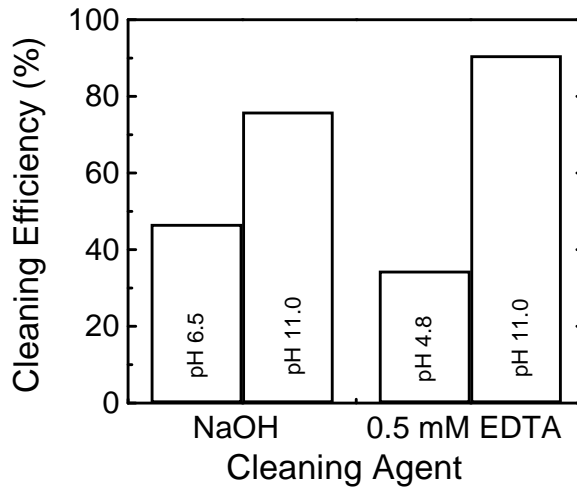
**Figure 5-7. Na<sup>+</sup> rejection of RO membranes measured before, and at the start and end of, the fouling runs under an adjusted feed solution pH of 6.0. The membranes were fouled by combined foulant types comprising 25 mg/L each of alginate, BSA, SRNOM, and OA. Permeate and feed samplings obtained before the fouling run were collected 30 minutes before the onset of fouling. Samplings taken at the start of the fouling run were initiated after first discarding 20 mL of permeate (duration of 8 minutes). Permeate and feed samples taken at the end were collected during the final 40 minutes of the fouling run. Error bars indicate one standard deviation. Fouling conditions were identical to those in figure 5-1.**



**Figure 5-8. Cleaning efficiencies of various cleaning agents on membranes fouled by combined foulant types comprising alginate, BSA, SRNOM, and OA, with the concentration of each foulant type at 25 mg/L, in the presence of 0.5 mM Ca<sup>2+</sup>. Cleaning conditions: time = 15 minutes, temperature = 21 ± 0.5 °C, operating pressure = 0 pounds per square inch (psi).**

### 5.2.1.2 Cleaning Agent pH

The influence of cleaning solution pH on the cleaning efficiency of cleaning agents is illustrated in figure 5-9. Cleaning efficiencies increased significantly for NaOH when the solution pH was increased from 6.5 to 11.0 (from 47 to 76%) and for EDTA when the solution pH was increased from 4.8 to 11.0 (from 35 to 91%). At pH 11, the organic foulants are above the isoelectric points and negatively charged. The effect of the shear due to the crossflow velocity, coupled with the repulsive interaction among the foulant types within the fouling layer, is substantial enough to break up the fouling layer matrix and transport the foulants from the membrane surface to the bulk solution. It is interesting to observe that a slight increase in solution pH from about 5.7 (DI water) to 6.5 (NaOH) results in a two-fold increase in the cleaning efficiency from 19 to 47%. While NaOH (pH 11) is not a favorable cleaning agent for cleaning membranes fouled solely with alginate in the presence of  $\text{Ca}^{2+}$  (Ang et al., 2006), we see that NaOH (pH 11) plays an effective role in cleaning membranes fouled with combined foulant types. It is hypothesized that the type of foulant affects both the fouling layer matrix and the cleaning efficiencies of cleaning agents in removing the foulants from the membrane surface.



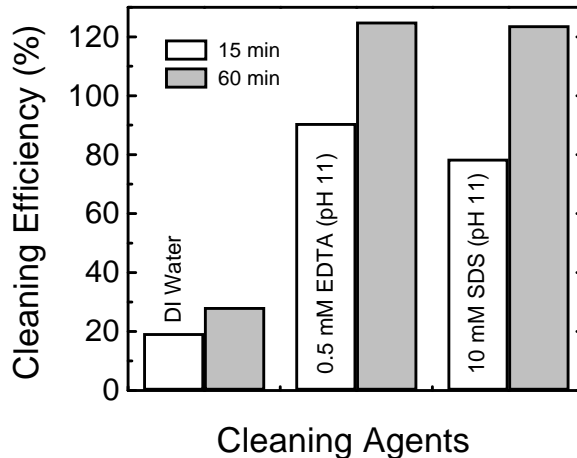
**Figure 5-9. Cleaning efficiencies of various cleaning agents on membranes fouled by combined foulant types comprising alginate, BSA, SRNOM, and OA, with the concentration of each foulant type at 25 mg/L, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . Other cleaning conditions were identical to those in figure 5-8 except for the indicated adjustments of pH.**

At an unadjusted solution pH (4.8), EDTA is not fully deprotonated to chelate fully with  $\text{Ca}^{2+}$  from the combined foulant-calcium complexes within the fouling layer. When EDTA solution is adjusted to pH 11 with NaOH, the chelating ability of EDTA is enhanced due to the full deprotonation of the carboxylic

functional groups, resulting in a more effective ligand-exchange reaction between EDTA and the combined foulant-calcium complexes within the fouling layer. Interestingly, while 0.5 mM EDTA (pH 11) is effective in removing the combined foulants from the membrane surface, the cleaning agent at the same concentration and solution pH is not as effective as a cleaning agent for membranes fouled solely with alginate in the presence of  $\text{Ca}^{2+}$  (Ang et al., 2006).

### 5.2.1.3 Cleaning Time

The influence of cleaning time on the cleaning efficiency of each cleaning agent was investigated. The efficiencies of cleaning with DI water, EDTA, and SDS for 15 and 60 minutes are shown in figure 5-10. Increasing the cleaning time for DI water from 15 to 60 minutes does not increase the cleaning efficiency markedly (from 19 to 28%). This implies that DI water is not favorable as a cleaning agent, as the enhanced physical and chemical aspects of cleaning did not result in significant improvement in the cleaning efficiency. When the cleaning times for EDTA and SDS are increased from 15 to 60 minutes, we see that the cleaning efficiencies increased beyond 100% for both cleaning agents. As EDTA and SDS are favorable cleaning agents, enhancing the physical and chemical aspects of cleaning results in increased cleaning efficiencies. The presence of permeate flux that is higher than that before the onset of fouling is a result of modification to the surface properties (e.g., hydrophilicity) by the cleaning agent.



**Figure 5-10. Cleaning efficiencies of various cleaning agents on membranes fouled by combined foulant types comprising alginate, BSA, SRNOM, and OA, with the concentration of each foulant type at 25 mg/L, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . Other cleaning conditions were identical to those in figure 5-8 except for the indicated adjustments in cleaning times.**

### **5.2.1.3 Foulant composition**

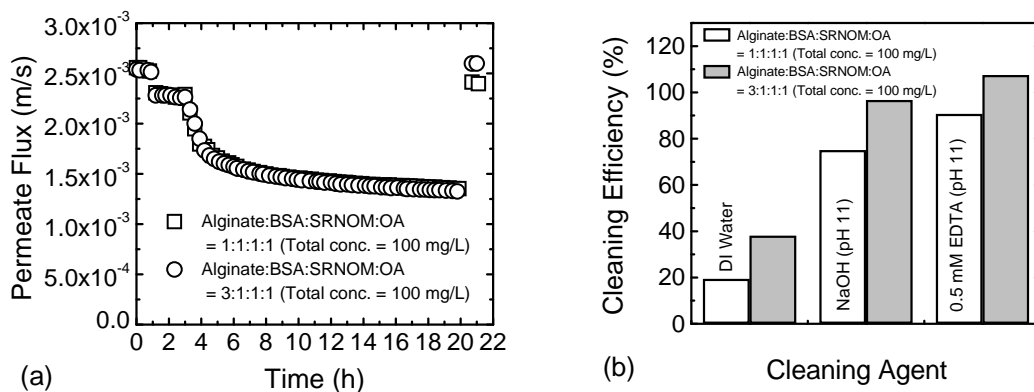
As discussed in previous sections, the feed foulant composition affects the membrane flux profile, which is influenced by the foulant accumulation as well as by the structure of the fouling layer on the membrane surface. To investigate the effect of fouling layer structure on cleaning efficiency, the foulant composition in the feed solution is varied. It is expected that the structure of the fouling layer would affect the transfer of the cleaning agent to the fouling layer matrix and, hence, removing the foulants from the membrane surface to the bulk solution. Figure 5-11(a) shows the flux profiles of membranes fouled with feed solutions containing different proportions of foulant types and cleaned with 0.5 mM EDTA (pH 11). Keeping the total foulant concentration of each feed solution at 100 mg/L, the foulant composition comprised 25 mg/L alginate, 25 mg/L BSA, 25 mg/L SRNOM, and 25 mg/L OA for one feed solution; and 50 mg/L alginate, 17 mg/L BSA, 17 mg/L SRNOM, and 17 mg/L OA for the other solution. As the flux profiles of the membranes fouled by the two foulant compositions were identical, the cleaning efficiencies of the cleaning agents on the fouled membranes can be compared.

Figure 5-11(a) shows the cleaning efficiencies of DI water, NaOH (pH 11), and 0.5 mM EDTA (pH 11) on membranes fouled with different feed foulant compositions. The cleaning agents exhibit the same trend for membranes fouled by different feed foulant compositions. 0.5 mM EDTA (pH 11) has a higher cleaning efficiency than NaOH (pH 11), while DI water has a relatively low cleaning efficiency. Each cleaning agent has a higher cleaning efficiency on membranes fouled with a feed solution containing a higher proportion of alginate. This observation can be attributed to the higher porosity of the fouling layer structure formed from a feed solution containing a higher concentration of alginate and lesser concentrations of the other foulant types. The more porous fouling layer structure would enhance the transfer of the cleaning agents from the bulk solution to the fouling layer and the transfer of reaction products from the fouling layer back to the bulk solution.

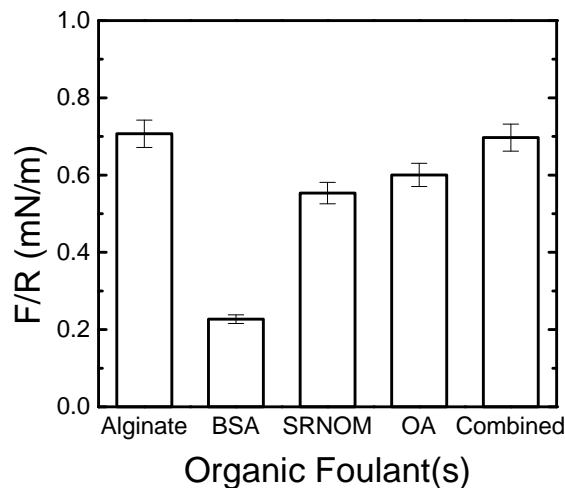
## **5.3 Foulant-foulant Intermolecular Adhesion Forces**

### **5.3.1 Effect of $\text{Ca}^{2+}$ on Foulant-foulant Interaction of Individual and Combined Foulants**

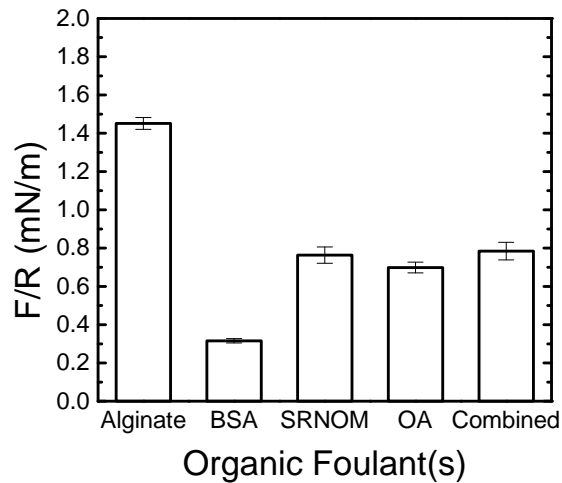
The AFM is used to determine the foulant-foulant interaction for all combinations of foulant mixtures. Figures 5-12 and 5-13 show the intermolecular adhesion force of individual and combined foulants (alginate, BSA, SRNOM, and OA) in the absence and presence of  $\text{Ca}^{2+}$ , respectively, in feed solutions with identical solution chemistries. In the absence of  $\text{Ca}^{2+}$ , the intermolecular adhesion force of alginate molecules is the strongest and that of BSA molecules the weakest. The magnitude of the intermolecular adhesion force of the combined foulants is similar to that of the individual foulant which has the highest adhesion force (alginate). This observation suggests that the combined foulant types in the



**Figure 5-11. Influence of feed foulant composition on cleaning of fouled membranes in the presence of 0.5 mM Ca<sup>2+</sup>: (a) flux profiles of fouled membranes with varying proportions of foulant types, cleaned with 0.5 mM EDTA (pH 11) and (b) variations in cleaning efficiencies with respect to feed foulant composition. Fouling experiments were performed with feed solution containing (i) alginate = 25 mg/L, BSA = 25 mg/L, SRNOM = 25 mg/L, OA = 25 mg/L (i.e., alginate:BSA:SRNOM:OA = 1:1:1:1), or (ii) alginate = 50 mg/L, BSA = 17 mg/L, SRNOM = 17 mg/L, OA = 17 mg/L (i.e., alginate:BSA:SRNOM:OA = 3:1:1:1). The total ionic strength of the feed solution was fixed at 10 mM, and the feed solution pH was adjusted to 6.0 ± 0.2. Other fouling and cleaning conditions were identical to those in figures 5-1 and 5-8, respectively.**



**Figure 5-12. Variation of mean foulant-foulant adhesion forces of the individual foulants and the combined foulants in the absence of Ca<sup>2+</sup>. The concentration of each individual foulant was 25 mg/L, and the combined foulants were a mixture of all individual foulants at 25 mg/L each. The total ionic strength of the feed solution was fixed at 10 mM, and the feed solution pH was adjusted to 6.0 by adding NaOH. The error bars represent the standard errors of the mean adhesion forces.**



**Figure 5-13. Variation of mean foulant-foulant adhesion forces of the individual foulants and the combined foulants in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The concentration of each individual foulant was 25 mg/L, and the combined foulants were a mixture of all individual foulants at 25 mg/L each. The total ionic strength of the feed solution was fixed at 10 mM, and the feed solution pH was adjusted to 6.0 by adding NaOH. The error bars represent the standard errors of the mean adhesion forces.**

mixture are not interacting and adhering to one another in the absence of  $\text{Ca}^{2+}$ , and would therefore have an adhesion force largely determined by the individual foulant possessing the highest adhesion force.

In the presence of  $\text{Ca}^{2+}$ , the intermolecular adhesion force of the alginate molecules is the strongest, and that of BSA molecules is the weakest (adhesion forces of individual foulants are similar to those in the absence of  $\text{Ca}^{2+}$ ). The effect of  $\text{Ca}^{2+}$  is most prominent on alginate as the adhesion force increases two-fold from  $0.71 \pm 0.04$  to  $1.45 \pm 0.03$  mN/m. The magnitude of intermolecular adhesion force of the foulant mixture is within the range of the highest and lowest adhesion forces of the individual foulants (alginate and BSA, respectively). The presence of  $\text{Ca}^{2+}$  will cause the various foulant molecules to bind among themselves to a different extent, depending on the foulant types in the solution. It is hypothesized that when there is an increase in the interaction among the various foulant types on the probe and the membrane surfaces, there will be less tendency for the foulants on the adsorbed probe to interact and adhere to the foulants on the membrane surfaces and vice versa, accounting for less foulant-foulant adhesion force as compared to the highest adhesion force observed for the individual foulants.

The significant effect of  $\text{Ca}^{2+}$  on the intermolecular adhesion force of alginate molecules is reflected from the fouling runs when  $\text{Ca}^{2+}$  is added to alginate in the feed solution (figures 5-1 and 5-2), whereby the flux-decline profile is significantly enhanced. While the effect of  $\text{Ca}^{2+}$  on the intermolecular adhesion forces of BSA, SRNOM, and OA is less obvious, we also see that the flux profile of membrane fouled by BSA, SRNOM, or OA in the absence of  $\text{Ca}^{2+}$  (figure 5-1) is not noticeably affected with the addition of  $\text{Ca}^{2+}$  (figure 5-2). The effect of  $\text{Ca}^{2+}$  on the fouling of combined foulants (figures 5-1 and 5-2), which resulted in an enhanced fouling behavior, is less telling from the corresponding effect of  $\text{Ca}^{2+}$  on the intermolecular adhesion force of combined foulants, which increases from  $0.70 \pm 0.03$  to  $0.78 \pm 0.05$  mN/m in the presence of  $\text{Ca}^{2+}$ .

### **5.3.2 Effect of Cleaning Agents on Intermolecular Adhesion Force of Combined Foulants**

While the optimum concentration of a cleaning agent for a fouled membrane can be determined from a series of cleaning experiments using various cleaning agent concentrations on membranes fouled under the same fouling conditions, the optimum concentration is only applicable under specific fouling and cleaning conditions and will change with fouling and cleaning conditions. Determining the optimum concentration by such a protocol is also time-consuming.

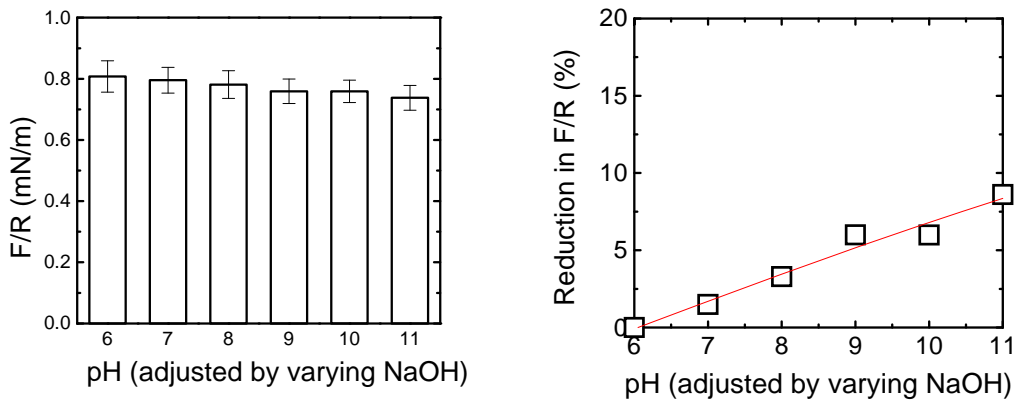
To circumvent the above issues, we can make use of the AFM as an alternative tool for indicating the concentration of cleaning agent to be used for cleaning the fouled membrane. The protocol for preparing the test solution is similar to that used for analyzing intermolecular adhesion force of single foulants in the presence of a cleaning agent, except that the foulant composition in the test solution would include all the foulant types at the concentrations used in the fouling runs. AFM force measurements are taken after a specific time (15 minutes), so that the intermolecular adhesion forces can be compared in the presence of various cleaning agent concentrations.

In the chapter on cleaning of alginate-fouled membrane, we proposed that efficient cleaning involves two important mechanisms: (i) *chemical reaction* between the cleaning agent and the foulants in the fouling layer and (ii) *mass transfer* of the cleaning agents from bulk phase to fouling layer and foulants from fouling layer to bulk phase. One major limitation of the AFM is that the physical conditions at which membrane fouling takes place cannot be reproduced in the AFM fluid cell. Consequently, the effect of *mass transfer* of the cleaning agents during cleaning cannot be reflected. Nonetheless, the profile of the reduction in intermolecular adhesion force with cleaning agent concentration would suggest the concentration of cleaning agent to use. While *chemical reaction* between the cleaning agent and the foulants at the suggested cleaning agent concentration is favorable, the cleaning efficiency of a cleaning agent can be further optimized by adjusting the operating conditions during cleaning, and such conditions would vary accordingly depending on the fouling conditions.



### 5.3.2.1 NaOH

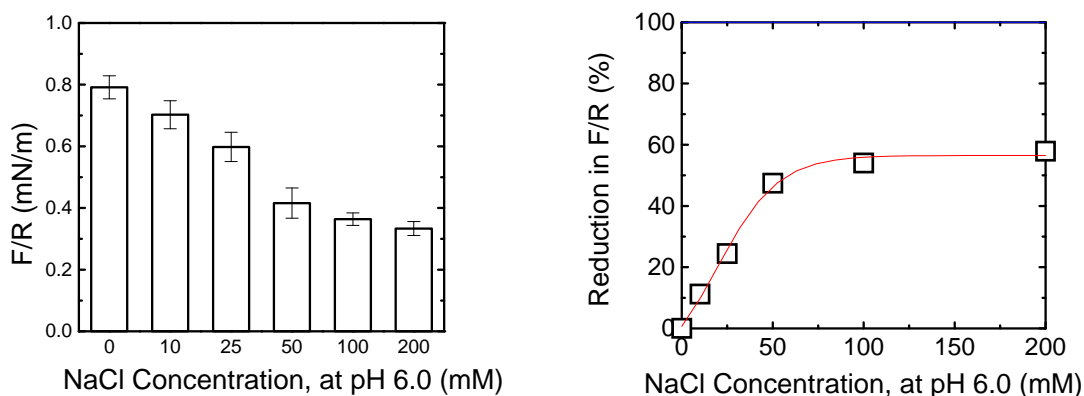
The effect of NaOH on the reduction in foulant intermolecular adhesion force was investigated. Figure 5-14 (a) shows that, although the foulant adhesion force decreases with the addition of NaOH, the decrease is gradual. Figure 5-14 (b) shows the profile of percentage reduction in adhesion force of the combined foulants in the presence of NaOH. The trend of the slight reduction in adhesion force with NaOH does not correspondingly reflect NaOH as a favorable cleaning agent for membranes fouled by a mixture of foulant types comprising alginate, BSA, SRNOM, and OA in the presence of 0.5 mM  $\text{Ca}^{2+}$  (figure 5-8), a favorable cleaning agent. It can be inferred that while NaOH is not a chemically favorable cleaning agent (as shown by the cleaning efficiency of NaOH for alginate fouled membranes and the effect of NaOH on the intermolecular adhesion force of alginate molecules in chapter 4), the bulk of the fouling layer formed from combined foulants can be removed by physical aspects of cleaning (e.g., shear due to the crossflow velocity). The fact that the cleaning efficiency of NaOH is higher for membranes fouled by combined foulants than alginate-fouled membranes in the presence of  $\text{Ca}^{2+}$  suggests that the binding among alginate-calcium complex, which constitutes the bulk of the structural integrity of the fouling layer for both types of membranes, is stronger when the feed solution contains alginate as the sole foulant type, and weakened when other foulant types are present in the feed solution.



**Figure 5-14. Effect of NaOH concentration: on (a) foulant intermolecular adhesion forces. Test solutions contain 25 mg/L alginate + 25 mg/L BSA + 25 mg/L SRNOM + 25 mg/L OA, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The total ionic strength was fixed at 10 mM, and solution pH was adjusted by adding NaOH. (b) Effect of NaOH concentration on percentage reduction in foulant intermolecular adhesion forces. The reduction is based on the intermolecular adhesion force in the absence of cleaning agent (pH 6).**

### 5.3.2.2 NaCl

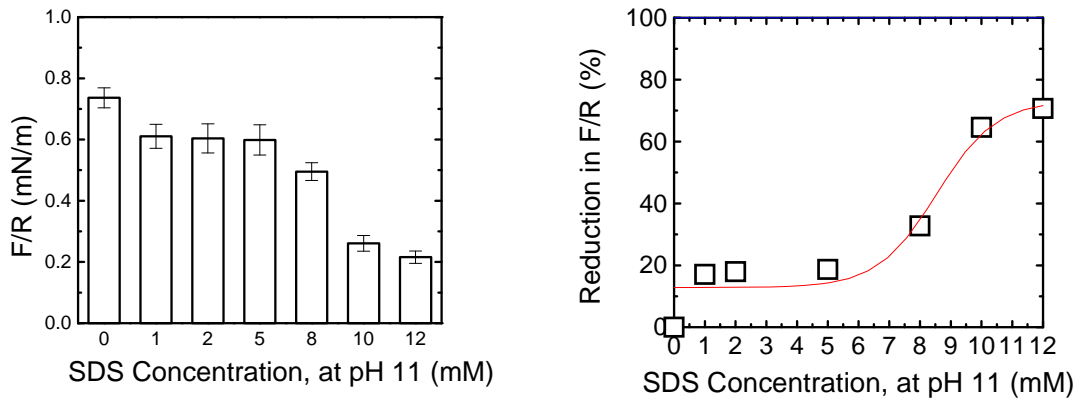
Figure 5-15a shows the effect of concentration of NaCl on the reduction in foulant intermolecular adhesion force. As NaCl concentration increases, the intermolecular adhesion force of the combined foulants decreases constantly and stabilizes at 100 mM. The percentage reduction in adhesion force in the presence of NaCl, as indicated in figure 5-15b, is more significant than that in the presence of NaOH. This observation is reflected in the fact that the cleaning efficiency for 500 mM NaCl is higher than that of NaOH (pH 11) (figure 5-8).



**Figure 5-15. Effect of NaCl concentration (pH 6.0 ± 0.2): on (a) foulant intermolecular adhesion forces. Test solutions contain 25 mg/L alginate + 25 mg/L BSA + 25 mg/L SRNOM + 25 mg/L OA, in the presence of 0.5 mM Ca<sup>2+</sup>. The total ionic strength was fixed at 10 mM, and solution pH was adjusted by adding NaOH. (b) Effect of NaCl concentration (pH 6.0 ± 0.2) on percentage reduction in foulant intermolecular adhesion forces. The reduction is based on the intermolecular adhesion force in the absence of cleaning agent.**

### 5.3.2.3 SDS

The effect of concentration of SDS (pH 11) on the reduction in foulant intermolecular adhesion force was investigated. Figure 5-16a shows that, as the SDS concentration increases, the intermolecular adhesion force decreases. The decrease in the adhesion force is more significant when the SDS concentration exceeds 8 mM, as the CMC of SDS is reported to be at 8.36 mM. Fig 5-16 (b) shows the profile of percentage reduction in adhesion force with SDS concentration (pH 11). It can be inferred from the graph that the optimum SDS concentration for a favorable chemical reaction between SDS and the foulants is about 10 mM, as the percentage reduction in adhesion force improves significantly at 10 mM SDS. The relatively high percentage reduction in intermolecular adhesion force of combined foulants in the presence of 10 mM SDS (65%) corresponds to the high cleaning efficiency of the cleaning agent (79%) from the cleaning experiment (figure 5-8).



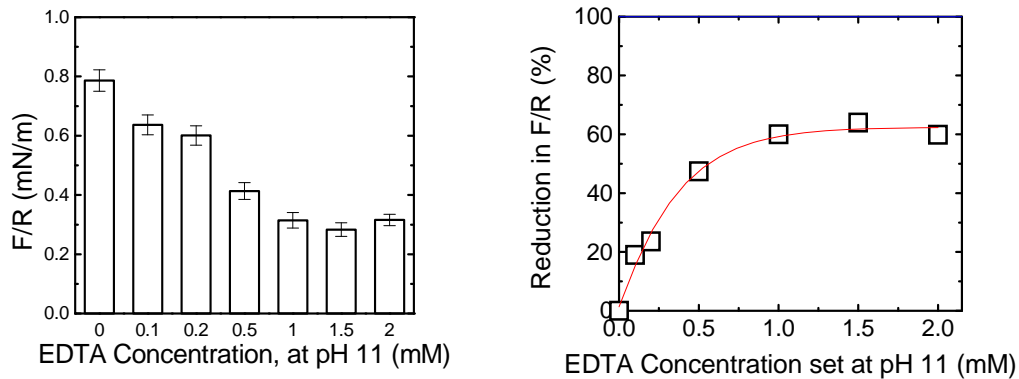
**Figure 5-16. Effect of SDS concentration (pH 11): on (a) foulant intermolecular adhesion forces. Test solutions contain 25 mg/L alginate + 25 mg/L BSA + 25 mg/L SRNOM + 25 mg/L OA, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The total ionic strength was fixed at 10 mM, and solution pH was adjusted by adding NaOH. (b) Effect of SDS concentration (pH 11) on percentage reduction in foulant intermolecular adhesion forces. The reduction is based on the intermolecular adhesion force in the absence of cleaning agent.**

#### 5.3.2.4 EDTA

The effect of EDTA concentration (pH 11) on the reduction in foulant intermolecular adhesion force is shown in figure 5-17a. The intermolecular adhesion force decreases with increasing EDTA concentration and stabilizes at 1.0 mM EDTA. From figure 5-17b, the percentage reduction of 47% in intermolecular adhesion force of combined foulants in the presence of 0.5 mM EDTA (pH 11) does not correspond well to the high cleaning efficiency of the cleaning agent (91%) from the cleaning experiment (figure 5-8). This is because that at a concentration of 0.5 mM EDTA (pH 11), the cleaning agent is not adequate enough to have a favorable chemical reaction with the foulants (a concentration of 2 mM EDTA (pH 11) was adopted to clean alginate-fouled membranes as shown in chapter 4). The high cleaning efficiency of the cleaning agent could be explained by the presence of a coupling effect of the physical aspects of cleaning (e.g., shear due to the crossflow velocity).

### 5.3.3 Probing Adhesion Force Between Different Foulants Using New Protocol

While intermolecular adhesion forces of combined organic foulants have been probed in the absence and presence of cleaning agents, such analysis does not give us a more realistic sense of actual interaction between different foulant types (e.g., between alginate and BSA).

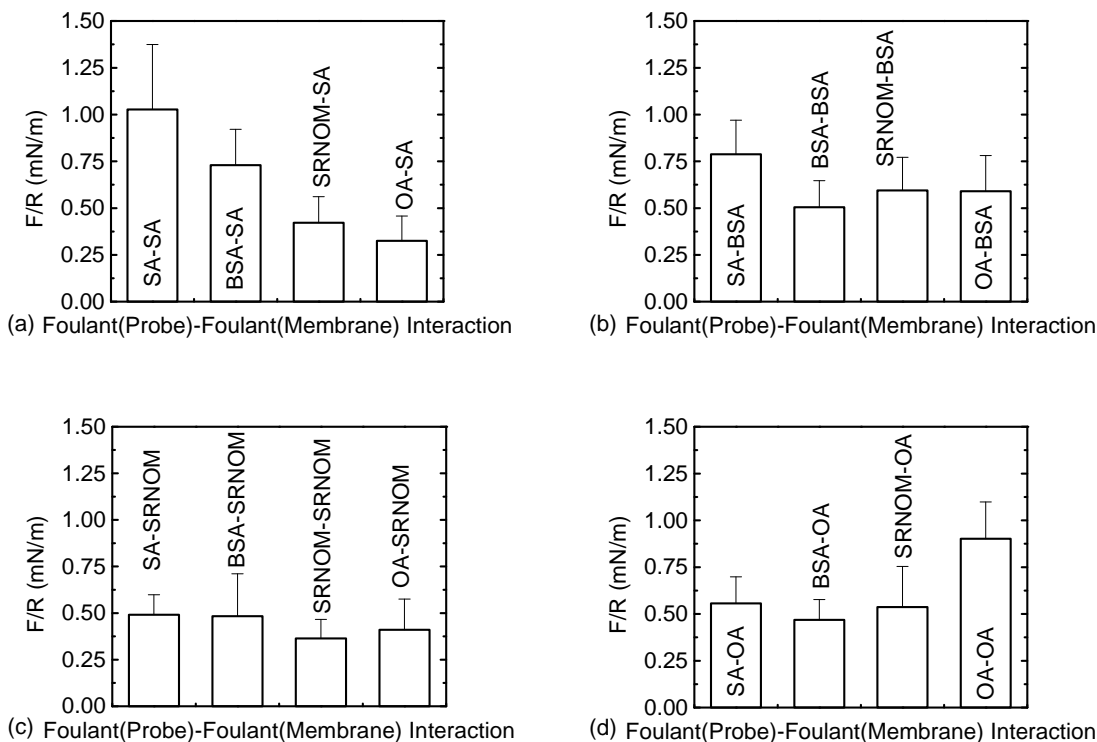


**Figure 5-17. Effect of EDTA concentration (pH 11): on (a) foulant intermolecular adhesion forces. Test solutions contain 25 mg/L alginate + 25 mg/L BSA + 25 mg/L SRNOM + 25 mg/L OA, in the presence of 0.5 mM  $\text{Ca}^{2+}$ . The total ionic strength was fixed at 10 mM, and solution pH was adjusted by adding NaOH. (b) Effect of EDTA concentration (pH 11) on percentage reduction in foulant intermolecular adhesion forces. The reduction is based on the intermolecular adhesion force in the absence of cleaning agent.**

The protocol for AFM analysis has been modified slightly to investigate the interaction between different foulant types. The AFM colloidal probe is soaked in organic foulant solution (2,000 mg/L alginate, BSA, or SRNOM, or greater than or equal to ( $\geq$ ) 98% OA) for at least 24 hours (at 4 °C for alginate, BSA, and SRNOM solutions to prevent organic degradation, and at room temperature for OA). The membrane is fouled with 200 mg/L organic foulant (alginate, BSA, SRNOM, or OA) using the crossflow unit for about 17 hours. After transferring the colloidal probe to the AFM fluid cell and the membrane to the AFM disc puck, an electrolyte solution containing 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl (adjusted to pH  $6.5 \pm 0.2$ ) is injected into the fluid cell. The volume of electrolyte solution added is just enough to fill up the fluid cell so as to minimize the possibility of flushing away the foulants on the membrane and probe surfaces. AFM force measurements are taken after 20 minutes of equilibration time.

### 5.3.3.1 Various foulant-foulant Interactions

Figure 5-18 shows the intermolecular adhesion force between the organic foulant adsorbed on the colloidal probe and the organic foulant adsorbed on the membrane surface—alginate, BSA, SRNOM, and OA, respectively, shown in figures 18a, b, c, and d—in the presence of  $\text{Ca}^{2+}$ . Generally, the intermolecular adhesion forces between the different foulants are comparable when the foulants adsorbed on the colloidal probe and on the membrane surface are interchanged. The intermolecular adhesion forces between different foulants, when interchanged, are slightly varied with OA as one of the foulants.

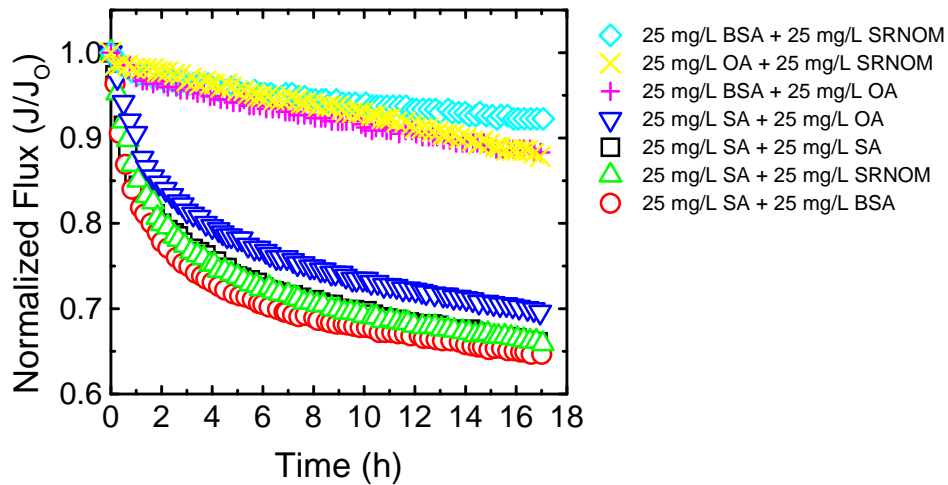


**Figure 5-18. Intermolecular adhesion force between foulant adsorbed on colloidal probe and membrane: fouled by (a) alginate, (b) BSA, (c) SRNOM, and (d) OA (e.g., SA-SRNOM refers to the adhesion force between alginate adsorbed on colloidal probe and SRNOM adsorbed on membrane surface). The electrolyte solution contains 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl and is adjusted to pH  $6.0 \pm 0.2$ .**

The intermolecular adhesion force between alginate and alginate molecules is the strongest among all the combinations of foulant interactions, as indicated in figure 5-18a. This is not surprising since alginate molecules are known to bind specifically and strongly among themselves in the presence of  $\text{Ca}^{2+}$  (chapter 4). The next strongest intermolecular adhesion forces are among OA molecules as reflected in figure 18d and between alginate and BSA molecules as shown in figures 18a and b. The other combinations of foulant-foulant interactions have relatively less significant adhesion forces as compared to the intermolecular adhesion forces between alginate and alginate molecules and between alginate and BSA molecules. The implication in waste water reclamation would be that the alginate molecules present in waste water effluent have a tendency to form aggregates among themselves and with BSA molecules near the membrane surface where the foulant type concentrations are increased due to concentration polarization.

### 5.3.3.2 Explaining Fouling Behavior with Foulant-foulant Interaction and Foulant Size

Figure 5-19 is similar to figure 5-4 (except for the inclusion of a flux profile of a membrane fouled by 50 mg/L alginate for comparison purposes), which shows the fouling behavior of membranes fouled by combinations of two foulant types in the presence of  $\text{Ca}^{2+}$  (fouling by 50 mg/L alginate is included for comparison). Membrane fouling is significant when alginate exists as a co-foulant in the presence of  $\text{Ca}^{2+}$ , because alginate molecules have the strongest adhesion among themselves as shown in the earlier section, and the interactions of alginate molecules with other foulant types become secondary. When alginate is absent from the feed solution, regardless of the other foulant types present, fouling is relatively insignificant.



**Figure 5-19. Influence of two-foulant mixture on fouling of LFC-1 membranes in the presence of  $0.5 \text{ mM Ca}^{2+}$ . The total ionic strength of the feed solution was fixed at  $10 \text{ mM}$ , and the feed solution pH was adjusted to  $6.0 \pm 0.2$ , if necessary, by adding NaOH. Fouling conditions were identical to those in figure 5-1.**

To investigate foulant interactions in feed solutions containing two foulant types, we examine all possible foulant interactions. As shown in figure 5-19, the flux profile of a membrane fouled by BSA and SRNOM has the least significant flux decline. The possible foulant interactions are between BSA and BSA, between SRNOM and SRNOM, and between BSA and SRNOM, which are shown as BSA-BSA (figure 5-18b), SRNOM-SRNOM (figure 5-18c), BSA-SRNOM (figure 5-18c), and SRNOM-BSA (figure 5-18 b). The adhesion forces are consistent and range from  $0.36$  to  $0.51 \text{ mN/m}$ . For membranes fouled by OA and SRNOM and by OA and BSA, with the exception of intermolecular adhesion forces between OA and OA molecules, the intermolecular adhesion forces of foulant interactions range from  $0.36$  to  $0.59 \text{ mN/m}$ . The adhesion force between

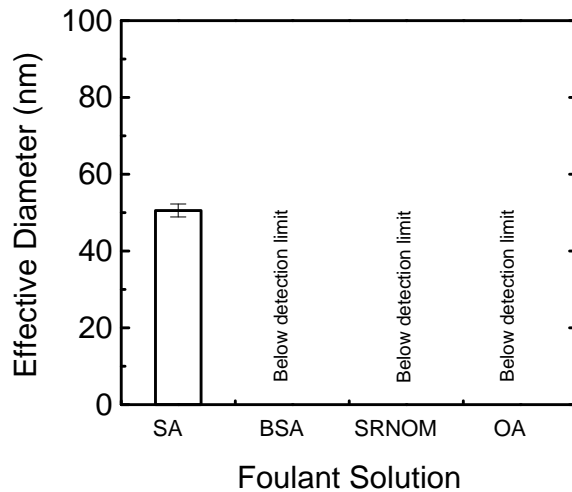
OA and OA molecules is 0.90 mN/m, due to strong hydrophobic interaction between the molecules when brought into contact with one another.

Fouling behavior becomes significant with alginate as one of the co-foulants. For a membrane fouled by alginate and OA, the dominant foulant interactions are between alginate and alginate molecules (1.03 mN/m) and between OA and OA molecules (0.90 mN/m). For a membrane fouled by alginate and SRNOM, the dominant foulant interaction is between alginate and alginate molecules (1.03 mN/m). For a membrane fouled by alginate and BSA, the dominant foulant interactions are between alginate and alginate molecules (1.03 mN/m) and between alginate and BSA molecules (0.73–0.79 mN/m). We observe that when alginate is present in the feed, regardless of the co-foulant, the interaction of alginate molecules among themselves is most dominant, with the possibility of alginate molecules interacting with other molecules, especially BSA molecules.

Figure 5-20 shows the foulant sizes using DLS. A solution consisting of 200 mg/L organic foulant was prepared in an electrolyte solution containing 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl, to simulate solution chemistry for membrane fouling. The organic concentration of 200 mg/L is higher than the 25 mg/L used in the fouling runs because foulant sizing is not detectable at such a low concentration. The solution pH is adjusted to  $6.0 \pm 0.2$  with NaOH, if necessary. The solution is left for 30 minutes before DLS analysis is performed. In the presence of  $\text{Ca}^{2+}$ , the alginate molecules have an effective diameter of 51 nanometers (nm), whereas the other foulant types are not detectable. This observation implies the ability of alginate molecules to form aggregates among themselves in the presence of  $\text{Ca}^{2+}$ , as alginate molecules at the same concentration are not detectable in the absence of  $\text{Ca}^{2+}$ .

We have observed that, when various foulants are present in the feed, there will be interaction between different foulant types. To investigate the effect of various foulant interactions on the foulant size, DLS analysis is performed on a solution containing two foulant types (200 mg/L alginate plus 200 mg/L of another foulant type) in the presence of  $\text{Ca}^{2+}$ . Figure 5-21 shows the alginate molecules in the solution have an effective diameter of 84 nm, which is an increment as compared to the effective diameter of 51 nanometers (nm) of alginate molecules in a solution in which the foulant concentration is halved. The effective diameters of the foulant molecules in mixtures of alginate and BSA, alginate and SRNOM, and alginate and OA are, respectively, 48, 63, and 73 nM. The effective diameter is an indirect indication of the foulant size due to aggregation between the foulants.

The results imply that aggregation of alginate molecules is concentration dependent. The bigger effective diameter of aggregates formed in 400-mg/L alginate solution as opposed to those in 200-mg/L alginate solution also implies a more extensive gel network at a higher concentration. Because of the varying interactions between alginate and another foulant type in the presence of  $\text{Ca}^{2+}$ , the aggregate size differs for foulant aggregates of different foulant combinations.



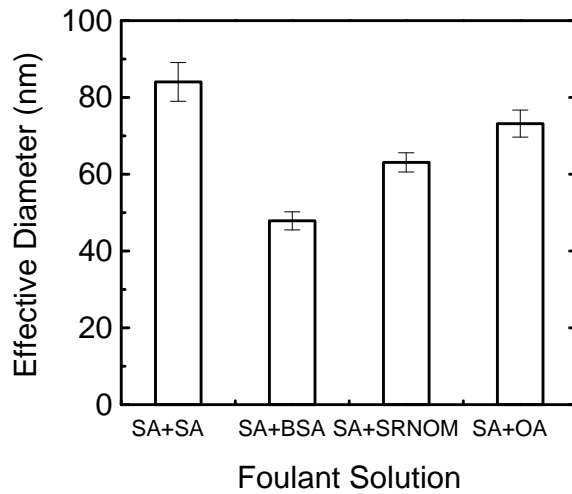
**Figure 5-20. Effective diameter of various foulants in solution. The foulant solution consists of 200 mg/L of the foulant in an electrolyte solution of 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl (same solution chemistry as that during fouling). The solution pH was adjusted to  $6.0 \pm 0.2$  if necessary, by adding NaOH.**

Comparing the effective diameters of the foulant aggregates in various two-foulant mixtures (figure 5-21) with the intermolecular adhesion force between different foulants (figure 5-18), reveals that foulant aggregate size generally decreases as intermolecular adhesion force increases. It is hypothesized that the interaction among the foulant types within the aggregates would affect the conformation and, hence, the size of the aggregates in the foulant solution. For example, the relatively stronger intermolecular adhesion force between alginate and BSA molecules in the feed solution in the presence of  $\text{Ca}^{2+}$  results in a more ‘compact’ or ‘tighter’ conformation of the foulant aggregates as compared to the foulant aggregates formed from a solution of alginate and SRNOM. The deposition of the smaller and more ‘compact’ alginate-BSA aggregates results in a tighter fouling layer and a lower final flux (figure 5-19).

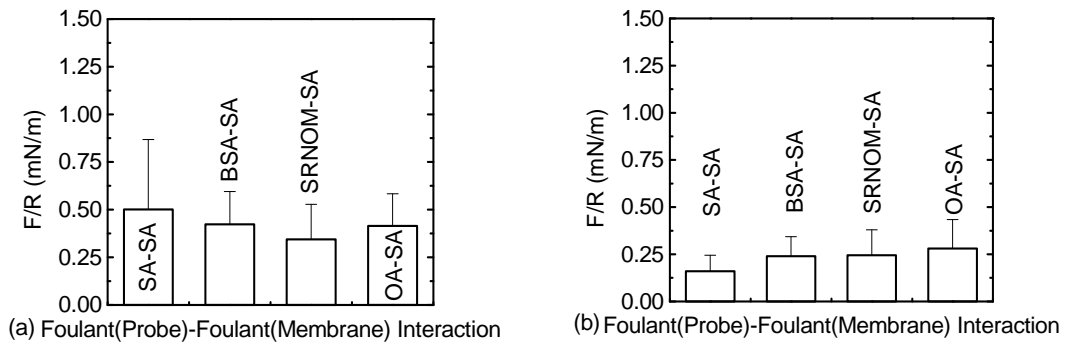
### 5.3.3.3 *Effect of Cleaning Agent on Foulant-foulant Interaction and Foulant Size*

The effect of a cleaning agent on foulant-foulant interaction is investigated by adding EDTA to the electrolyte solution before injection into the fluid cell, with the solution pH at unadjusted and adjusted pH. The carboxylate modified latex (CML) probe is presoaked in foulant solutions, and the membrane was pre fouled with alginate. AFM force measurements are taken after 30 minutes of equilibration time, and the average intermolecular adhesion forces between the foulant-foulant interactions in the presence of EDTA at different pH are present in figure 5-22.





**Figure 5-21. Effective diameter of foulant aggregates in solutions of various foulant combinations consisting of alginate as co-foulant. The foulant solution consists of 200 mg/L alginate plus 200 mg/L of another foulant type in an electrolyte solution of 0.5 mM CaCl<sub>2</sub> and 8.5 mM NaCl (same solution chemistry as that during fouling). The solution pH was adjusted to 6.0 ± 0.2 if necessary, by adding NaOH.**



**Figure 5-22. Effect of cleaning agent on intermolecular adhesion force between foulant adsorbed on colloidal probe and alginate-fouled membrane: (a) 2 mM EDTA (unadjusted pH of 3.9) and (b) 2 mM EDTA (adjusted pH of 11.0). The electrolyte solution contains 0.5 mM CaCl<sub>2</sub> and 8.5 mM NaCl.**

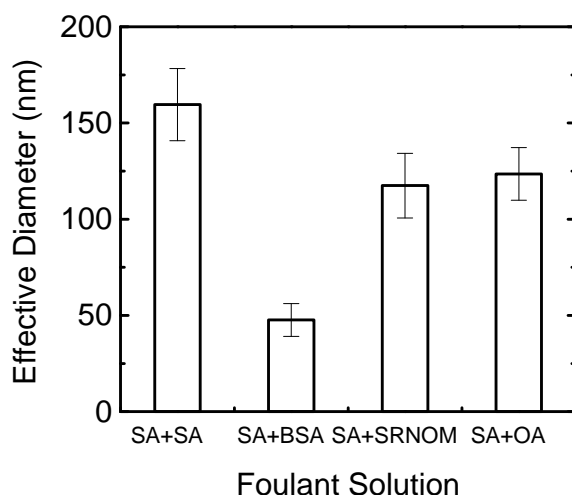
While the various foulant-foulant interactions are reduced in the presence of all the cleaning agents, the change in the adhesion forces is most significant for alginate-alginate and BSA-alginate interactions when we compare the results with those in figure 18a where the force measurements were performed in the absence of a cleaning agent. The focus for discussion will be on alginate-alginate and BSA-alginate interactions, as the integrity of the fouling layer is governed by the presence of the strongest foulant-foulant interaction. The extent of reduction varies according to the effect of solution pH. In the presence of 2 mM EDTA (unadjusted pH of 3.9), the alginate-alginate and BSA-alginate interactions are relatively higher than those in the presence of 2 mM EDTA (adjusted pH of 11.0), since EDTA is not fully deprotonated for effective chelating ability at lower pH.

The effect of a cleaning agent on the foulant size in solutions containing two foulant types (200 mg/L alginate plus 200 mg/L of another foulant type) is investigated using DLS. Figure 5-23 shows the effect of introducing 2 mM EDTA (pH 11) to various foulant solutions which have alginate as a single foulant or co-foulant. The cleaning agent was added 60 minutes after the foulant solution had been prepared. After a contact time of 15 minutes, the solution was analyzed for the effective diameter of the foulants.

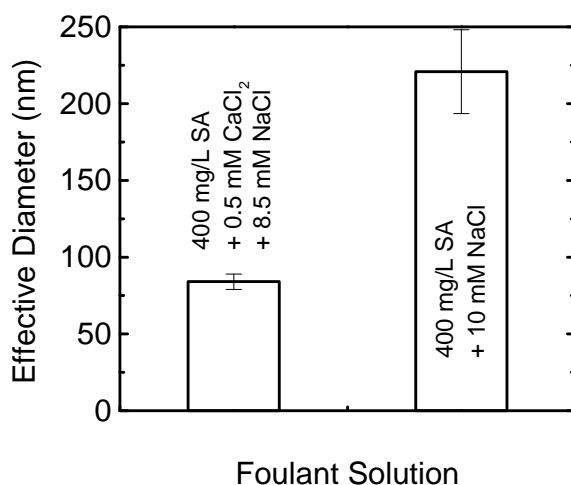
It is observed that the aggregate sizes become bigger in the presence of 2 mM EDTA (pH 11). The aggregates of a two-foulant solution (figure 5-21) increase in size due to the chelating effect of EDTA with  $\text{Ca}^{2+}$  bound in the foulant aggregates which result in bigger-sized and less 'compact' foulants, as observed in figure 5-23. We also see that the size increase was most significant for aggregates in the alginate solution, SA+SA (400 mg/L alginate + 0.5 mM  $\text{CaCl}_2$  + 8.5 mM NaCl), and least significant for SA+BSA (200 mg/L SA + 200 mg/L BSA + 0.5 mM  $\text{CaCl}_2$  + 8.5 mM NaCl).

This is because the conformation of the foulant aggregates plays a role in the transfer of EDTA to the aggregates. In the previous section, it is hypothesized that the conformations and sizes of the foulant aggregates vary due to the difference in the intermolecular adhesion force between alginate and the various foulants in the presence of  $\text{Ca}^{2+}$ . The fact that the increment in effective diameters of pure alginate solutions upon adding EDTA was most significant and that of alginate and BSA solution least significant suggests that the structured alginate-calcium complex aggregates in the former case have looser structures and are more permeable to the transfer of EDTA into the aggregates than in the latter case.

Figure 5-24 shows the effect of  $\text{Ca}^{2+}$  on the foulant size of alginate solutions. In the absence of  $\text{Ca}^{2+}$ , the effective diameter of aggregates increases significantly to 221 nM (as compared to 84 nM in the presence of  $\text{Ca}^{2+}$ ) as alginate molecules do not form alginate-calcium complex and, thus, have more 'relaxed' and 'spread-out' conformation.



**Figure 5-23.** Effect of 2 mM EDTA (pH 11) on effective diameter of foulant aggregates in solutions of various foulant combinations. 2 mM EDTA is added 60 minutes after preparation of foulant solution consisting of 200 mg/L alginate plus 200 mg/L of another foulant type in an electrolyte solution of 0.5 mM CaCl<sub>2</sub> and 8.5 mM NaCl (same solution chemistry as that during fouling). Solution pH is adjusted to 11.0 with NaOH, and DLS analysis is performed 15 minutes after EDTA has been added.



**Figure 5-24.** Effect of Ca<sup>2+</sup> on effective diameter of foulant aggregates in alginate solution (400 mg/L). The first electrolyte solution has 0.5 mM CaCl<sub>2</sub> and 8.5 mM NaCl, and the second solution has 10 mM NaCl. The solution pH is unadjusted at 5.8. DLS analysis is performed 30 minutes after the solutions have been prepared.

## 5.4 ATR-FTIR

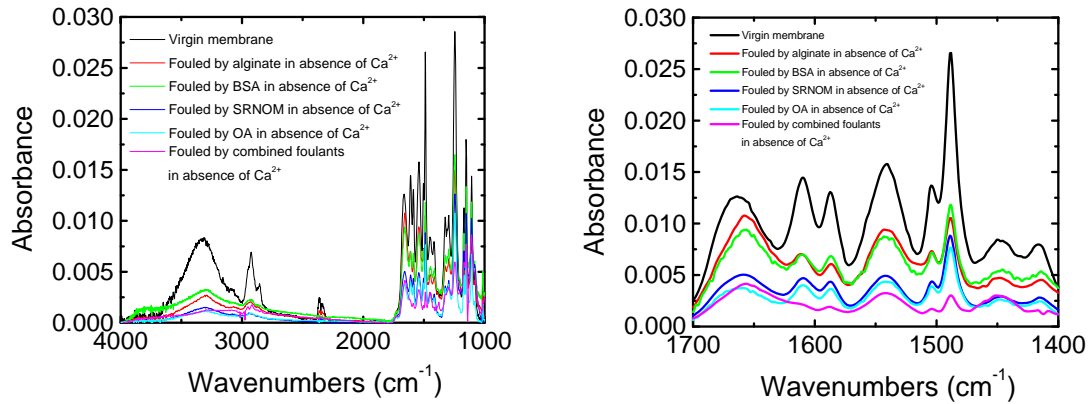
### 5.4.1 Membranes Fouled by Individual and Combined Foulants

Figure 5-25a shows the ATR-FTIR spectrum profiles of a virgin membrane and membranes fouled by the individual and combined foulants in the absence of  $\text{Ca}^{2+}$ . The 60 scans taken for each membrane are averaged and presented in the figures. As the wavenumber increases, the detected functional groups become closer to the top of the active layer, due to the infrared radiation having a shallower depth of penetration. Because the higher frequency portion of the spectrum profile is difficult to read at this scale, the portion from 1,700 to 1,400 is shown in expanded scale at the right in each such figure.

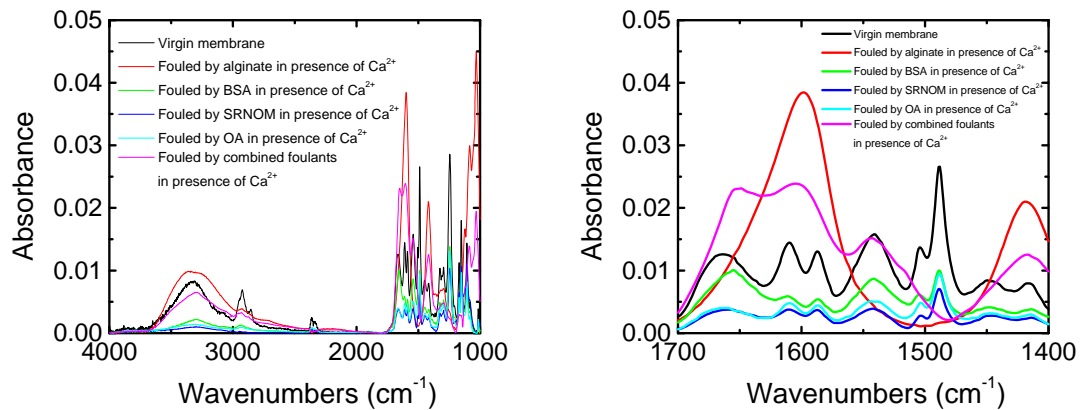
The ATR-FTIR profiles of a virgin membrane are characterized by a broad band centered at  $3,300 \text{ cm}^{-1}$ , which is due to the overlapping of stretching vibration of N-H and carboxylic groups from the polyamide layer and functional groups (e.g., O-H group) from the top coating layer above the active layer and a smaller peak at  $2,900 \text{ cm}^{-1}$  due to the presence of C-H functional groups (Tang et al., 2007). The presence of a coating layer for LFC-1 membranes is evident from the smoothed broad band around  $3,300 \text{ cm}^{-1}$ , as the O-H functional groups from the coating layer overwhelm the presence of other functional groups (e.g., N-H groups from the polyamide layer) (Tang et al., 2007). For fouled membranes, it is observed that the peaks at  $3,300$  and  $2,900 \text{ cm}^{-1}$  are reduced regardless of the foulants on the membrane surface. As foulants get deposited on the coating layer of the LFC-1 membranes, the contribution to the peaks at  $3,300$  and  $2,900 \text{ cm}^{-1}$  from the N-H, carboxylic, and O-H functional groups are reduced and, hence, the peaks are reduced accordingly.

Zooming in on the spectra, peaks are also observed to be reduced in the  $1,700$ - to  $1,400\text{-cm}^{-1}$  range for fouled membranes, as shown in figure 5-25b. The functional groups detected in this range are further from the membrane surface and are more representative of functional groups within the active layer. The peaks at  $1,660$ ,  $1,610$ , and  $1,540 \text{ cm}^{-1}$  for the spectrum of the virgin membrane correspond to, respectively, C=O signal (amide I), aromatic ring breathing, and C-N stretching (amide II) functional groups, which are associated with the presence of amide groups (Rao et al., 2003). For membranes fouled by combined foulants in the absence of  $\text{Ca}^{2+}$ , the peaks are reduced, to the extent that some peaks are smoothed for the spectrum of the membrane fouled by combined foulants. Because of the presence of a thin layer of loosely bound fouling layer, the penetration by infrared radiation is focused less within the active layer and more on the fouling layer, which accounts for the reductions in the peak profile reduced in the  $1,400$ - to  $1,700\text{-cm}^{-1}$  range.

Figure 5-26a shows the ATR-FTIR spectrum profiles of a virgin membrane and membranes fouled by the individual and combined foulants in the presence of  $\text{Ca}^{2+}$ . For the membrane fouled by alginate (individually or as a co-foulant), the spectrum peak is increased at  $3,300 \text{ cm}^{-1}$ , as compared to fouling by other



**Figure 5-25. Spectra of virgin membrane and membranes fouled by individual or combined foulants in the absence of  $\text{Ca}^{2+}$ . The concentration of the individual foulant is 25 mg/L in feed solution containing 10 mM NaCl. The combined foulant mixture comprises alginate, BSA, SRNOM and OA, each foulant type at 25 mg/L. The operation conditions of the crossflow unit are identical to those in figure 5-1.**

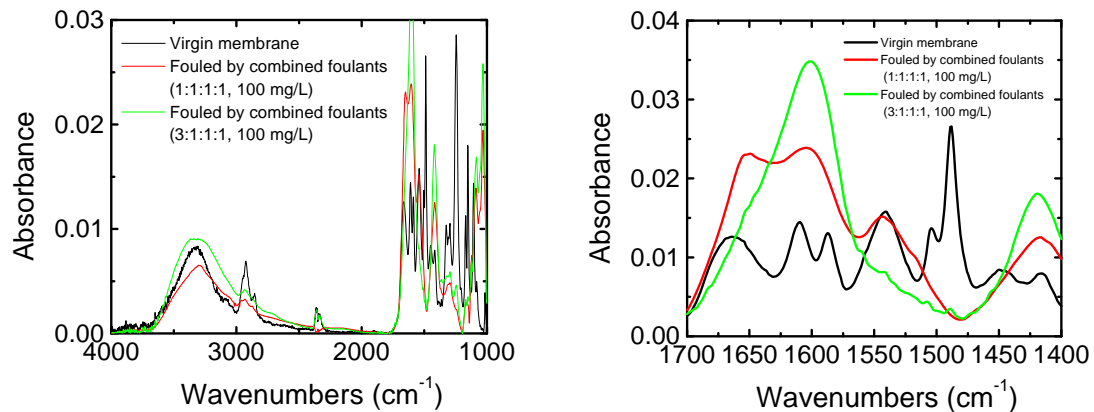


**Figure 5-26. Spectra of virgin membrane and membranes fouled by various organic foulant types and by combined foulants in the presence of  $\text{Ca}^{2+}$ . The foulant concentrations are identical to those used in figure 25, except that feed solution contains 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl. The operation conditions of the crossflow unit are identical to those in figure 5-1.**

foulants, possibly due to increased carboxylic functional groups from the complexation of calcium with carboxylic functional groups of alginate in the fouling layer. A peak is also detected at about  $1,600\text{ cm}^{-1}$  when fouled by alginate, which is higher than the peak detected at the same wavenumber for spectrums of the virgin membrane and membranes fouled by other foulants. The peak at  $1,600\text{ cm}^{-1}$  is indicative of the presence of carboxylic functional groups on the fouling layer, which have been reported to have been in the spectrum range of  $1,550\text{--}1,610\text{ cm}^{-1}$  (Coates, 2000). Thus, the peaks at 3,300 and

$1,600\text{ cm}^{-1}$  can be used as benchmarks or indicators for fouling by calcium complexation with the carboxylic functional groups of foulants.

To further investigate the effect of calcium complexation with the carboxylic functional groups of foulants on the spectrum profile, the ATR-FTIR spectrum profile of a membrane fouled with combined foulants with a higher alginate content (alginate:BSA:SRNOM: OA = 3:1:1:1), and the spectrum profiles are compared with those of a virgin membrane and a membrane fouled by combined foulants with equal foulant type concentrations (alginate:BSA:SRNOM:OA = 1:1:1:1). Figure 5-27b shows that the spectrum profile of the membrane fouled by combined foulants with higher alginate content has a higher peak at  $1,600\text{ cm}^{-1}$ , which is comparable to the peak at  $1,600\text{ cm}^{-1}$  for the spectrum of the membrane fouled solely by alginate in the presence of  $\text{Ca}^{2+}$ .

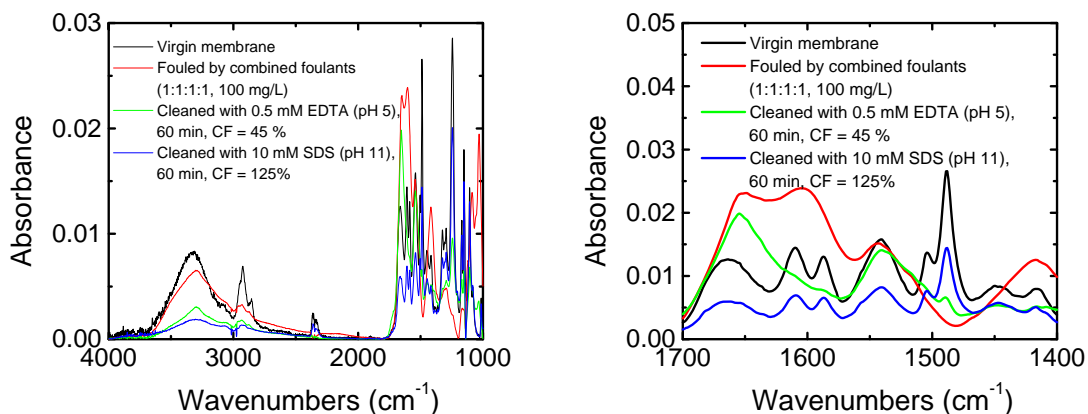


**Figure 5-27. Spectra of virgin membrane and membranes fouled by combined foulants of different concentration ratio combinations of each foulant type in the presence of  $\text{Ca}^{2+}$ . The feed solution during fouling contains  $0.5\text{ mM CaCl}_2$  and  $8.5\text{ mM NaCl}$ . The operation conditions of the crossflow unit are identical to those in figure 5-1.**

#### 5.4.2 Membranes Cleaned with Cleaning Agents

Figure 5-28a shows the ATR-FTIR spectrum profiles of membranes that were fouled earlier by a mixture of foulants in equal concentrations in the presence of  $\text{Ca}^{2+}$  and subsequently cleaned with cleaning agent, so as to investigate the effect of varying cleaning extent on the spectrum profiles. The profiles are compared with those of a virgin membrane and a fouled membrane which is not cleaned by any cleaning agent.

When a higher cleaning efficiency is achieved using  $10\text{ mM SDS}$  ( $\text{pH } 11$ ) than  $0.5\text{ mM EDTA}$  ( $\text{pH } 5$ ), the decrease of the spectrum peak at  $3,300\text{ cm}^{-1}$  is more significant. When a cleaning efficiency exceeds 100%, as in the case of cleaning with  $10\text{ mM SDS}$  ( $\text{pH } 11$ ), the top coating layer might be modified



**Figure 5-28. Spectra of a virgin membrane, a membrane fouled by combined foulants of equal concentration ratios for each foulant type in the presence of  $\text{Ca}^{2+}$ , and fouled membranes cleaned with cleaning agents. The feed solution during fouling contains 0.5 mM  $\text{CaCl}_2$  and 8.5 mM  $\text{NaCl}$ . The operation conditions of the crossflow unit are identical to those in figure 5-1.**

or removed, partially or completely, together with the foulants. Hence, the contribution to the absorbance at  $3,300\text{ cm}^{-1}$  by the O-H functional groups from the coating layer is reduced accordingly.

The decrease in peak at  $3,300\text{ cm}^{-1}$  is also observed for fouled membranes by individual and combined foulants in the absence and presence of  $\text{Ca}^{2+}$  (with the exception of membranes fouled by alginate as the sole or co-foulant in the presence of  $\text{Ca}^{2+}$ , when the peak would increase due to contribution to the absorbance at  $3,300\text{ cm}^{-1}$  by the carboxylic functional groups of the alginate molecules). A better spectrum indicator for the cleaning extent of a fouled membrane is the spectrum range from  $1,400$  to  $1,700\text{ cm}^{-1}$ . The membrane with 45% cleaning efficiency (EDTA cleaning) has a spectrum profile similar to that of the fouled membrane, and the one with 125% cleaning efficiency has a profile similar to that of the virgin membrane.

## 5.5 Conclusion

Fouling of RO membranes was performed using organic foulants, both individually and in various combinations as foulant mixtures, in the absence and presence of  $\text{Ca}^{2+}$ . To keep the study relevant to waste water reclamation, fouling and cleaning experiments were performed on membrane fouled by a feed solution consisting of alginate, BSA, SRNOM, and OA in the presence of  $\text{Ca}^{2+}$ . For fouling experiments, the foulant composition in the feed was varied, and for cleaning experiments, the effects of various cleaning agents, solution pH, and cleaning time on fouled membranes were investigated.

Because significant membrane fouling is governed by alginate in the presence of  $\text{Ca}^{2+}$ , the investigation of intermolecular adhesion force and foulant size involves alginate as a single or co-foulant. It is proposed that the membrane fouling by alginate as one of the foulant types in the feed is governed by the foulant aggregate size and conformation in the bulk. The smaller and tighter the foulant aggregates, the more significant the flux decline is due to the formation of a more compact and tighter fouling layer. The state of the fouling layer would also affect the transfer of a cleaning agent to the fouling layer. ATR-FTIR is a good supplementary tool to investigate the nature of the foulants on the RO membrane and the extent of membrane cleaning by a cleaning agent.



## 6. Chemical Cleaning of RO Membranes Fouled by Real Waste Water Effluent

In this chapter, cleaning experiments are performed on RO membranes fouled by prefiltered waste water effluent collected at a waste water treatment plant (Wallingford, Connecticut). The waste water effluent was collected after the ultraviolet (UV) disinfection stage (at the final exit point) just prior to being discharge to the Quinnipiac River, so as to minimize the effect of micro-organisms on membrane fouling. The waste water effluent is collected by an automatic sampler. Once collected, the containers of waste water effluent are stored under refrigeration at 4 °C.

### 6.1 Waste Water Characterization

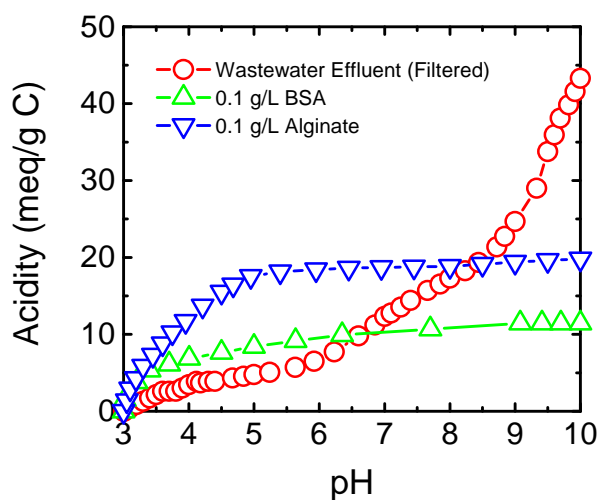
The parameters of the waste water effluent are shown in table 6.1. The parameters are analyzed based on 12–18 samples from three batches of waste water effluent that were collected at the treatment plant every few weeks, with the exception of fatty acid analysis which is based on two samples. The solution pH is the average of the solution pH taken at the start of the fouling experiment. The biodegradable oxygen demand (BOD) data is obtained from the plant's laboratory. The cations and anions are analyzed using ion chromatography. The polysaccharide, protein, NOM, and fatty acid concentrations were analyzed, respectively, by the Dubois (Dubois et al., 1956) and modified Lowry (Bulletin, 2005) methods, using ultraviolet-visible (UV-Vis) spectroscopy (Wang and Hsieh, 2001) and electrospray ionization tandem mass spectrometry (analysis was carried out by the Kansas Lipidomics Research Center, Kansas State University).

The parameters suggest that the waste water effluent is close to neutral pH range and has low organic content. The average  $\text{Ca}^{2+}$  concentration is similar to that of the feed solution (0.5 mM) in previous fouling experiments with organic foulants, and the approximate ionic strength is slightly less than half that of the feed solution (10 mM) (fouling by alginate in chapter 4; fouling by various organic foulants in chapter 5). Among the various foulant types, polysaccharides (using alginate as a reference polysaccharide) are the most abundant. The measurements of the various foulant types are not mutually exclusive (e.g., some natural organic matter contains protein-based substances).

**Table 6-1. Parameters of waste water effluent**

Parameter	Value
pH	6.1 – 6.8
BOD	3 – 5 mg/L
TOC	6 – 10 mg/L
Ca <sup>2+</sup>	0.52 ± 0.03 mM
Na <sup>+</sup>	1.87 ± 0.12 mM
Mg <sup>2+</sup>	0.23 ± 0.03 mM
K <sup>+</sup>	0.21 ± 0.02 mM
Cl <sup>-</sup>	1.72 ± 0.33 mM
NO <sub>3</sub> <sup>-</sup>	0.37 ± 0.13 mM
PO <sub>4</sub> <sup>3-</sup>	0.08 ± 0.02 mM
SO <sub>4</sub> <sup>2-</sup>	0.04 ± 0.01 mM
Polysaccharides (as alginate)	32.9 ± 6.3 mg/L
Proteins (as BSA)	9.9 ± 2.5 mg/L
NOM (as SRNOM)	25.3 ± 1.5 mg/L
Fatty acids (C <sub>11</sub> –C <sub>24</sub> )	329.8 ± 1.6 µg/L

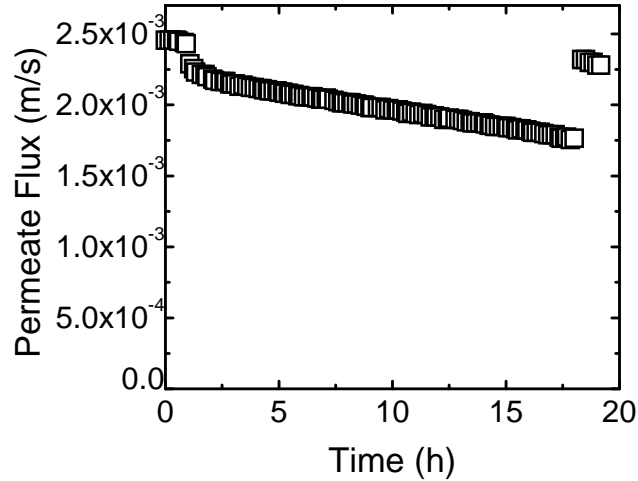
Membrane fouling is influenced by the electrostatic interactions between the organic foulants and the membrane surface (affecting foulant deposition during initial fouling) and among organic foulants (affecting intermolecular adhesion and subsequent foulant deposition on membrane). To probe into the charge characteristics of the waste water effluent, the acidity of waste water effluent was determined by potentiometric titration from pH 3.0 to pH 10.0. Figure 6-1 shows the increase in acidity from pH 3.0 to 8.0, which is attributed to the deprotonation of the carboxylic functional groups in the waste water effluent (Collins et al., 1986). The acidity profiles of alginate and BSA are also included for comparison purposes. The increase from pH 8.0 to 10.0, which is attributed to the presence of phenolic functional groups (Collins et al., 1986), is more significant. Thus, unlike specific organic foulants (e.g., alginate or BSA), the waste water effluent is made up of a complex mixture of organic foulants with varying charge characteristics. Nonetheless, as waste water effluents are in the neutral pH range, the charged functional groups are predominantly the carboxylic groups.



**Figure 6-1. Acidity of waste water effluent as a function of pH, as compared to that of alginate and BSA. The waste water effluent is filtered with a 0.45-micrometer ( $\mu\text{m}$ ) filter. The concentrations of alginate and BSA solutions are each 0.1 gram per liter (g/L), with background electrolyte solution of 10 mM NaCl. Potentiometric titration is performed from pH 3.0 to 10.0 with 0.10 (molar) M NaOH in a carbonate-free nitrogen ( $\text{N}_2$ ) atmosphere at  $23 \pm 0.5$  °C. Blank tests are performed with foulant-free electrolyte solution prior to each sample titration.**

## 6.2 Fouling Profile

The waste water effluent is poured from the storage containers under quiescent conditions to prevent the settled particles from being stirred up. The waste water effluent was filtered with a 38- $\mu\text{m}$  sieve to remove particles in the feed but was not pretreated with a filter possessing a pore size typical to that of an MF membrane in order to maintain accelerated fouling conditions. A typical profile of the permeate flux with time is shown in figure 6-2. The initial fluxes are the permeate fluxes from DI water. After an hour of baseline run, the pump is stopped, and DI water is decanted. After adding waste water effluent to the feed reservoir, the pump is restarted. The permeate flux drops immediately due to the impact of the feed osmotic pressure. It is observed that the flux decreases almost constantly with time until the fouling run ends after 17 hours. Cleaning of the fouled membrane is performed by adding the cleaning agent solution to the feed reservoir. At the end of the cleaning time (15 minutes), the cleaning agent solution in the feed reservoir is emptied. To determine the efficiency of the cleaning agent, the RO membrane is subjected to a second baseline run by filling the reservoir with DI water and running it at the same operating pressure as that in the earlier baseline run.



**Figure 6-2. Permeate flux profile of RO membrane. The initial constant permeate flux values are the first baseline performance with DI water, and the permeate flux values at the end of the run are the second baseline performance with DI water (after cleaning of the fouled membrane was performed). The cleaning efficiency is determined from the two baseline performances. Here, the cleaning agent solution is 2 mM EDTA (pH 11), and the cleaning efficiency is determined as 79 %. Initial permeate flux during fouling = 23  $\mu\text{m/s}$  (or 83  $\text{L m}^{-2} \text{h}^{-1}$  or 49 gfd), crossflow velocity = 8.6 cm/s, operating pressure = 300–350 psi, and temperature =  $21.0 \pm 0.5 \text{ }^\circ\text{C}$ .<sup>1</sup>**

### 6.3 Cleaning Data

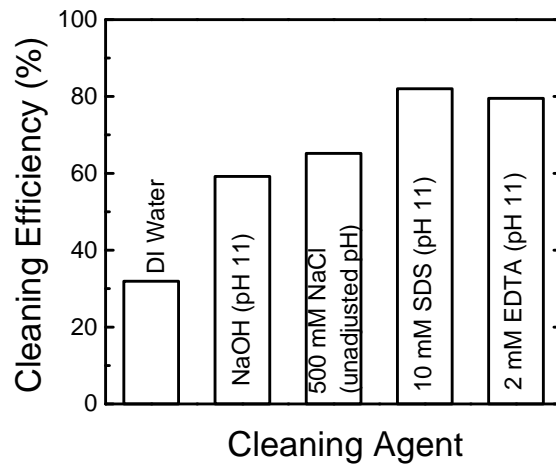
To look into the optimization of cleaning by cleaning agents, the effects of dual and combined chemical cleaning on membranes fouled with waste water effluent are investigated. The cleaning agents used are NaOH (pH 11), 500 mM NaCl (unadjusted pH 6.4), 2 mM EDTA (pH 7.0), and 10 mM SDS (pH 7). The fouled membranes are cleaned by each cleaning agent individually for 7.5 and 15 minutes as separate cleaning experiments. Cleaning experiments also are performed with two cleaning agents in different order of usage, with the cleaning time for each of the cleaning agents at 7.5 minutes. Lastly, cleaning experiments are performed with a combination of cleaning agents for 15 minutes.

<sup>1</sup> L = liter; h = hour; gfd = gallons per square foot of membrane per day.

### 6.3.1 Single Cleaning Agent

Figure 6-3 shows the cleaning efficiencies of various cleaning agents on membranes fouled by waste water effluent. Cleaning was performed for 15 minutes with negligible trans-membrane pressure and at a crossflow velocity five times as high as that during fouling. Membrane fouling is largely irreversible, as cleaning the fouled membrane with DI water resulted in 32% cleaning efficiency. The cleaning efficiencies of NaOH (pH 11), 500 mM NaCl (unadjusted pH 6.4), 10 mM SDS (pH 11), and 2.0 mM EDTA (pH 11) are, respectively, 59, 65, 82, and 79%. NaCl has been proven to be effective in cleaning alginate-fouled RO membranes (Lee and Elimelech, 2007), while EDTA and SDS have been used more extensively in our research and proven to be effective in cleaning alginate-fouled membranes (chapter 4) and membranes fouled by mixtures of various organic foulants (chapter 5).

Comparing the cleaning efficiency of DI water on the membranes fouled by waste water effluent (32%) with that of the membranes fouled by combined organic foulants (19%) (chapter 5), fouling by waste water effluent has a larger potential for reversible fouling. On the other hand, the various cleaning agents have lower cleaning efficiencies on membranes fouled by waste water effluent. This observation suggests that the foulants within the irreversible fouling layer on membrane surfaces fouled by waste water effluent have higher adhesion intermolecular force among themselves, as compared to the foulants on membrane surfaces fouled by synthetic organic foulants.



**Figure 6-3. Cleaning efficiencies of various cleaning agents on membranes fouled by waste water effluent. Cleaning conditions: Time = 15 minutes, temperature =  $21 \pm 0.5$  C, operating pressure = 0 psi.**

### 6.3.2 Dual Cleaning Agents

#### 6.3.2.1 NaOH and EDTA

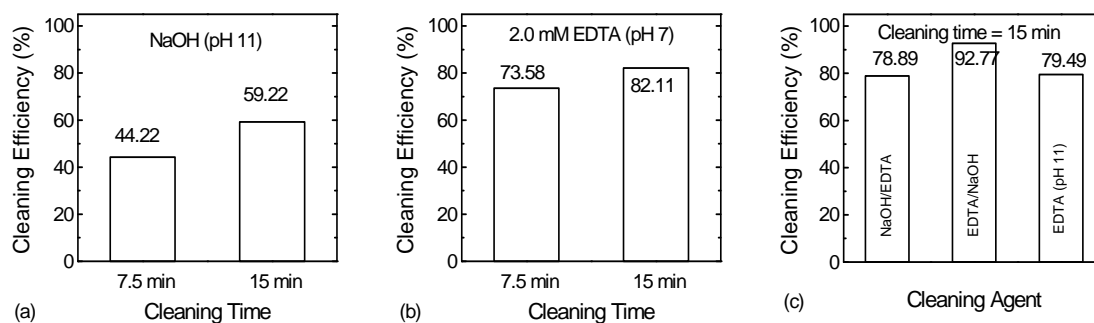
Figure 6-4 shows the cleaning efficiencies of NaOH and EDTA at different cleaning times and for different cleaning orders and combinations on membranes fouled by waste water effluent. As NaOH removes foulant on the membrane surface by hydrolysis and solubilization, the fouling layer matrix would become more porous and facilitate the transfer of EDTA molecules into the fouling layer matrix. The EDTA molecules would chelate with  $\text{Ca}^{2+}$  within the fouling layer matrix and break up the structural integrity of the fouling layer matrix. Hence, a higher cleaning efficiency is observed when the fouled membrane is cleaned with NaOH and followed by EDTA (NaOH/EDTA, 79%), as compared to when the membrane is cleaned with NaOH for the same total cleaning time of 15 minutes (59%).

When the order of cleaning starts with EDTA cleaning, the transfer of the EDTA molecules into the foulant layer would not be as favorable, since the fouling layer matrix is not as porous as it would be following NaOH cleaning. Nonetheless, a higher cleaning efficiency (93%) is observed in cleaning with EDTA, followed by NaOH (EDTA/NaOH), as compared to the cleaning efficiency (79%) if the order of cleaning agent usage is reversed (NaOH/EDTA). A possible explanation is the difference in membrane hydrophilicity when the fouled membranes are cleaned using different sequences of cleaning. The membrane hydrophilicity when cleaned with EDTA/NaOH (left contact angle, right contact angle =  $55 \pm 2.7$ ,  $56 \pm 3.9$ ) is increased as compared to that cleaned with NaOH/EDTA (left contact angle, right contact angle =  $75 \pm 2.2$ ,  $75 \pm 2.0$ ). The increase in hydrophilicity, when the membrane is cleaned with EDTA/NaOH, accounts for more water flux during the second baseline run, resulting in a higher cleaning efficiency, although the residual foulant on the membrane surface may be higher.

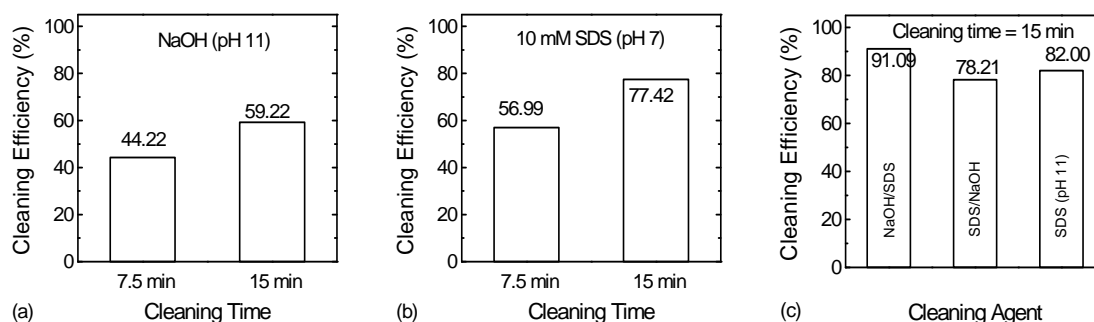
It is interesting to note that while an increase in solution pH of EDTA is expected to increase the cleaning efficiency, we do not see a significant change in the cleaning efficiencies of EDTA at pH 7 (82%) and at pH 11 (80%). This observation implies that, under the specified cleaning conditions, the chemical reaction of EDTA is maximized at pH 7.

#### 6.3.2.2 NaOH and SDS

Figure 6-5 shows that the overall efficiency is higher for membrane cleaning with NaOH, followed by SDS (NaOH/SDS) than cleaning with the same agents in the reverse order. The cleaning mechanism by SDS is via the formation of SDS micelles around the foulant and transport of the foulant from the membrane surface to the bulk solution. SDS molecules do not interact specifically with  $\text{Ca}^{2+}$  in the polysaccharide-calcium complex. Thus, SDS molecules would have more difficulty in breaking down the structural integrity of the fouling layer matrix and removing the foulant when the SDS is added first than when it is added as a succeeding cleaning agent after NaOH. When NaOH is added as a preceding cleaning agent, the fouling layer matrix becomes more porous due to hydrolysis



**Figure 6-4. Cleaning efficiencies of NaOH and EDTA on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**



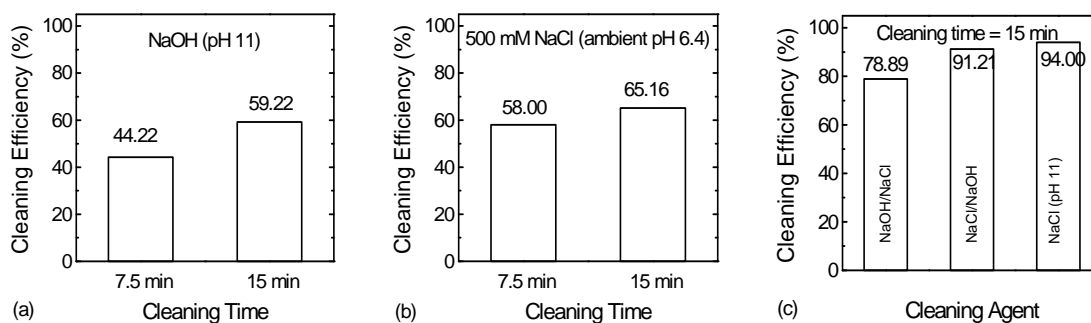
**Figure 6-5. Cleaning efficiencies of NaOH and SDS on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**

and solubilization. This would facilitate SDS in breaking up the fouling layer matrix, forming micelles around the foulant and transporting the foulants from the membrane surface to the bulk solution.

#### 6.3.2.4 NaOH and NaCl

Figure 6-6 shows the cleaning efficiencies of NaOH and NaCl at different cleaning times and for different cleaning orders and combinations, on membranes fouled by waste water effluent. By cleaning with NaOH, followed by NaCl (NaOH/NaCl), the transfer of NaCl from the bulk solution to the fouling layer is facilitated after the fouling layer matrix becomes more porous with the preceding NaOH cleaning. The resultant cleaning efficiency is higher than cleaning efficiencies of NaOH or NaCl as a single cleaning agent for 15 minutes of cleaning time.

When NaCl is used first in dual cleaning and then followed with NaOH (NaCl/NaOH), the cleaning efficiency is even higher than the cleaning efficiency



**Figure 6-6. Cleaning efficiencies of NaOH and NaCl on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**

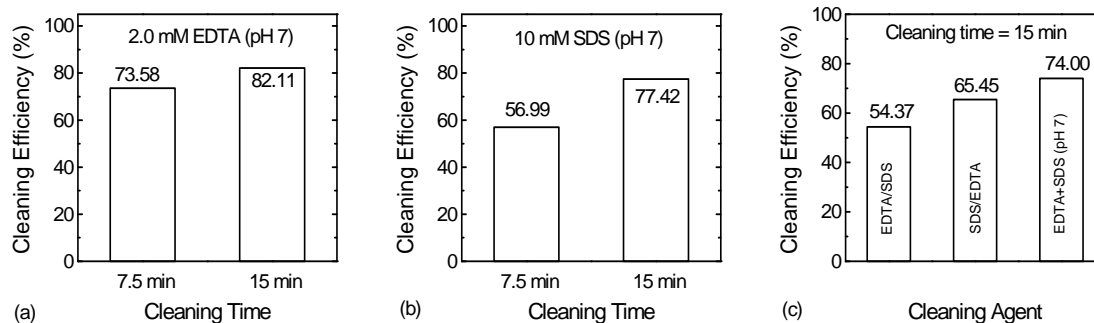
in the earlier case when the order of the cleaning agents is reversed. While it is speculated that a tighter fouling layer before NaOH cleaning does not facilitate NaCl transfer into the fouling layer matrix, the higher membrane hydrophilicity when the membrane is cleaned with NaCl/NaOH (left contact angle, right contact angle =  $57 \pm 3.3$ ,  $58 \pm 3.3$ ) as compared to that cleaned with NaOH/EDTA (left contact angle, right contact angle =  $69 \pm 4.4$ ,  $70 \pm 3.3$ ), accounts for a higher permeate flux during the second baseline run and, hence, a higher cleaning efficiency.

#### 6.3.2.4 EDTA and SDS

Figure 6-7 shows the efficiencies of EDTA and SDS, at different cleaning times and for different cleaning orders and combinations, on membranes fouled by waste water effluent. Cleaning by EDTA, followed by SDS (EDTA/SDS), has a lower reported cleaning efficiency than cleaning by the cleaning agents in the reverse order (SDS/EDTA). It could be that SDS requires a longer cleaning time to effectively remove the foulant on the membrane surface than EDTA. When SDS molecules are introduced as the preceding cleaning agent, even though the SDS molecules are removed after decanting the cleaning solution, the adsorbed SDS molecules on the fouling layer have a longer time to remove the foulant. The observation that SDS requires a longer cleaning time is also reflected in the cleaning efficiencies of SDS at 7.5 and 15 minutes, between which the cleaning efficiency increases significantly from 57 to 77%.

Comparing the cleaning efficiency of EDTA at a cleaning time of 7.5 minutes (74%) with that of the EDTA/SDS cleaning order at a cleaning time of 15 minutes (54%), it is observed that SDS does not contribute to the overall foulant removal as a second cleaning agent in the EDTA/SDS cleaning order. On the other hand, the effect of adding EDTA in dual cleaning increases slightly the cleaning efficiency from 57%, (cleaning efficiency of SDS at a cleaning time of 7.5 minutes) to 65% (cleaning efficiency of SDS/EDTA cleaning order at a cleaning time of 15 minutes). However, the increase in cleaning efficiency





**Figure 6-7. Cleaning efficiencies of EDTA and SDS on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**

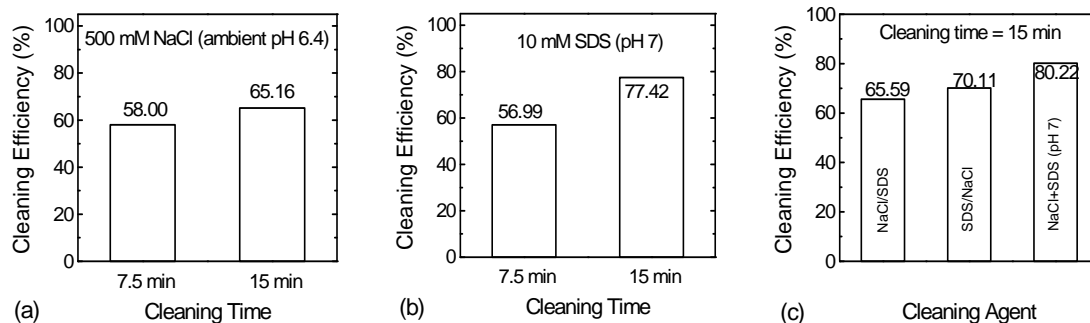
contributed by cleaning agents at ambient pH (e.g., figure 6-5) is not as significant as the contribution to cleaning efficiency when there is a change in cleaning solution pH from ambient pH to an elevated pH or vice versa (e.g., figure 6-6).

#### 6.3.2.5 NaCl and SDS

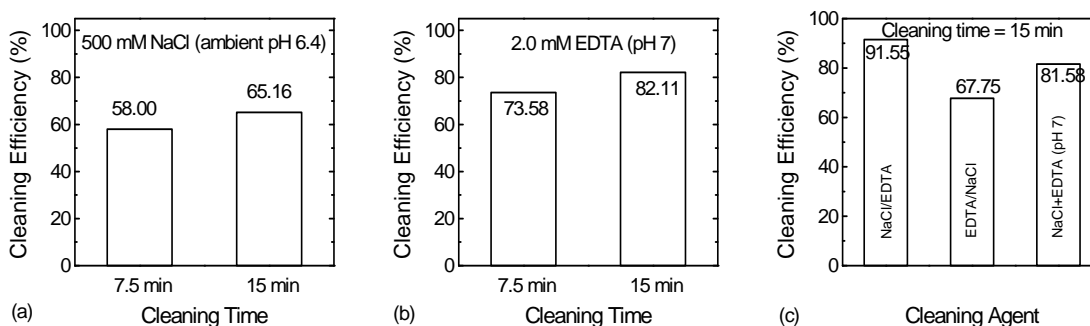
Figure 6-8 shows the efficiencies of NaCl and SDS at different cleaning times and for different cleaning orders and combinations on membranes fouled by waste water effluent. Cleaning with NaCl, followed by SDS, has a slightly lower reported cleaning efficiency as compared to cleaning with the cleaning agents in the reverse order. This feature of having a poorer cleaning efficiency when SDS is used as a second cleaning agent is observed for EDTA/SDS and SDS/EDTA cleaning (figure 6-7), in which SDS cleaning after EDTA cleaning resulted in a lower cleaning efficiency. The same explanation would apply in this case. SDS molecules require a longer time to effectively remove the foulants than NaCl. When SDS molecules are introduced first in dual cleaning, even though they have been removed after decanting the cleaning solution, the SDS molecules are adsorbed onto the fouling layer, and the remaining cleaning time will allow the SDS molecules to continue to remove the foulant.

#### 6.3.2.6 NaCl and EDTA

Figure 6-9 shows the efficiencies of NaCl and EDTA at different cleaning times and for different cleaning orders and combinations on membranes fouled by waste water effluent. When a fouled membrane is cleaned with NaCl, the fouling layer is expected to swell, and NaCl will interact with  $\text{Ca}^{2+}$  via ion exchange (Lee and Elimelech, 2007). Although the displacement of  $\text{Ca}^{2+}$  results in the weakening of the fouling layer matrix structure, the cleaning mechanism via ion exchange is not as effective as chelation of EDTA with  $\text{Ca}^{2+}$ , which is reflected from the cleaning efficiencies of NaCl and EDTA at both 7.5- and 15-minute cleaning times.



**Figure 6-8. Cleaning efficiencies of NaCl and SDS on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**



**Figure 6-9. Cleaning efficiencies of NaCl and EDTA on membranes fouled by waste water effluent: at (a, b) different cleaning times and (c) combinations of usage. Cleaning was performed at 0 psi (no permeation), and the crossflow velocity was 42.8 cm/s (five times that during fouling). The temperature during cleaning was maintained at  $21.0 \pm 0.5$  °C.**

Cleaning with NaCl, followed by EDTA (NaCl/EDTA), has a higher cleaning efficiency than cleaning by the cleaning agents in the reverse order (EDTA/NaCl). When NaCl cleaning is succeeded by EDTA cleaning (NaCl/EDTA), the transfer of EDTA into the fouling layer to chelate with  $\text{Ca}^{2+}$  will be enhanced due to the swelled fouling layer after cleaning with NaCl. On the other hand, when EDTA cleaning is followed by NaCl cleaning (EDTA/NaCl), the transfer of EDTA molecules into the fouling layer matrix is relatively less effective due to a denser fouling layer. The cleaning is followed by a less effective cleaning agent in the form of NaCl, which does not contribute significantly to the overall foulant removal from the membrane surface.

To single out the contribution of NaCl to the cleaning efficiency when applied as a second cleaning agent in dual cleaning, the cleaning efficiency of EDTA at a cleaning time of 7.5 minutes (74%) is compared with that of the EDTA/NaCl cleaning order at a cleaning time of 15 minutes (68%). It is observed that NaCl,

as the second cleaning agent in EDTA/NaCl cleaning, does not contribute to overall foulant removal. In contrast, the effect of EDTA since a second cleaning agent in NaCl/EDTA cleaning is more significant, as cleaning efficiency was significantly improved from 59% for NaCl cleaning for 7.5 minutes to 92% for cleaning with NaCl, followed by EDTA (NaCl/EDTA).

The cleaning efficiencies of the various cleaning agent combinations were tabulated from the highest to the lowest cleaning efficiencies, respectively, as summarized in table 6.2. The results show that membrane cleaning by dual or combined cleaning agents, when used appropriately, is more effective than membrane cleaning by individual cleaning agents.

**Table 6-2. Cleaning agent combinations determined from a total cleaning time of 15 minutes, in the order of the highest to the lowest cleaning efficiencies**

<b>Cleaning Agent Combination</b>	<b>Cleaning Efficiency (%)</b>
NaCl (pH 11)	94
EDTA/NaOH	93
NaCl/NaOH	91
NaOH/SDS	91
NaOH + SDS	85
EDTA	82
SDS (pH 11)	82
NaCl +EDTA	82
NaCl+SDS	80
NaOH/NaCl	79
NaOH/EDTA	79
EDTA (pH 11)	79
SDS/NaOH	78
SDS	77
EDTA+SDS	74
SDS/NaCl	70
EDTA/NaCl	68
NaCl/SDS	66
SDS/EDTA	65
NaCl	65
NaOH	59
EDTA/SDS	54

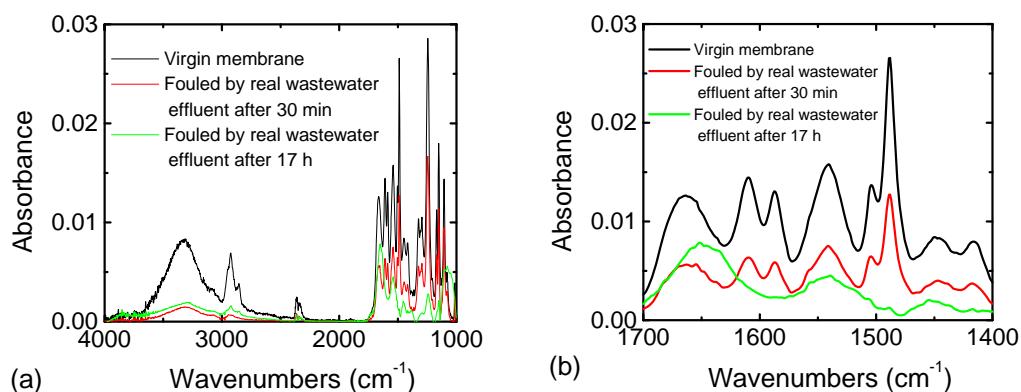
Membrane cleaning with dual cleaning agents generally has higher cleaning efficiencies when there is a change in solution pH of the cleaning agents (i.e., when one of the cleaning agents is NaOH) than when the solution pH of the cleaning agents remains relatively constant at pH 7 (see table 6.2). This is because NaOH cleaning has the effect of making the fouling layer less porous and, thus, the ability of weakening the structural integrity of the fouling layer when used with another cleaning agent. In dual cleaning, when there is a significant difference in the cleaning efficiency of each cleaning agent, applying the less efficient cleaning agent first generally brings about a higher overall cleaning efficiency than applying the more efficient cleaning agent first. This is because the less efficient cleaning agent, after being transferred to within the fouling layer matrix, would need more time for favorable reaction with the foulant.

## 6.4 ATR-FTIR

### 6.4.1 Fouling

Figure 6-10a shows the ATR-FTIR spectrum profiles ( $1,000\text{--}4,000\text{ cm}^{-1}$ ) of a virgin membrane and membranes fouled by waste water effluent at different stages of the fouling runs. The spectrum of each membrane presented in figure 6-10 is averaged from 60 scans taken for each membrane. As the wavenumber increases, the detected functional groups become closer to the top of the active layer, due to the infrared radiation having a shallower depth of penetration.

The ATR-FTIR profiles of a virgin membrane are characterized by a broad band centered at  $3,300\text{ cm}^{-1}$ , which corresponds to the presence of amide (N-H), carboxylic (COOH), and hydroxyl (O-H) functional groups, and a smaller peak at  $2,900\text{ cm}^{-1}$  attributed to the presence of aliphatic carbon (C-H) groups (Tang et al., 2007). The broad band is smoothed due to the presence of a coating layer for LFC-1 membranes that has O-H functional groups overwhelming the presence of other functional groups (e.g., N-H groups from the polyamide layer) (Tang et al., 2007). The spectra of the fouled membranes have significant reduction in peaks at  $3,300$  and  $2,900\text{ cm}^{-1}$ , regardless of fouling duration. Due to the presence of a fouling layer on top of the membrane coating, the functional groups detected at these wavenumbers correspond to those of the fouling layer, and not of the membrane coating as in the case of virgin membranes. The reduction in peaks at  $3,300$  and  $2,900\text{ cm}^{-1}$  implies that a fouling layer is formed as soon as 30 minutes into a fouling run and that the presence of carboxylic functional groups (mainly from polysaccharides bound together by  $\text{Ca}^{2+}$  to form structural integrity of fouling layer) is not as extensive as in the membranes fouled by alginate as a single foulant or as a co-foulant (fouling by alginate in chapter 4; fouling by various organic foulants in chapter 5).



**Figure 6-10. Spectra of virgin membrane and membranes fouled by waste water effluent at different fouling times. The same spectra range from 1,000–4,000 in (a), and 1,400–1,700 in (b). Operating conditions of the crossflow unit are identical to those in figure 6-2.**

Figure 6-10b shows the same spectrum profiles in the 1,400- to 1,700-cm<sup>-1</sup> range for the virgin and fouled membranes. Within this spectrum range, the functional groups detected in this range are within the active layer. The peaks at 1,660, 1,610, and 1,540 cm<sup>-1</sup> for the spectrum of the virgin membrane correspond to, respectively, C=O signal (amide I), aromatic ring breathing, and C-N stretching (amide II) functional groups which are associated with the presence of amide groups (Rao et al., 2003). When the membrane is fouled by waste water effluent for 30 minutes, the spectrum profile is similar to that of the virgin membrane. Although a change in spectrum profile above 2,500 cm<sup>-1</sup> implies the presence of foulant on the membrane surface, the unchanged spectrum profile in the 1,400- to 1,700-cm<sup>-1</sup> range suggests the deposition of foulant after 30 minutes is not significant to affect the infrared penetration depth and change the spectrum profile at this frequency range. When the membrane is fouled for 17 hours, the spectrum profile within this range varies considerably from that of the virgin membrane, implying the presence of the foulant which has permeated across the membrane surface into the fouling layer. The relative peak at 1,650 cm<sup>-1</sup> suggests the presence of C=O signal (amide I) from part of the amide group, which is a constituent of the active layer.

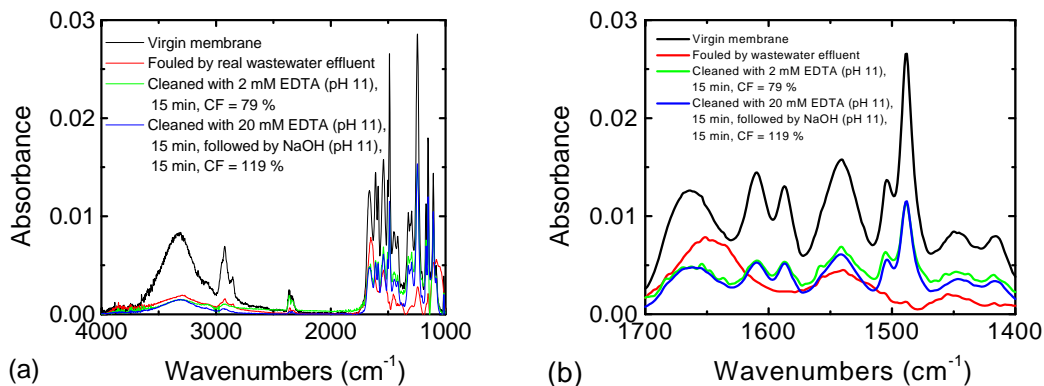
#### 6.4.2 Cleaning

Figure 6-11(a) shows the ATR-FTIR spectra (1,000–4,000 cm<sup>-1</sup>) of a virgin membrane, a membrane fouled by waste water effluent, and fouled membranes that are cleaned effectively, so as to investigate the effect of membrane cleaning on the spectrum profiles. At 3,300 and 2,900 cm<sup>-1</sup>, upon cleaning that consists solely of 2 mM EDTA (pH 11), or 20 mM EDTA (pH 11) followed by NaOH (pH 11), the peaks are slightly reduced as compared to the peaks when the membrane is fouled, and the spectrum profiles at the higher end are not recovered to the profile of the virgin membrane, due to the possible chemical effect or

modification on the top membrane coating at high pH (pH 11). The objective of using excessive cleaning agents in one of the cleaning experiments is to investigate the effect of ‘over cleaning’, if any, on the FTIR spectrum.

Figure 6.11b shows the same spectrum profiles in the 1,400- to 1,700- $\text{cm}^{-1}$  range for the membranes. The membrane fouled by wastewater effluent shows a variation in the ATR-FTIR spectrum as compared to the spectrum of the virgin membrane. When the fouled membranes are cleaned effectively by the two different cleaning solutions, the spectrum profiles are reverted to the profile of a virgin membrane. While cleaning with an excess of cleaning agent concentration (20 mM EDTA, followed by NaOH [pH 11]) leads to a higher cleaning efficiency of above 100%, the resultant spectrum profile from 1,400 to 1,700  $\text{cm}^{-1}$  is very similar to the profiles of the fouled membrane cleaned with 2 mM EDTA (pH 11) and the virgin membrane.

Thus, the spectrum profile from 1,400 to 1,700  $\text{cm}^{-1}$  can be indicative of fouling extent by organic foulants and cleaning efficiencies of cleaning agents. In this spectrum range, a fouled membrane has a spectrum profile which deviates from that of a virgin membrane, whereas cleaned membranes have spectrum profiles similar to that of a virgin membrane.



**Figure 6-11. Spectra of a virgin membrane, a membrane fouled by waste water effluent, and fouled membranes cleaned with various concentration of EDTA. The feed solution during fouling contains 0.5 mM  $\text{CaCl}_2$  and 8.5 mM  $\text{NaCl}$ . The same spectra range from 1,000–4,000 in (a), and 1,400-1,700 in (b). Operating conditions of the crossflow unit are identical to those in figure 6-2.**

## 6.5 Scanning Electron Microscope (SEM) Imaging

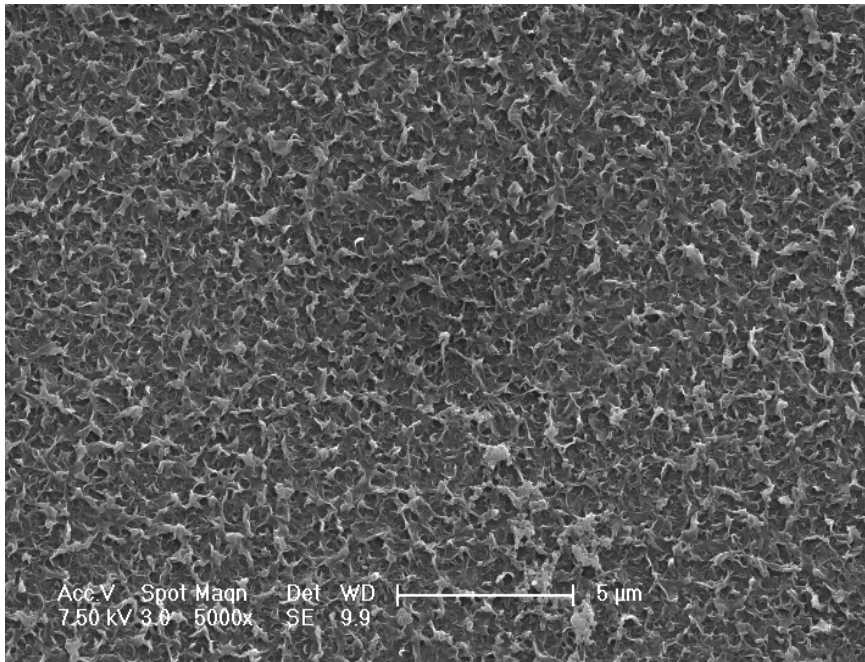
SEM images were taken for virgin membranes and membranes that had been fouled by waste water effluent and, subsequently, cleaned with various cleaning agents. Figures 6.12–6.18 show the SEM images of a virgin membrane, a membrane fouled by waste water effluent, and various fouled membranes cleaned by various cleaning agents (cleaning time = 15 minutes). To aid in the discussion

of correlating the observed foulant on membrane surfaces to cleaning efficiencies, the cleaning efficiencies of DI water, NaOH (pH 11), 500 mM NaCl (ambient pH 6.4), 10 mM SDS (pH 7), and 2 mM EDTA (pH 7) are arranged in ascending order and are 32, 59, 65, 79, and 82%, respectively. It should be noted that the images are selected to be as representative of the overall condition of the membrane surfaces as possible.

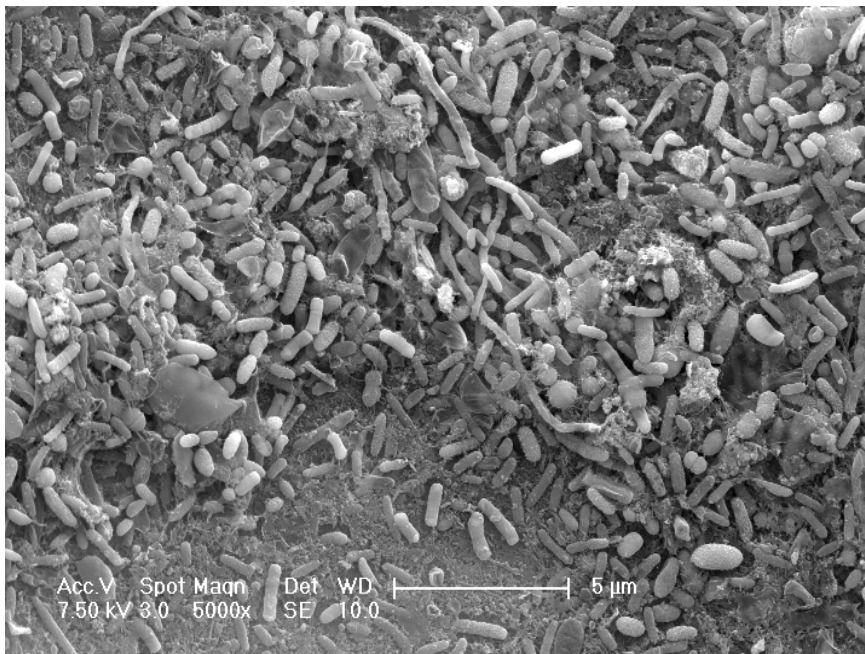
The virgin membrane has a characteristic 'hill-and-valley' surface which is devoid of particles (figure 6-12). The membrane fouled by waste water effluent has an intermeshed matrix of the bacteria and organic foulants, which is about a few micrometers thick (figure 6-13). The bacteria are mostly located near the top surface of the fouling layer when viewed at a location that shows a part of the fouling layer peeled back. This observation implies that the bacteria are deposited mostly at a later fouling stage with bacteria grown in the feed.

When the fouled membrane is cleaned with DI water, a major portion of the fouling layer still remains on the membrane surface (figure 6-14). When the membrane is cleaned with NaOH, most of the fouling layer is removed, with bacteria and organic foulants sparsely located on the membrane surface (figure 6-15). However, a closer look at the plate shows that the 'valley' regions of the membrane surface are smoothed from the deposition of the foulants during fouling. The preferential accumulation of foulant within the 'valley' regions of the membrane surface at the initial stage of fouling results in more severe flux declines than in smooth membranes (Vrijenhoek et al., 2001). The accumulation of the foulant within the 'valley' regions is still observed in figure 6-16 where the membrane is cleaned with NaCl. When the membranes are cleaned with SDS (figure 6-17) and EDTA (figure 6-18), most of the foulant accumulated in the 'valley' regions is removed, although some spots of bacteria can be observed. The SEM images of the membranes cleaned by various cleaning agents supplement the cleaning efficiencies of the corresponding cleaning agents, as the extent of foulant and bacteria coverage on the membrane surface corresponded visually to the cleaning efficiency.

From the above observation, it can be inferred that the fouling layer comprises foulant accumulated within the 'valley' regions at the initial fouling stage and a top layer of foulant deposited on the membrane after the 'valley' regions are filled up. With increased fouling, the top fouling layer can grow to be a few micrometers thick, as in our case of membrane fouling. The top fouling layer is relatively easier to remove by cleaning agents, as we have shown that NaOH and NaCl, which are relatively less effective cleaning agents than SDS and EDTA, can remove a major portion of the top fouling layer. On the other hand, the harder-to-remove accumulated foulant within the 'valley' regions can only be cleared by SDS and EDTA under favorable cleaning conditions.

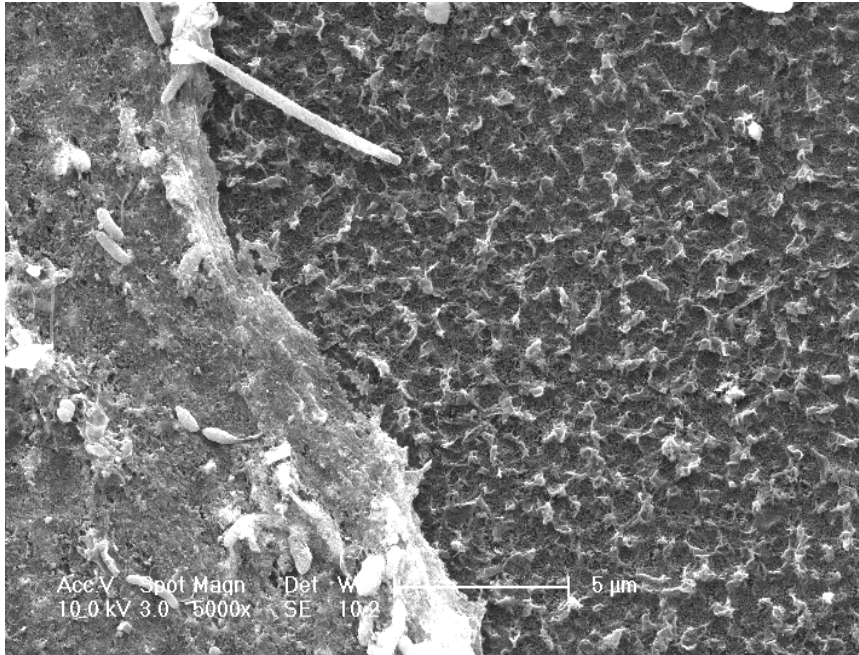


**Figure 6-12. SEM image of virgin LFC-1 membrane**

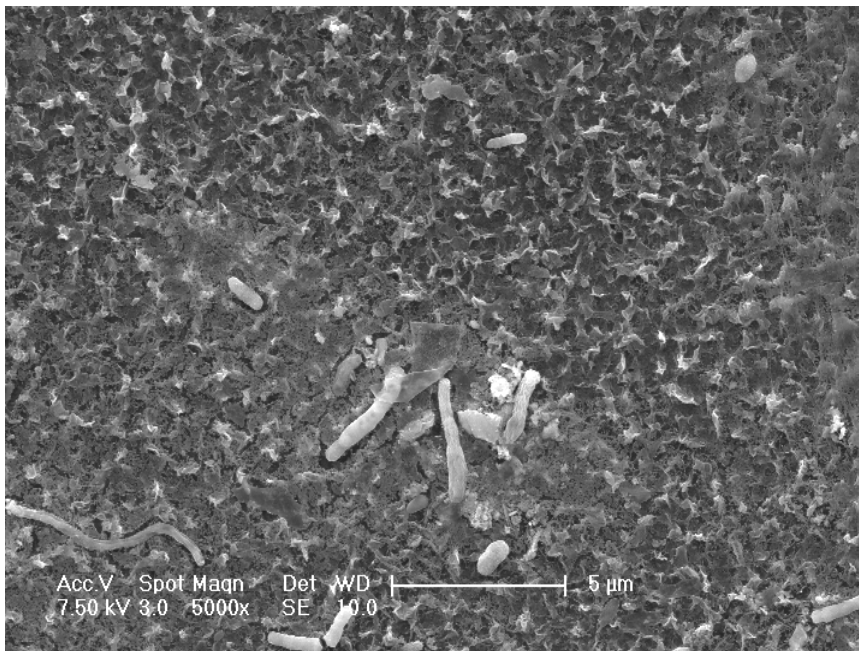


**Figure 6-13. SEM image of LFC-1 membrane fouled by waste water effluent under different magnification. Fouling conditions are identical to those in figure 6-2.**

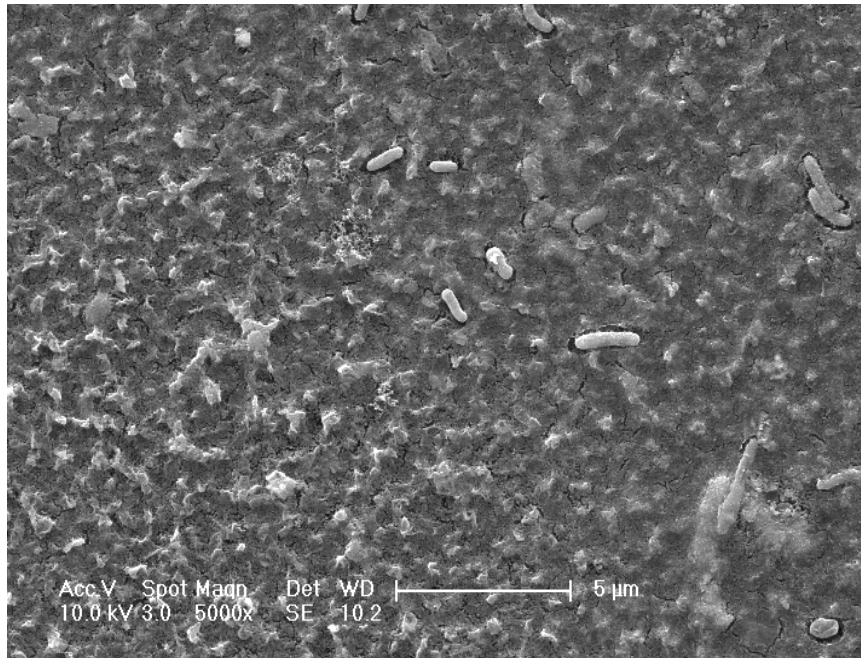




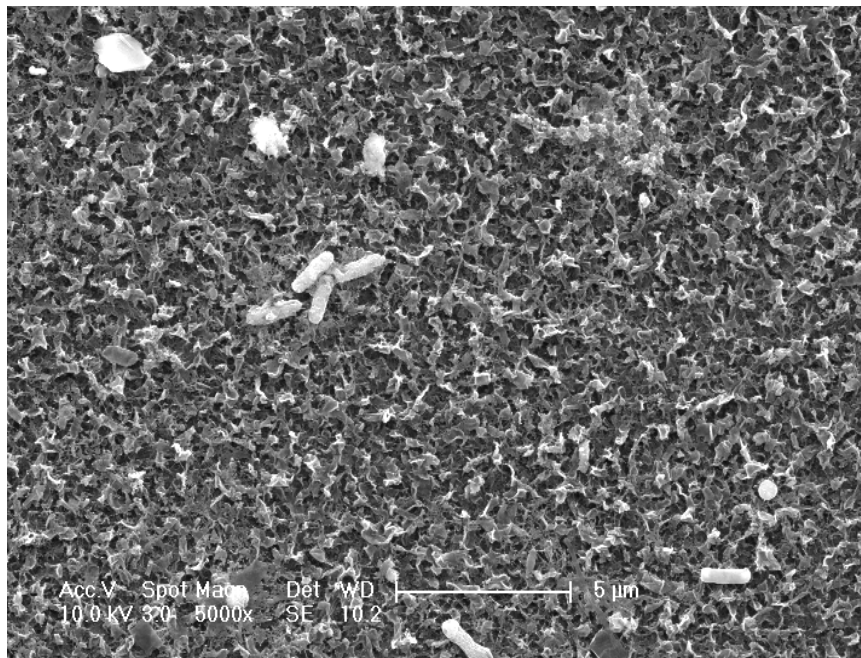
**Figure 6-14. SEM image of fouled LFC-1 membrane cleaned with DI water under different magnification. Fouling conditions are identical to those in figure 6-2, and cleaning conditions are identical to those in figure 6-3.**



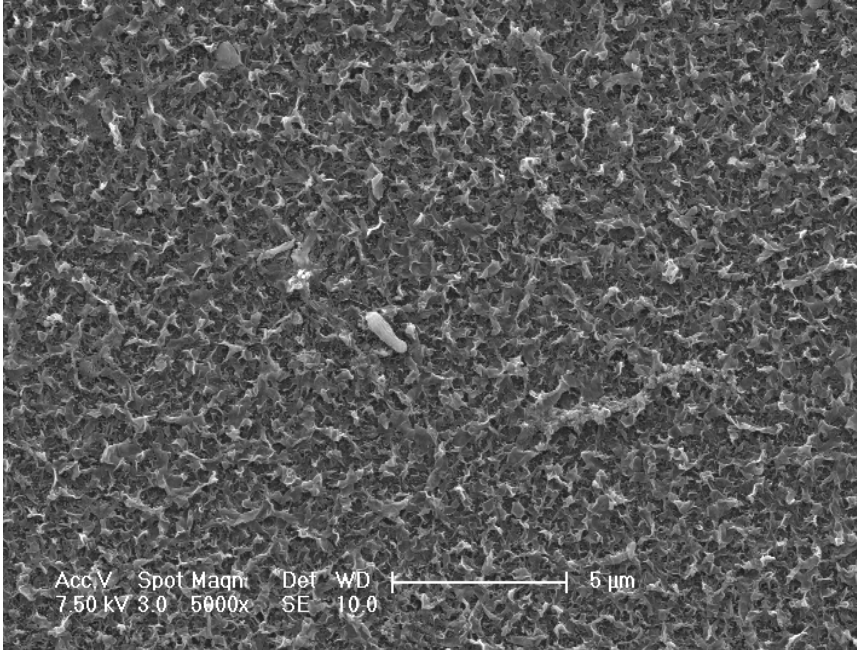
**Figure 6-15. SEM image of fouled LFC-1 membrane cleaned with NaOH (pH 11). Fouling conditions are identical to those in figure 6-2, and cleaning conditions are identical to those in figure 6-3.**



**Figure 6-16. SEM image of fouled LFC-1 membrane cleaned with 500 mM NaCl (pH 6.4). Fouling conditions are identical to those in figure 6-2, and cleaning conditions are identical to those in figure 6-3.**



**Figure 6-17. SEM image of fouled LFC-1 membrane cleaned with 10 mM SDS (pH 7.2). Fouling conditions are identical to those in figure 6-2, and cleaning conditions are identical to those in figure 6-3.**



**Figure 6-18. SEM image of fouled LFC-1 membrane cleaned with 2 mM EDTA (pH 7.0). Fouling conditions are identical to those in figure 6-2, and cleaning conditions are identical to those in figure 6-3.**

## 6.6 Conclusion

RO membranes have been fouled by secondary waste water effluent under specified fouling conditions so as to perform systematic cleaning experiments.

- Membrane cleaning by dual or combined cleaning agents, when used appropriately, is more effective than membrane cleaning by individual cleaning agents.
- Membrane cleaning with dual cleaning agents has higher cleaning efficiencies when there is a change in solution pH of the cleaning agents (i.e., when one of the cleaning agents is NaOH) than when the solution pH of the cleaning agents remains relatively constant at pH 7.
- In dual cleaning, when there is a significant difference in the cleaning efficiency of each cleaning agent, applying the less efficient cleaning agent first generally brings about a higher overall cleaning efficiency than applying the more efficient cleaning agent first.

From the SEM images of the cleaned membranes and the corresponding cleaning efficiencies of the cleaning agents, it is observed that the extent of foulant removal by a cleaning agent corresponded well to the cleaning efficiency of the corresponding cleaning agent.

- The fouling layer comprises foulants accumulated within the ‘valley’ regions of the membrane at the initial fouling stage and a top layer of foulants deposited on the membrane after the ‘valley’ regions are filled up.
- While the top fouling layer is relatively easier to remove, the accumulated foulant within the ‘valley’ regions can only be removed by favorable cleaning agents.

ATR-FTIR has been shown to be an effective supplementary tool to investigate the extent of membrane cleaning by a cleaning agent.

## 7. Materials and Methods

### 7.1 Organic Foulants

The model organic foulants chosen to represent the polysaccharides, proteins, humic acid, and fatty acids found in EfOM of waste water effluent were sodium alginate (Sigma-Aldrich, St. Louis, Missouri) and Suwannee River natural organic matter (International Humic Substances Society, St. Paul, Minnesota), bovine serum albumin (Sigma-Aldrich, St. Louis, Missouri), and OA (Sigma-Aldrich, St. Louis, Missouri) respectively. Sodium alginate (SA) was extracted from brown seaweed. Based on the manufacturer, the molecular weight of the sodium alginate ranges from 12 to 80 kilodaltons (kDa). Other characteristics of SRNOM, including molecular weight and mass fraction of hydrophobic NOM, can be found elsewhere (Lee et al., 2004; Lee et al., 2005). According to the manufacturer, the molecular weight of the BSA is about 66 kDa. BSA is reported to have an isoelectric point at pH 4.7 (PeulaGarcia et al., 1997). OA (Sigma-Aldrich, St. Louis, Missouri) was selected to model fatty acids in EfOM because of its presence in food and solubility in water (saturation concentration of 4.7 mM at 20 °C) (Kintner and Day, 1965).

Sodium alginate, BSA, and SRNOM were received in a powder form, and stock solutions (2 g/L) were prepared by dissolving each of the foulants in DI water. DI water was supplied from a Milli-Q ultrapure water purification system (Millipore, Billerica, Massachusetts). Mixing of the stock solutions was performed for over 24 h to ensure complete dissolution of the foulants, followed by filtration with a 0.45- $\mu$ m filter (Durapore, Millipore, Billerica, Massachusetts). The filtered stock solutions were stored in sterilized glass bottles at 4 °C. OA was received in solution ( $\geq$  98% concentration) and was stored at room temperature. To achieve the intended OA concentration during fouling, OA was dissolved separately for at least 8 hours prior to fouling so that, at the initiation of fouling, OA could be introduced as a solution. A few hours before the initiation of fouling, the ionic strength of the stock solution was adjusted to the same concentration as that of the feed solution (10 mM), and the stock solution pH was elevated, if required, from ambient pH of 3.9 to 9.0 by adding small amounts of 1 molar (M) NaOH.

The waste water effluent used in fouling experiments was collected at a waste water treatment plant in Wallingford, Connecticut. The waste water effluent was refrigerated at 4 °C. The waste water effluent characteristics are presented in chapter 5.

The charge densities of alginate, BSA, and waste water effluent were determined by potentiometric titration. The automatic titrator was a 794 Basic Titrino (Metrohm, Switzerland), and the titrant was 0.1 M NaOH. For the analysis of

alginate and BSA, the titrant was added to the sample solution containing 100 mg/L organic foulant and background electrolyte of 10 mM NaCl. The waste water effluent was prefiltered with a 0.45- $\mu\text{m}$  filter (Durapore, Millipore, Billerica, Massachusetts) before the titration. Prior to titration, the sample solution was acidified with 1.0 M HCl to pH 2.95 to fully protonate the carboxylic functional groups of the organic foulant. The small amount of HCl added did not significantly increase the ionic strength of the sample solution. During titration,  $\text{N}_2$  gas was introduced continuously into the sample solution to maintain a carbon dioxide- ( $\text{CO}_2$ ) free environment. The sample solution was stirred in a titrator vessel using a magnetic stirrer to ensure adequate mixing of the sample solution upon addition of the titrant. Blank titration was performed using a foulant-free solution with a background electrolyte of 10 mM under the same experimental conditions as those used during the sample titration. The net amount of NaOH required to deprotonate the carboxylic and phenolic groups of the organic foulants were determined from the titration runs of the foulant solution sample and the blank (foulant-free solution).

## 7.2 Chemical Cleaning Agents

The chemical cleaning agents used were NaOH (pH 11.0) as an alkaline solution, certified grade disodium ethylenediaminetetraacetate ( $\text{Na}_2\text{-EDTA}$ ) as a metal chelating agent, certified grade SDS as an anionic surfactant, and NaCl as a salt cleaning solution. The agents were purchased from Fisher Scientific (Pittsburgh, Pennsylvania) and used with no further purification. The stock chemical solutions were prepared freshly by dissolving each chemical in DI water. The pH of the EDTA, SDS, and NaCl cleaning solutions was adjusted with 1.0 M NaOH if necessary.

## 7.3 RO Membrane

The relatively well characterized thin-film composite LFC-1 membrane (Hydranautics, Oceanside, California) was used as a model RO membrane. The average hydraulic resistance was determined to be  $9.16 (\pm 0.11) \times 10^{13} \text{ m}^{-1}$ . The observed salt rejection was 98.7-99.3%—determined with a 10-mM (584-mg/L) NaCl feed solution at an applied pressure of 300 psi (2,068.5 kilopascals [kPa]) and a crossflow velocity of 8.1 cm/s. Membrane samples were received as dry large sheets and were cut and stored in DI water at 4 °C. The membrane has been reported to be negatively charged at solution chemistries typical to natural and waste waters, with an isoelectric point at about pH 4 (Vrijenhoek et al., 2001). The membrane has been reported to be coated with a neutral polyalcohol layer rich in  $-\text{COH}$  functional groups which renders the surface less charged than the surfaces of other polyamide RO membranes without a coating layer (Tang et al., 2007).

## 7.4 Crossflow Test Unit

Fouling and ensuing cleaning experiments were performed with a laboratory-scale crossflow test unit. The membrane test unit consists of a membrane cell, pump, feed reservoir, temperature control system, and data acquisition system. The membrane cell was of a rectangular plate-and-frame unit, containing a flat membrane sheet placed in a rectangular channel with dimensions measuring 7.7 cm long, 2.6 cm wide, and 0.3 cm high. Both permeate and retentate were recirculated back to the feed reservoir. Permeate flux was registered continuously by a digital flow meter (Optiflow 1000, Humonics, California), interfaced with a computer. A floating disc rotameter (King Instrument, Fresno, California) was used to monitor the retentate flow rate. The crossflow velocity and the operating pressure were adjusted using a bypass valve (Swagelok, Solon, Ohio) in conjunction with a back-pressure regulator (U.S. Para Plate, Auburn, California). Temperature was controlled by a recirculating chiller/heater (Model 633, Polysciences) with a stainless steel coil submerged in the feed water reservoir.

## 7.5 Fouling and Cleaning Experiments

For fouling by organic foulants, the membrane was first compacted with DI water until the permeate flux became constant, followed by the initial baseline performance for 1 hour. The membrane was then stabilized and equilibrated with a foulant-free electrolyte solution for 2 hours. The flux at which the baseline run was performed was pre-determined so that the initial flux will drop to a specified flux of  $2.3 \times 10^{-5}$  meters per second (m/s) (or 83 liters per square meter per hour [L/m<sup>2</sup> h]) after adding the electrolyte solution due to osmotic pressure on the membrane. The chemistry of the foulant-free electrolyte solution and operating conditions adjusted in this stage were similar to those used for the ensuing fouling runs.

As OA takes time to dissolve completely, the mixture of organic foulant solution has to be prepared 8 hours before the fouling run. The feed foulant solution was prepared separately in another container. The chemistry of the feed foulant solution was adjusted to be identical to that of the foulant-free electrolyte solution so that the overall ionic strength and solution chemistry would not change when the feed foulant solution was added to initiate fouling. When the membrane is fouled with waste water effluent, fouling is initiated immediately after the baseline run without equilibrating the membrane with a foulant-free electrolyte solution. Fouling runs were carried out for 17 hours. At the end of fouling, the solution in the feed reservoir was disposed off, and cleaning of the fouled membrane was performed by adding the chemical cleaning solution to the feed reservoir. At the end of the cleaning stage, the chemical cleaning solution in the reservoir was emptied, and the reservoir and the membrane cell were rinsed with DI water to flush out the residual chemical cleaning solution. Finally, the cleaned RO membrane was subjected to the second baseline performance with DI water to determine the pure water flux again. The crossflow velocity throughout the

experiment, except during cleaning, was maintained at 8.6 cm/s. The operating conditions (i.e., initial flux, crossflow velocity, and temperature) at this stage were identical to those applied during the initial baseline performance, so as to determine the cleaning efficiency by comparing the pure water fluxes determined before fouling and after cleaning. To confirm the reproducibility of determined cleaning efficiency, selected fouling/cleaning runs were duplicated. Results showed that fouling rate and cleaning efficiency obtained from the duplicate runs were within less than a 5% difference. Throughout all the fouling/cleaning stages, the feed water in the reservoir which was located on top of a magnetic stirrer was mixed rigorously to ensure complete mixing of the feed water and cleaning solution.

To investigate the change in the permeate quality during the fouling stage, permeate samples taken before and at the start and end of fouling were analyzed for salt (NaCl) rejection using an ICP-AES (ICP Optima 3000, Perkin Elmer, Waltham, Massachusetts). Permeate and feed samplings obtained before the fouling run were collected 30 minutes before the onset of fouling. Samplings taken at the start of the fouling run were initiated after first discarding 20 mL of permeate (duration of 8 minutes). Permeate and feed samples taken at the end were collected during the final 40 minutes of the fouling run. The fouled membrane coupons were air dried and kept in storage for contact angle measurements. The contact angle measurements were performed using a VCA-2,500 system (AST Products, Billerica, Massachusetts). The dried membrane coupon was adhered to a glass slide using double-sided tape and was brought near to the tip of the syringe. DI water was injected using a syringe until a water droplet formed on the membrane surface. About 10 contact angle measurements were performed across the membrane coupon at equally spaced intervals.

## **7.6 AFM Adhesion Force Measurements**

AFM was used to measure the interfacial force between the foulant in the bulk solution and the foulant in the fouling layer on the membrane. The force measurements were performed with a colloid probe, modified from a commercialized SiN AFM probe (Veeco Metrology Group, Santa Barbara, California). A CML particle (Interfacial Dynamics Corp., Portland, Oregon) was used as a surrogate for the organic foulants, because organic foulants (alginate and SRNOM) carry predominantly carboxylic functional groups. To make a colloid probe, a CML particle with a diameter of 4.0  $\mu\text{m}$  was attached by Norland Optical adhesive (Norland Products, Inc., Cranbury, New Jersey) to a tipless SiN cantilever. The colloid probe was cured under UV light for 20 minutes.

The AFM adhesion force measurements were performed in a fluid cell using a closed inlet/outlet loop. The solution chemistries of the test solutions injected into the fluid cell were identical to those used in the bench-scale fouling/cleaning experiments. Once all the air bubbles had been flushed out of the fluid cell, the injection would stop, and the outlet was closed. The membrane was equilibrated



with the test solution for 30–45 minutes before force measurements were performed. The force measurements were conducted at three to five different locations, and at least ten measurements were taken at each location. Because the focus of this study was on the foulant-foulant interaction (adhesion), only the raw data obtained from the retracting force curves were processed and converted to obtain the force versus surface-to-surface separation curves. The force curves presented were the averages of all the representative force curves obtained at the different locations.

The protocol for AFM analysis has been modified slightly to investigate the interaction between different foulant types. The AFM colloidal probe is soaked in organic foulant solution (2,000 mg/L alginate, BSA, or SRNOM, or  $\geq 98\%$  OA) for at least 24 hours (at 4 °C for alginate, BSA, and SRNOM solutions to prevent organic degradation, and at room temperature for OA). The membrane is fouled with 200 mg/L organic foulant (alginate, BSA, SRNOM, or OA) using the crossflow unit for about 17 hours. After transferring the colloidal probe to the AFM fluid cell and the membrane to the AFM disc puck, an electrolyte solution containing 0.5 mM  $\text{CaCl}_2$  and 8.5 mM NaCl (adjusted to  $\text{pH } 6.5 \pm 0.2$ ) (identical solution chemistry during fouling) is injected into the fluid cell. The volume of electrolyte solution added is just enough to fill up the fluid cell so as to minimize the possibility of flushing away the foulants on the membrane and probe surfaces. AFM force measurements are taken after 20 minutes of equilibration time. To investigate the effect of cleaning agent on the intermolecular adhesion force, the cleaning agent was added to the electrolyte solution at the same concentration as that used in the cleaning experiments.

## 7.7 Light Scattering

Static light scattering experiments were performed on foulant solution to determine the effective diameters of the foulant aggregates in foulant mixtures using a multidetector light scattering unit (ALV-5000, Langen, Germany). New glass vials (Supelco, Bellefonte, Pennsylvania) for containing foulant solutions under various solution chemistries were cleaned prior to use by soaking overnight in a cleaning solution (Extran MA 01, Merck KGaA, Darmstadt, Germany), rinsing with DI water, and drying in an oven under dust-free conditions. The foulant solutions were adjusted accordingly to reflect the solution pH of the feed solution during fouling or the pH of the cleaning solution by adding small amounts of 1 M NaOH. The vial was vortexed (Mini Vortexer, Fisher Scientific) to homogenize the solution, before starting the light scattering experiment after 30 minutes for foulant solutions. The effective diameters were calculated based on average scattered light intensities measured at a scattering of 90 degrees for 15 seconds and averaged over at least 10 readings.

## 7.8 ATR-FTIR

The ATR-FTIR spectrometry was used to probe the characteristic functional groups of the membranes. The analysis was performed with a Tensor 27 FTIR spectrometer (Bruker Optics, Billerica, Massachusetts) equipped with an ATR accessory and OPUS software. A zinc selenide crystal was pressed against the dry membrane surface using a clamping device and an infrared source at a 45-degree incident angle was used at a resolution of  $2\text{ cm}^{-1}$ . Each spectrum was averaged from 60 scans performed at one location. A representative spectrum was selected from the three spectra obtained from different locations on the membrane surface.

## 7.9 SEM Images

At the end of the fouling and/or cleaning experiments, a portion of the membrane coupon was cut after it was taken out of the crossflow unit. The portion of membrane was fixed with 2.5% glutaraldehyde and 1% osmium tetroxide and dehydrated with ethanol (Fox and Demaree, 1999). The cells were sputter coated with gold (30 seconds, 30 milliamperes) and then viewed under an XL30 scanning electron microscope (FEI, Hillsboro, Oregon).

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# Data Appendix

Figure 4.1a

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.08	1.00	0.08	1.00	0.08	1.00
0.16	1.00	0.16	1.00	0.16	1.00	0.16	1.00
0.25	1.00	0.24	1.00	0.25	1.00	0.24	1.00
0.33	1.00	0.33	1.00	0.33	1.00	0.33	1.00
0.41	1.00	0.41	1.00	0.41	1.00	0.41	1.00
0.50	1.00	0.49	1.00	0.41	1.00	0.49	1.00
0.58	1.00	0.49	1.00	0.50	1.00	0.58	1.00
0.66	1.00	0.58	1.00	0.58	1.00	0.58	1.00
0.75	1.00	0.66	1.00	0.66	1.00	0.66	1.00
0.83	1.00	0.74	1.00	0.66	1.00	0.74	1.00
0.91	1.00	0.83	1.00	0.75	1.00	0.83	1.00
0.91	1.00	0.83	1.00	0.83	1.00	0.83	1.00
1.00	1.00	0.91	1.00	0.91	1.00	0.91	1.00
1.08	1.00	0.99	1.00	1.00	1.00	0.99	1.00
1.16	0.91	1.08	1.00	1.08	1.00	1.08	1.00
1.16	0.91	1.16	0.89	1.16	0.89	1.16	0.90
1.25	0.92	1.24	0.90	1.25	0.89	1.24	0.90
1.33	0.92	1.33	0.89	1.33	0.89	1.33	0.90
1.41	0.91	1.41	0.89	1.41	0.89	1.41	0.88
1.50	0.90	1.49	0.89	1.50	0.88	1.49	0.89
1.58	0.92	1.58	0.89	1.58	0.89	1.58	0.90
1.66	0.90	1.66	0.89	1.66	0.89	1.66	0.89
1.75	0.91	1.74	0.89	1.66	0.89	1.74	0.89
1.83	0.91	1.83	0.89	1.75	0.89	1.83	0.90
1.91	0.91	1.91	0.89	1.83	0.88	1.91	0.90
2.00	0.91	1.99	0.89	1.91	0.89	1.99	0.90
2.08	0.91	2.08	0.89	2.00	0.89	2.08	0.89
2.16	0.91	2.16	0.89	2.08	0.89	2.16	0.88
2.25	0.91	2.24	0.89	2.16	0.89	2.16	0.90
2.33	0.91	2.33	0.89	2.16	0.88	2.24	0.90
2.41	0.91	2.41	0.89	2.25	0.89	2.33	0.88
2.50	0.91	2.49	0.89	2.33	0.89	2.41	0.89
2.58	0.91	2.58	0.89	2.41	0.89	2.49	0.90
2.66	0.91	2.66	0.89	2.41	0.89	2.58	0.89
2.75	0.90	2.74	0.89	2.50	0.89	2.66	0.89
2.83	0.92	2.83	0.89	2.58	0.89	2.74	0.90

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
2.91	0.90	2.83	0.89	2.66	0.89	2.83	0.90
3.00	0.91	2.91	0.89	2.66	0.88	2.91	0.90
3.08	0.91	2.99	0.89	2.75	0.89	2.99	0.89
3.16	0.91	3.08	0.89	2.83	0.89	3.08	0.88
3.25	0.91	3.08	0.87	2.91	0.89	3.16	0.88
3.25	0.91	3.16	0.88	3.00	0.89	3.24	0.87
3.33	0.91	3.24	0.87	3.08	0.88	3.24	0.87
3.41	0.91	3.33	0.87	3.16	0.88	3.33	0.87
3.50	0.90	3.41	0.86	3.25	0.88	3.41	0.86
3.58	0.90	3.41	0.86	3.33	0.88	3.49	0.86
3.66	0.89	3.49	0.85	3.41	0.87	3.58	0.85
3.75	0.89	3.58	0.84	3.50	0.86	3.58	0.84
3.83	0.88	3.66	0.84	3.58	0.85	3.66	0.84
3.83	0.87	3.74	0.83	3.66	0.85	3.74	0.83
3.91	0.87	3.83	0.82	3.75	0.84	3.83	0.82
4.00	0.87	3.91	0.81	3.75	0.83	3.83	0.81
4.08	0.85	3.99	0.80	3.83	0.83	3.91	0.81
4.16	0.85	4.08	0.79	3.91	0.83	3.99	0.80
4.16	0.84	4.08	0.78	4.00	0.81	4.08	0.78
4.25	0.84	4.16	0.78	4.08	0.81	4.16	0.77
4.33	0.83	4.24	0.77	4.16	0.80	4.24	0.76
4.41	0.82	4.33	0.76	4.16	0.79	4.33	0.76
4.50	0.80	4.41	0.74	4.25	0.79	4.41	0.74
4.58	0.79	4.49	0.73	4.33	0.78	4.49	0.73
4.66	0.79	4.58	0.72	4.41	0.77	4.58	0.71
4.75	0.77	4.66	0.71	4.50	0.75	4.66	0.70
4.83	0.76	4.74	0.70	4.58	0.74	4.74	0.69
4.91	0.74	4.83	0.69	4.66	0.74	4.83	0.68
5.00	0.73	4.91	0.68	4.75	0.72	4.91	0.67
5.08	0.72	4.99	0.67	4.83	0.71	4.99	0.66
5.16	0.71	5.08	0.66	5.00	0.70	5.08	0.65
5.25	0.69	5.16	0.65	5.08	0.68	5.16	0.64
5.33	0.68	5.24	0.65	5.16	0.67	5.24	0.63
5.41	0.67	5.33	0.63	5.25	0.66	5.33	0.62
5.50	0.67	5.41	0.63	5.33	0.65	5.41	0.61
5.58	0.65	5.49	0.62	5.41	0.64	5.41	0.60
5.66	0.65	5.58	0.61	5.50	0.63	5.49	0.60
5.75	0.64	5.66	0.61	5.58	0.62	5.58	0.59
5.83	0.63	5.74	0.60	5.66	0.61	5.66	0.59
5.91	0.62	5.83	0.59	5.75	0.60	5.74	0.58
6.00	0.61	5.91	0.58	5.83	0.60	5.83	0.57



DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
6.08	0.60	5.99	0.58	5.83	0.59	5.91	0.57
6.16	0.59	6.08	0.57	5.91	0.59	5.99	0.56
6.16	0.59	6.16	0.56	6.00	0.58	6.16	0.55
6.25	0.59	6.24	0.56	6.08	0.57	6.24	0.54
6.33	0.58	6.33	0.55	6.16	0.56	6.33	0.54
6.41	0.58	6.41	0.55	6.25	0.56	6.41	0.54
6.58	0.57	6.49	0.55	6.33	0.55	6.49	0.53
6.66	0.56	6.58	0.54	6.41	0.54	6.58	0.52
6.75	0.56	6.66	0.54	6.50	0.54	6.66	0.52
6.83	0.55	6.74	0.53	6.58	0.53	6.74	0.52
6.91	0.55	6.83	0.52	6.66	0.53	6.83	0.51
7.00	0.54	6.91	0.52	6.75	0.52	6.91	0.51
7.08	0.54	6.99	0.52	6.83	0.52	6.99	0.50
7.16	0.53	6.99	0.51	6.91	0.52	7.08	0.50
7.25	0.53	7.08	0.51	7.00	0.51	7.16	0.50
7.33	0.53	7.16	0.51	7.08	0.50	7.24	0.50
7.41	0.52	7.33	0.50	7.16	0.50	7.33	0.49
7.50	0.52	7.41	0.50	7.25	0.50	7.41	0.49
7.58	0.51	7.49	0.50	7.33	0.49	7.49	0.48
7.66	0.51	7.58	0.49	7.41	0.49	7.58	0.48
7.75	0.51	7.66	0.49	7.50	0.49	7.66	0.48
7.83	0.51	7.74	0.49	7.58	0.48	7.74	0.48
7.91	0.50	7.83	0.49	7.66	0.48	7.83	0.48
8.00	0.50	7.91	0.48	7.75	0.48	7.91	0.47
8.08	0.50	7.99	0.48	7.83	0.47	7.99	0.47
8.16	0.50	8.08	0.48	7.91	0.47	8.08	0.47
8.25	0.49	8.16	0.48	8.00	0.47	8.16	0.47
8.33	0.49	8.24	0.47	8.08	0.46	8.24	0.46
8.41	0.49	8.32	0.47	8.16	0.46	8.33	0.46
8.50	0.49	8.41	0.47	8.25	0.46	8.41	0.46
8.58	0.48	8.49	0.47	8.33	0.46	8.49	0.46
8.66	0.48	8.58	0.47	8.41	0.45	8.58	0.46
8.75	0.48	8.66	0.46	8.50	0.45	8.66	0.45
8.83	0.48	8.74	0.46	8.58	0.45	8.74	0.45
8.91	0.48	8.83	0.46	8.66	0.45	8.83	0.45
9.00	0.48	8.83	0.46	8.75	0.45	8.91	0.45
9.08	0.47	8.91	0.46	8.83	0.44	8.99	0.45
9.16	0.47	8.99	0.46	8.91	0.44	9.08	0.44
9.25	0.47	9.07	0.46	9.00	0.44	9.16	0.44
9.33	0.47	9.24	0.46	9.08	0.44	9.24	0.44
9.41	0.47	9.32	0.45	9.16	0.43	9.33	0.44

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
9.50	0.46	9.41	0.45	9.25	0.43	9.33	0.44
9.58	0.47	9.49	0.45	9.33	0.43	9.49	0.44
9.66	0.46	9.57	0.45	9.41	0.43	9.49	0.43
9.75	0.46	9.66	0.44	9.50	0.43	9.58	0.43
9.83	0.46	9.74	0.44	9.58	0.43	9.66	0.44
9.83	0.46	9.82	0.44	9.66	0.42	9.74	0.43
9.91	0.45	9.91	0.44	9.75	0.42	9.91	0.43
10.00	0.46	9.99	0.44	9.83	0.42	9.99	0.43
10.08	0.45	10.07	0.44	9.91	0.42	10.08	0.43
10.25	0.45	10.16	0.44	10.00	0.42	10.16	0.43
10.33	0.45	10.24	0.44	10.09	0.42	10.24	0.42
10.41	0.45	10.32	0.44	10.18	0.42	10.33	0.42
10.50	0.45	10.41	0.43	10.26	0.42	10.41	0.42
10.58	0.45	10.49	0.43	10.34	0.42	10.49	0.42
10.66	0.44	10.57	0.43	10.43	0.42	10.58	0.42
10.75	0.45	10.66	0.43	10.51	0.41	10.66	0.42
10.83	0.44	10.74	0.43	10.59	0.42	10.74	0.42
10.91	0.44	10.82	0.43	10.68	0.42	10.83	0.42
11.00	0.44	10.91	0.43	10.76	0.41	10.91	0.42
11.08	0.44	10.99	0.42	10.84	0.41	10.99	0.41
11.16	0.44	11.07	0.43	10.93	0.41	11.08	0.41
11.25	0.44	11.24	0.42	11.01	0.41	11.16	0.41
11.33	0.44	11.32	0.42	11.09	0.41	11.16	0.41
11.41	0.44	11.41	0.42	11.18	0.41	11.17	0.41
11.50	0.44	11.57	0.42	11.26	0.41	11.26	0.41
11.58	0.43	11.66	0.42	11.34	0.40	11.34	0.41
11.66	0.43	11.74	0.42	11.43	0.40	11.42	0.41
11.75	0.43	11.82	0.42	11.51	0.40	11.51	0.41
11.83	0.43	11.91	0.42	11.59	0.40	11.59	0.41
11.91	0.43	11.99	0.41	11.68	0.40	11.67	0.40
12.00	0.43	12.07	0.41	11.68	0.40	11.76	0.41
12.08	0.43	12.16	0.41	11.84	0.40	11.84	0.40
12.16	0.42	12.24	0.41	11.84	0.40	11.92	0.40
12.25	0.42	12.32	0.41	12.01	0.40	12.01	0.40
12.33	0.43	12.32	0.41	12.09	0.40	12.09	0.40
12.41	0.42	12.41	0.41	12.18	0.39	12.17	0.40
12.50	0.42	12.49	0.41	12.26	0.39	12.26	0.40
12.58	0.42	12.57	0.41	12.34	0.39	12.34	0.40
12.66	0.42	12.66	0.41	12.43	0.39	12.42	0.40
12.75	0.42	12.74	0.41	12.51	0.39	12.51	0.40
12.83	0.42	12.82	0.41	12.59	0.39	12.59	0.40

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
12.91	0.42	12.91	0.41	12.68	0.39	12.67	0.40
13.00	0.42	12.99	0.40	12.76	0.39	12.76	0.40
13.08	0.42	13.07	0.41	12.84	0.39	12.84	0.39
13.16	0.42	13.16	0.40	12.93	0.39	12.92	0.39
13.25	0.42	13.24	0.40	13.01	0.39	12.92	0.39
13.33	0.42	13.32	0.40	13.09	0.39	13.01	0.39
13.41	0.42	13.41	0.40	13.18	0.39	13.09	0.39
13.50	0.41	13.49	0.40	13.26	0.39	13.17	0.39
13.50	0.41	13.57	0.40	13.34	0.39	13.26	0.39
13.58	0.41	13.66	0.40	13.43	0.39	13.34	0.39
13.66	0.41	13.74	0.40	13.51	0.39	13.42	0.39
13.81	0.41	13.82	0.40	13.59	0.39	13.51	0.39
13.89	0.41	13.91	0.40	13.68	0.38	13.59	0.39
13.98	0.41	13.99	0.40	13.76	0.38	13.67	0.39
14.06	0.41	14.07	0.40	13.84	0.38	13.76	0.39
14.14	0.41	14.16	0.40	13.93	0.38	13.84	0.38
14.23	0.41	14.24	0.40	14.01	0.38	13.92	0.39
14.31	0.41	14.32	0.39	14.09	0.38	14.01	0.38
14.39	0.41	14.32	0.39	14.18	0.38	14.09	0.38
14.48	0.41	14.41	0.39	14.26	0.38	14.17	0.38
14.56	0.41	14.49	0.39	14.34	0.38	14.26	0.38
14.64	0.41	14.57	0.39	14.43	0.38	14.34	0.38
14.73	0.41	14.66	0.39	14.51	0.38	14.42	0.38
14.81	0.41	14.74	0.39	14.59	0.37	14.51	0.38
14.89	0.40	14.82	0.39	14.68	0.38	14.59	0.38
14.98	0.40	14.91	0.39	14.76	0.38	14.67	0.38
15.06	0.40	14.99	0.39	14.84	0.38	14.76	0.38
15.14	0.40	15.07	0.39	14.93	0.38	14.84	0.38
15.23	0.40	15.16	0.39	15.01	0.38	14.92	0.38
15.23	0.40	15.24	0.39	15.09	0.38	15.01	0.38
15.31	0.40	15.32	0.39	15.18	0.38	15.09	0.38
15.39	0.40	15.41	0.39	15.26	0.38	15.17	0.37
15.48	0.40	15.49	0.39	15.26	0.37	15.34	0.38
15.56	0.40	15.57	0.39	15.34	0.37	15.42	0.38
15.64	0.40	15.66	0.39	15.43	0.37	15.51	0.37
15.73	0.40	15.74	0.39	15.51	0.37	15.59	0.37
15.81	0.40	15.82	0.39	15.59	0.37	15.67	0.37
15.89	0.40	15.91	0.38	15.68	0.37	15.76	0.37
15.98	0.39	15.99	0.38	15.76	0.37	15.84	0.37
16.06	0.40	16.07	0.38	15.84	0.37	15.92	0.37
16.14	0.40	16.16	0.38	15.93	0.37	16.01	0.37

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
16.23	0.39	16.24	0.38	16.01	0.37	16.09	0.37
16.31	0.40	16.32	0.38	16.09	0.37	16.17	0.37
16.39	0.39	16.41	0.38	16.18	0.37	16.26	0.37
16.48	0.39	16.49	0.38	16.26	0.37	16.34	0.37
16.56	0.39	16.66	0.38	16.34	0.37	16.42	0.37
16.64	0.39	16.74	0.38	16.43	0.37	16.51	0.37
16.73	0.39	16.82	0.38	16.51	0.37	16.51	0.37
16.81	0.39	16.91	0.38	16.59	0.37	16.59	0.37
16.89	0.39	16.99	0.38	16.68	0.37	16.67	0.37
16.98	0.39	17.07	0.38	16.76	0.37	16.76	0.37
17.06	0.39	17.16	0.38	16.84	0.36	16.84	0.37
17.14	0.39	17.24	0.38	16.93	0.36	16.92	0.37
17.23	0.39	17.32	0.38	17.01	0.36	17.09	0.36
17.31	0.39	17.41	0.38	17.01	0.36	17.17	0.36
17.39	0.39	17.49	0.37	17.09	0.36	17.26	0.36
17.48	0.39	17.57	0.37	17.18	0.36	17.34	0.36
17.56	0.39	17.66	0.37	17.26	0.36	17.42	0.36
17.73	0.38	17.74	0.37	17.34	0.36	17.51	0.36
17.81	0.39	17.82	0.37	17.51	0.36	17.59	0.36
17.89	0.39	17.91	0.37	17.59	0.36	17.67	0.36
17.98	0.38	17.99	0.37	17.68	0.36	17.76	0.36
18.06	0.38	18.07	0.37	17.76	0.36	17.84	0.36
18.14	0.38	18.16	0.37	17.84	0.36	17.92	0.36
18.23	0.38	18.16	0.37	17.93	0.36	18.01	0.36
18.31	0.39	18.32	0.37	18.01	0.36	18.09	0.36
18.39	0.38	18.41	0.37	18.09	0.36	18.17	0.36
18.48	0.38	18.49	0.37	18.18	0.36	18.17	0.36
18.56	0.38	18.57	0.37	18.26	0.36	18.26	0.36
18.64	0.38	18.66	0.37	18.34	0.36	18.34	0.36
18.73	0.38	18.74	0.37	18.43	0.36	18.42	0.36
18.81	0.38	18.82	0.37	18.51	0.36	18.51	0.36
18.89	0.38	18.91	0.37	18.59	0.36	18.59	0.36
18.98	0.38	18.99	0.37	18.68	0.36	18.67	0.36
19.06	0.38	19.07	0.37	18.76	0.36	18.76	0.36
19.14	0.38	19.16	0.37	18.84	0.36	18.84	0.35
19.23	0.38	19.24	0.37	18.92	0.35	18.92	0.35
19.31	0.38	19.32	0.37	19.01	0.35	19.01	0.35
19.39	0.38	19.41	0.37	19.09	0.35	19.09	0.35
19.48	0.38	19.49	0.37	19.17	0.35	19.17	0.35
19.56	0.38	19.57	0.36	19.26	0.35	19.26	0.35
19.64	0.38	19.66	0.36	19.43	0.35	19.34	0.35

DI Water		NaOH (pH 11)		2 mM SDS		0.5 mM EDTA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
19.73	0.38	19.74	0.36	19.51	0.35	19.42	0.35
19.81	0.38	19.82	0.36	19.59	0.35	19.51	0.35
19.89	0.38	19.82	0.36	19.68	0.35	19.59	0.35
19.98	0.38	19.91	0.36	19.76	0.35	19.67	0.35
20.06	0.38	20.07	0.36	19.84	0.35	19.76	0.35
20.57	0.41	20.57	0.45	19.92	0.35	19.84	0.35
20.65	0.41	20.66	0.45	20.01	0.35	19.92	0.35
20.73	0.41	20.74	0.45	20.51	0.45	20.01	0.35
20.82	0.41	20.83	0.45	20.59	0.45	20.51	0.50
20.90	0.41	20.90	0.45	20.67	0.45	20.59	0.50
				20.76	0.45	20.67	0.50
				20.84	0.45	20.76	0.50
						20.84	0.50

**Figure 4.1b**

Cleaning Solution	Cleaning Efficiency (%)
DI water	11.93
NaOH	14.22
SDS	14.84
EDTA	24.81

**Figure 4.2**

2mM SDS	Cleaning Efficiency (%)
pH 5.7	14.84
pH 11.0	17.24
0.5 mM EDTA	Cleaning Efficiency (%)
pH 4.9	24.81
pH 11.0	44.50

**Figure 4.3**

EDTA Concentration (mM)	Cleaning Efficiency (%)
0.5	44.80
1	75.39
2	98.58

**Figure 4.4**

SDS Concentration (mM)	Cleaning Efficiency (%)
2	18.38
5	24.86
8	63.43
10	71.50

**Figure 4.5a**

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.01
0.00	1.00	0.08	1.00	0.07	1.00	0.08	1.00
0.08	1.00	0.16	1.00	0.15	1.00	0.16	1.00
0.16	1.00	0.24	0.99	0.23	1.00	0.16	1.00
0.25	1.00	0.33	1.00	0.32	1.00	0.25	1.01
0.33	0.99	0.41	0.99	0.40	1.00	0.33	1.00
0.41	1.00	0.49	1.00	0.48	1.00	0.41	1.00
0.50	1.00	0.58	1.00	0.48	1.00	0.50	1.00
0.58	1.00	0.66	1.00	0.57	1.00	0.58	1.00
0.66	1.00	0.74	1.00	0.65	1.00	0.66	1.00
0.75	1.00	0.83	0.99	0.73	1.00	0.75	1.00
0.83	1.00	0.91	1.00	0.82	1.00	0.75	1.00
0.91	1.00	0.91	0.99	0.90	1.00	0.91	1.00
1.00	1.00	0.99	1.00	0.98	1.00	1.00	1.00
1.08	1.00	1.08	0.88	1.07	0.89	1.08	0.90
1.16	0.88	1.16	0.88	1.15	0.89	1.08	0.90
1.16	0.88	1.24	0.88	1.15	0.89	1.25	0.90
1.25	0.88	1.33	0.88	1.23	0.89	1.33	0.90
1.33	0.88	1.41	0.88	1.32	0.89	1.33	0.90
1.41	0.88	1.49	0.88	1.40	0.89	1.41	0.90
1.41	0.88	1.58	0.88	1.48	0.89	1.50	0.90
1.50	0.88	1.66	0.88	1.57	0.89	1.58	0.90
1.58	0.88	1.66	0.88	1.65	0.89	1.66	0.90

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
1.66	0.88	1.74	0.88	1.65	0.89	1.75	0.91
1.66	0.88	1.83	0.88	1.73	0.89	1.75	0.90
1.75	0.88	1.91	0.88	1.82	0.89	1.83	0.90
1.83	0.88	1.99	0.88	1.90	0.89	1.91	0.90
1.91	0.88	2.08	0.88	1.98	0.89	2.00	0.90
2.00	0.88	2.16	0.88	2.07	0.89	2.08	0.90
2.00	0.88	2.16	0.88	2.15	0.89	2.16	0.90
2.08	0.88	2.24	0.88	2.23	0.89	2.25	0.90
2.16	0.88	2.33	0.88	2.32	0.89	2.33	0.90
2.25	0.88	2.41	0.88	2.40	0.89	2.41	0.90
2.33	0.88	2.49	0.88	2.48	0.89	2.50	0.90
2.41	0.88	2.58	0.88	2.57	0.88	2.58	0.90
2.50	0.88	2.66	0.88	2.65	0.89	2.66	0.91
2.58	0.88	2.74	0.88	2.73	0.89	2.75	0.90
2.66	0.88	2.74	0.88	2.82	0.89	2.83	0.90
2.75	0.88	2.83	0.88	2.82	0.89	2.91	0.90
2.83	0.88	2.91	0.88	2.90	0.88	3.00	0.90
2.91	0.88	2.99	0.88	2.98	0.88	3.08	0.89
3.00	0.88	3.08	0.87	3.07	0.87	3.08	0.89
3.08	0.87	3.16	0.88	3.15	0.87	3.16	0.89
3.16	0.87	3.24	0.88	3.23	0.86	3.25	0.89
3.25	0.86	3.24	0.87	3.32	0.85	3.33	0.89
3.33	0.85	3.33	0.87	3.40	0.85	3.41	0.89
3.41	0.84	3.41	0.87	3.48	0.85	3.50	0.89
3.50	0.83	3.49	0.85	3.57	0.85	3.50	0.89
3.58	0.82	3.58	0.85	3.65	0.85	3.58	0.89
3.58	0.82	3.66	0.84	3.73	0.84	3.66	0.89
3.66	0.82	3.74	0.83	3.82	0.83	3.75	0.89
3.75	0.80	3.83	0.83	3.82	0.83	3.83	0.89
3.83	0.80	3.91	0.82	3.90	0.83	3.83	0.89
3.83	0.78	3.99	0.81	3.98	0.83	3.91	0.89
3.91	0.78	4.08	0.80	4.07	0.83	4.00	0.89
4.00	0.78	4.16	0.80	4.15	0.82	4.08	0.89
4.08	0.76	4.24	0.79	4.15	0.82	4.08	0.89
4.08	0.75	4.33	0.78	4.23	0.82	4.16	0.89
4.16	0.76	4.41	0.78	4.32	0.82	4.25	0.89
4.25	0.74	4.41	0.77	4.40	0.82	4.33	0.89
4.33	0.73	4.49	0.77	4.48	0.81	4.41	0.88
4.41	0.72	4.58	0.76	4.57	0.80	4.41	0.88
4.50	0.71	4.66	0.75	4.57	0.80	4.58	0.88
4.58	0.70	4.74	0.75	4.65	0.81	4.66	0.89
4.66	0.69	4.83	0.73	4.73	0.80	4.66	0.88

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
4.75	0.68	4.91	0.73	4.82	0.80	4.75	0.89
4.83	0.67	4.99	0.72	4.90	0.79	4.83	0.89
4.91	0.65	5.08	0.71	4.98	0.78	4.91	0.89
5.00	0.64	5.16	0.70	5.07	0.78	5.00	0.88
5.08	0.64	5.24	0.69	5.15	0.78	5.08	0.88
5.16	0.62	5.33	0.68	5.23	0.77	5.16	0.88
5.25	0.61	5.41	0.68	5.32	0.76	5.16	0.89
5.33	0.60	5.49	0.67	5.40	0.77	5.25	0.88
5.41	0.59	5.58	0.66	5.48	0.76	5.33	0.89
5.50	0.59	5.66	0.65	5.57	0.75	5.41	0.88
5.58	0.58	5.74	0.65	5.65	0.75	5.50	0.88
5.66	0.57	5.83	0.64	5.73	0.74	5.50	0.88
5.75	0.57	5.91	0.63	5.73	0.74	5.58	0.88
5.83	0.55	5.99	0.62	5.82	0.74	5.66	0.89
5.91	0.55	6.08	0.62	5.90	0.73	5.75	0.89
6.00	0.54	6.16	0.61	5.98	0.73	5.83	0.89
6.08	0.54	6.24	0.60	6.07	0.72	5.83	0.88
6.16	0.53	6.33	0.59	6.15	0.72	5.91	0.88
6.25	0.53	6.41	0.59	6.23	0.71	6.08	0.88
6.33	0.52	6.49	0.58	6.32	0.71	6.08	0.88
6.41	0.52	6.58	0.58	6.40	0.70	6.25	0.88
6.50	0.51	6.66	0.57	6.48	0.70	6.33	0.88
6.58	0.51	6.74	0.57	6.57	0.69	6.41	0.88
6.66	0.50	6.83	0.56	6.65	0.69	6.50	0.88
6.75	0.50	6.91	0.56	6.73	0.69	6.58	0.88
6.83	0.49	6.99	0.55	6.82	0.68	6.66	0.88
6.91	0.49	7.08	0.55	6.90	0.68	6.75	0.88
7.00	0.49	7.16	0.54	6.98	0.67	6.83	0.88
7.08	0.48	7.24	0.53	7.07	0.67	6.91	0.88
7.16	0.48	7.33	0.53	7.15	0.67	7.00	0.88
7.25	0.48	7.41	0.53	7.23	0.66	7.08	0.88
7.33	0.47	7.49	0.52	7.32	0.66	7.08	0.87
7.41	0.46	7.58	0.51	7.40	0.65	7.16	0.88
7.50	0.46	7.66	0.51	7.48	0.65	7.25	0.87
7.58	0.46	7.74	0.51	7.57	0.65	7.33	0.87
7.66	0.46	7.83	0.50	7.65	0.64	7.33	0.86
7.75	0.46	7.91	0.50	7.73	0.64	7.41	0.86
7.83	0.45	7.99	0.50	7.82	0.63	7.50	0.86
7.91	0.45	8.07	0.49	7.90	0.63	7.50	0.86
8.00	0.45	8.16	0.49	7.98	0.63	7.58	0.86
8.08	0.45	8.24	0.49	8.07	0.63	7.66	0.87
8.16	0.44	8.32	0.49	8.15	0.62	7.75	0.87



SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.25	0.44	8.41	0.48	8.23	0.62	7.83	0.87
8.33	0.44	8.49	0.48	8.32	0.62	7.91	0.87
8.41	0.44	8.57	0.48	8.40	0.61	8.00	0.87
8.50	0.43	8.66	0.47	8.57	0.61	8.08	0.87
8.58	0.43	8.74	0.47	8.65	0.60	8.16	0.87
8.66	0.43	8.82	0.47	8.73	0.60	8.25	0.87
8.75	0.43	8.91	0.47	8.82	0.59	8.33	0.87
8.83	0.43	8.99	0.46	8.90	0.59	8.41	0.86
8.91	0.42	9.07	0.46	8.98	0.59	8.50	0.85
9.00	0.42	9.16	0.46	9.07	0.59	8.58	0.85
9.08	0.42	9.24	0.46	9.15	0.59	8.66	0.86
9.16	0.42	9.32	0.45	9.23	0.58	8.75	0.86
9.25	0.42	9.41	0.45	9.32	0.58	8.83	0.86
9.33	0.42	9.49	0.45	9.40	0.58	8.83	0.86
9.41	0.41	9.57	0.45	9.48	0.57	8.91	0.86
9.50	0.41	9.66	0.44	9.53	0.57	9.00	0.86
9.58	0.41	9.74	0.44	9.61	0.57	9.08	0.86
9.66	0.41	9.82	0.44	9.70	0.56	9.16	0.86
9.75	0.41	9.91	0.44	9.70	0.56	9.16	0.85
9.83	0.41	9.99	0.44	9.78	0.56	9.25	0.85
10.00	0.41	10.07	0.44	9.86	0.56	9.33	0.85
10.08	0.40	10.16	0.43	9.95	0.56	9.41	0.85
10.16	0.40	10.24	0.43	10.03	0.56	9.50	0.85
10.25	0.40	10.32	0.43	10.11	0.56	9.50	0.85
10.33	0.40	10.39	0.43	10.20	0.55	9.58	0.85
10.41	0.40	10.47	0.43	10.28	0.55	9.66	0.85
10.50	0.40	10.55	0.43	10.36	0.55	9.75	0.85
10.58	0.40	10.64	0.42	10.45	0.55	9.83	0.84
10.66	0.40	10.72	0.43	10.53	0.54	9.91	0.84
10.75	0.40	10.80	0.42	10.61	0.54	10.00	0.84
10.83	0.39	10.89	0.42	10.70	0.54	10.08	0.85
10.91	0.39	10.97	0.42	10.78	0.54	10.16	0.84
10.99	0.39	11.05	0.42	10.86	0.54	10.25	0.84
11.08	0.39	11.14	0.42	10.95	0.53	10.33	0.84
11.16	0.39	11.22	0.41	11.03	0.53	10.41	0.84
11.24	0.39	11.30	0.41	11.11	0.53	10.50	0.84
11.33	0.39	11.39	0.41	11.20	0.53	10.66	0.84
11.33	0.39	11.47	0.41	11.28	0.53	10.66	0.84
11.41	0.39	11.55	0.41	11.36	0.52	10.75	0.84
11.49	0.39	11.64	0.41	11.45	0.52	10.83	0.84
11.58	0.38	11.72	0.41	11.53	0.52	10.91	0.83
11.66	0.38	11.80	0.41	11.61	0.52	11.00	0.83

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.74	0.38	11.89	0.41	11.70	0.51	11.08	0.83
11.83	0.38	11.97	0.41	11.78	0.51	11.16	0.82
11.96	0.38	12.05	0.40	11.86	0.52	11.25	0.82
12.04	0.38	12.14	0.40	11.95	0.51	11.33	0.82
12.13	0.38	12.22	0.40	12.11	0.51	11.33	0.83
12.21	0.38	12.30	0.40	12.20	0.50	11.48	0.83
12.29	0.38	12.39	0.40	12.28	0.51	11.56	0.83
12.38	0.38	12.47	0.40	12.36	0.50	11.65	0.83
12.46	0.37	12.55	0.40	12.45	0.50	11.73	0.83
12.54	0.38	12.64	0.40	12.53	0.50	11.81	0.83
12.63	0.38	12.72	0.40	12.61	0.50	11.90	0.83
12.71	0.37	12.80	0.39	12.70	0.50	12.06	0.82
12.79	0.37	12.89	0.39	12.78	0.49	12.06	0.82
12.88	0.37	12.97	0.39	12.86	0.49	12.15	0.82
12.96	0.37	13.05	0.39	12.95	0.49	12.23	0.82
13.04	0.37	13.14	0.39	13.03	0.49	12.31	0.82
13.13	0.37	13.22	0.39	13.11	0.49	12.40	0.82
13.21	0.37	13.30	0.39	13.20	0.48	12.48	0.82
13.29	0.37	13.39	0.39	13.28	0.48	12.56	0.82
13.29	0.37	13.47	0.38	13.36	0.48	12.65	0.82
13.38	0.36	13.55	0.38	13.45	0.48	12.73	0.81
13.46	0.37	13.64	0.38	13.53	0.48	12.81	0.81
13.54	0.36	13.72	0.38	13.61	0.48	12.90	0.81
13.63	0.36	13.80	0.38	13.70	0.48	12.90	0.81
13.71	0.36	13.89	0.38	13.70	0.48	12.98	0.81
13.88	0.36	13.97	0.38	13.78	0.48	13.06	0.81
13.96	0.36	14.05	0.38	13.86	0.48	13.15	0.81
14.04	0.36	14.14	0.38	13.95	0.47	13.15	0.81
14.13	0.36	14.22	0.38	14.11	0.48	13.23	0.81
14.21	0.36	14.30	0.38	14.20	0.47	13.31	0.81
14.29	0.36	14.39	0.37	14.28	0.47	13.40	0.81
14.38	0.36	14.47	0.37	14.36	0.47	13.48	0.81
14.46	0.36	14.55	0.37	14.45	0.47	13.56	0.80
14.54	0.36	14.64	0.37	14.53	0.47	13.65	0.80
14.63	0.36	14.72	0.37	14.61	0.46	13.73	0.80
14.71	0.36	14.80	0.37	14.70	0.46	13.73	0.80
14.79	0.36	14.89	0.37	14.78	0.46	13.81	0.79
14.88	0.36	14.97	0.37	14.86	0.46	13.90	0.80
14.96	0.35	15.05	0.37	14.95	0.46	13.98	0.79
14.96	0.36	15.14	0.37	15.03	0.46	14.15	0.79
15.04	0.36	15.22	0.37	15.11	0.46	14.15	0.79
15.13	0.35	15.30	0.37	15.20	0.46	14.31	0.79

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
15.21	0.35	15.39	0.37	15.20	0.46	14.40	0.79
15.29	0.35	15.47	0.37	15.28	0.46	14.48	0.79
15.38	0.35	15.55	0.37	15.36	0.45	14.56	0.79
15.46	0.35	15.64	0.37	15.53	0.45	14.56	0.79
15.54	0.35	15.72	0.37	15.61	0.45	14.65	0.79
15.63	0.35	15.80	0.37	15.70	0.45	14.73	0.78
15.71	0.35	15.89	0.36	15.78	0.45	14.81	0.79
15.79	0.35	15.97	0.36	15.86	0.45	14.90	0.78
15.88	0.35	16.05	0.36	15.95	0.45	14.90	0.78
15.96	0.35	16.14	0.36	16.03	0.45	14.98	0.78
16.04	0.35	16.22	0.36	16.11	0.45	15.06	0.78
16.13	0.35	16.30	0.36	16.20	0.44	15.15	0.78
16.21	0.35	16.39	0.36	16.28	0.44	15.23	0.78
16.29	0.35	16.47	0.36	16.36	0.44	15.31	0.78
16.38	0.35	16.55	0.36	16.45	0.44	15.40	0.77
16.46	0.35	16.64	0.36	16.53	0.44	15.48	0.77
16.54	0.34	16.72	0.36	16.61	0.44	15.56	0.77
16.63	0.34	16.80	0.36	16.70	0.44	15.65	0.76
16.71	0.34	16.89	0.36	16.78	0.44	15.73	0.76
16.79	0.34	16.97	0.36	16.86	0.44	15.81	0.76
16.88	0.34	17.05	0.36	16.95	0.44	15.90	0.76
16.96	0.34	17.14	0.35	17.03	0.44	15.98	0.76
17.04	0.34	17.22	0.35	17.11	0.43	16.06	0.76
17.04	0.34	17.30	0.35	17.20	0.43	16.15	0.76
17.13	0.34	17.39	0.35	17.28	0.43	16.15	0.76
17.21	0.34	17.47	0.35	17.36	0.43	16.23	0.76
17.29	0.34	17.55	0.35	17.45	0.43	16.31	0.76
17.46	0.34	17.64	0.35	17.53	0.43	16.40	0.75
17.54	0.34	17.72	0.35	17.61	0.43	16.48	0.75
17.63	0.34	17.80	0.35	17.70	0.43	16.56	0.76
17.71	0.34	17.89	0.35	17.78	0.43	16.56	0.76
17.79	0.34	17.97	0.35	17.86	0.43	16.65	0.76
17.88	0.34	18.05	0.35	17.95	0.43	16.73	0.76
17.96	0.34	18.14	0.35	18.03	0.43	16.81	0.76
18.04	0.34	18.22	0.35	18.11	0.43	16.90	0.75
18.13	0.34	18.30	0.35	18.20	0.43	16.98	0.75
18.21	0.34	18.39	0.35	18.28	0.43	17.06	0.75
18.29	0.33	18.47	0.35	18.36	0.42	17.15	0.74
18.38	0.33	18.55	0.35	18.45	0.42	17.23	0.74
18.46	0.33	18.64	0.34	18.53	0.42	17.31	0.74
18.54	0.33	18.72	0.34	18.61	0.42	17.39	0.74
18.63	0.33	18.80	0.34	18.70	0.42	17.48	0.74

SA only		SA:SRNOM = 7:3		SA:SRNOM = 3:7		SRNOM only	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
18.71	0.33	18.89	0.34	18.78	0.42	17.56	0.74
18.71	0.33	18.97	0.34	18.86	0.42	17.64	0.74
18.79	0.33	19.05	0.34	18.95	0.42	17.73	0.74
18.88	0.33	19.14	0.34	19.03	0.42	17.81	0.73
18.96	0.33	19.22	0.34	19.11	0.42	17.81	0.74
19.04	0.33	19.30	0.34	19.20	0.41	17.98	0.73
19.13	0.33	19.39	0.34	19.28	0.42	18.06	0.73
19.29	0.33	19.47	0.34	19.36	0.41	18.14	0.73
19.29	0.33	19.55	0.34	19.45	0.41	18.15	0.73
19.38	0.33	19.64	0.34	19.53	0.42	18.23	0.73
19.46	0.33	19.72	0.34	19.61	0.41	18.31	0.73
19.54	0.33	19.80	0.34	19.70	0.41	18.39	0.72
19.63	0.33	19.89	0.34	19.78	0.41	18.40	0.73
19.71	0.33	19.97	0.34	20.44	1.01	18.48	0.73
19.88	0.33	20.05	0.34	20.51	1.01	18.56	0.73
19.96	0.33	20.73	0.75	20.60	1.01	18.56	0.72
20.04	0.33	20.81	0.76	20.68	1.01	18.64	0.72
20.62	0.63	20.90	0.75	20.76	1.01	18.73	0.72
20.70	0.63	20.98	0.76			18.81	0.72
20.78	0.62	21.06	0.76			18.89	0.71
20.86	0.63					18.98	0.71
20.95	0.63					19.06	0.71
						19.14	0.71
						19.23	0.71
						19.31	0.71
						19.39	0.70
						19.48	0.70
						19.56	0.70
						19.64	0.70
						19.73	0.69
						19.81	0.69
						19.89	0.69
						19.98	0.69
						20.55	1.03
						20.63	1.03
						20.71	1.02
						20.80	1.03
						20.80	1.03

**Figure 4.5b**

<b>Organic Foulant Composition</b>	<b>Cleaning Efficiency (%)</b>
SA only	44.80
SA:SRNOM=7:3	63.46
SA:SRNOM=3:7	102.08
SRNOM only	108.27

**Figure 4.6a**

<b>15 min (NaOH)</b>		<b>60 min (NaOH)</b>		<b>15 min (EDTA)</b>		<b>60 min (EDTA)</b>	
<b>Time (h)</b>	<b>Normalized Flux</b>	<b>Time (h)</b>	<b>Normalized Flux</b>	<b>Time (h)</b>	<b>Normalized Flux</b>	<b>Time (h)</b>	<b>Normalized Flux</b>
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.00	1.00	0.00	1.00	0.08	1.00
0.16	1.00	0.08	1.00	0.08	1.00	0.16	1.00
0.24	1.00	0.16	1.00	0.16	1.00	0.24	1.00
0.33	1.00	0.25	1.00	0.25	1.00	0.33	1.00
0.41	1.00	0.33	0.99	0.33	0.99	0.41	1.00
0.49	1.00	0.41	1.00	0.41	1.00	0.49	1.00
0.49	1.00	0.50	1.00	0.50	1.00	0.58	1.00
0.58	1.00	0.58	1.00	0.58	1.00	0.58	0.99
0.66	1.00	0.66	1.00	0.66	1.00	0.66	1.00
0.74	1.00	0.75	1.00	0.75	1.00	0.74	1.00
0.83	1.00	0.83	1.00	0.83	1.00	0.83	1.00
0.83	1.00	0.91	1.00	0.91	1.00	0.91	1.00
0.91	1.00	1.00	1.00	1.00	1.00	0.99	1.00
0.99	1.00	1.08	1.00	1.08	1.00	1.08	0.87
1.08	1.00	1.16	0.88	1.16	0.88	1.16	0.88
1.16	0.89	1.16	0.88	1.16	0.88	1.16	0.87
1.24	0.90	1.25	0.88	1.25	0.88	1.24	0.88
1.33	0.89	1.33	0.88	1.33	0.88	1.33	0.87
1.41	0.89	1.41	0.88	1.41	0.88	1.41	0.88
1.49	0.89	1.41	0.88	1.41	0.88	1.49	0.87
1.58	0.89	1.50	0.88	1.50	0.88	1.58	0.88
1.66	0.89	1.58	0.88	1.58	0.88	1.66	0.87
1.74	0.89	1.66	0.88	1.66	0.88	1.74	0.88
1.83	0.89	1.66	0.88	1.66	0.88	1.74	0.87
1.91	0.89	1.75	0.88	1.75	0.88	1.83	0.88
1.99	0.89	1.83	0.88	1.83	0.88	1.91	0.88
2.08	0.89	1.91	0.88	1.91	0.88	1.99	0.87
2.16	0.89	2.00	0.88	2.00	0.88	2.08	0.87
2.24	0.89	2.00	0.88	2.00	0.88	2.16	0.88
2.33	0.89	2.08	0.88	2.08	0.88	2.24	0.87

15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
2.41	0.89	2.16	0.88	2.16	0.88	2.33	0.88
2.49	0.89	2.25	0.88	2.25	0.88	2.41	0.87
2.58	0.89	2.33	0.88	2.33	0.88	2.49	0.88
2.66	0.89	2.41	0.88	2.41	0.88	2.58	0.87
2.74	0.89	2.50	0.88	2.50	0.88	2.66	0.88
2.83	0.89	2.58	0.88	2.58	0.88	2.74	0.87
2.83	0.89	2.66	0.88	2.66	0.88	2.83	0.88
2.91	0.89	2.75	0.88	2.75	0.88	2.91	0.87
2.99	0.89	2.83	0.88	2.83	0.88	2.99	0.88
3.08	0.89	2.91	0.88	2.91	0.88	3.08	0.88
3.08	0.87	3.00	0.88	3.00	0.88	3.16	0.87
3.16	0.88	3.08	0.87	3.08	0.87	3.24	0.87
3.24	0.87	3.16	0.87	3.16	0.87	3.33	0.87
3.33	0.87	3.25	0.86	3.25	0.86	3.41	0.86
3.41	0.86	3.33	0.85	3.33	0.85	3.41	0.86
3.41	0.86	3.41	0.84	3.41	0.84	3.49	0.86
3.49	0.85	3.50	0.83	3.50	0.83	3.58	0.85
3.58	0.84	3.58	0.82	3.58	0.83	3.66	0.85
3.66	0.84	3.58	0.82	3.58	0.82	3.74	0.84
3.74	0.83	3.66	0.82	3.66	0.82	3.83	0.83
3.83	0.82	3.75	0.80	3.75	0.80	3.91	0.82
3.91	0.81	3.83	0.80	3.83	0.80	3.99	0.81
3.99	0.80	3.83	0.78	3.83	0.79	3.99	0.80
4.08	0.79	3.91	0.78	3.91	0.79	4.08	0.81
4.08	0.78	4.00	0.78	4.00	0.78	4.16	0.79
4.16	0.78	4.08	0.76	4.08	0.76	4.24	0.78
4.24	0.77	4.08	0.75	4.08	0.75	4.33	0.77
4.33	0.76	4.16	0.76	4.16	0.76	4.41	0.76
4.41	0.74	4.25	0.74	4.25	0.75	4.49	0.75
4.49	0.73	4.33	0.73	4.33	0.73	4.58	0.73
4.58	0.72	4.41	0.72	4.41	0.72	4.58	0.73
4.66	0.71	4.50	0.71	4.50	0.71	4.66	0.73
4.74	0.70	4.58	0.70	4.58	0.70	4.74	0.72
4.83	0.69	4.66	0.69	4.66	0.69	4.83	0.70
4.91	0.68	4.75	0.68	4.75	0.68	4.91	0.69
4.99	0.67	4.83	0.67	4.83	0.67	4.99	0.68
5.08	0.66	4.91	0.65	4.91	0.65	5.08	0.67
5.16	0.65	5.00	0.64	5.00	0.65	5.16	0.66
5.24	0.65	5.08	0.64	5.08	0.64	5.24	0.65
5.33	0.63	5.16	0.62	5.16	0.62	5.33	0.64
5.41	0.63	5.25	0.61	5.25	0.62	5.41	0.63

15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.49	0.62	5.33	0.60	5.33	0.60	5.49	0.63
5.58	0.61	5.41	0.59	5.41	0.59	5.58	0.62
5.66	0.61	5.50	0.59	5.50	0.59	5.66	0.60
5.74	0.60	5.58	0.58	5.58	0.58	5.74	0.60
5.83	0.59	5.66	0.57	5.66	0.57	5.83	0.59
5.91	0.58	5.75	0.57	5.75	0.57	5.91	0.58
5.99	0.58	5.83	0.55	5.83	0.56	5.99	0.58
6.08	0.57	5.91	0.55	5.91	0.55	6.08	0.58
6.16	0.56	6.00	0.54	6.00	0.54	6.16	0.56
6.24	0.56	6.08	0.54	6.08	0.54	6.24	0.56
6.33	0.55	6.16	0.53	6.16	0.53	6.33	0.56
6.41	0.55	6.25	0.53	6.25	0.53	6.41	0.55
6.49	0.55	6.33	0.52	6.33	0.52	6.49	0.55
6.58	0.54	6.41	0.52	6.41	0.52	6.58	0.54
6.66	0.54	6.50	0.51	6.50	0.51	6.66	0.53
6.74	0.53	6.58	0.51	6.58	0.51	6.74	0.53
6.83	0.52	6.66	0.50	6.66	0.50	6.83	0.52
6.91	0.52	6.75	0.50	6.75	0.50	6.91	0.52
6.99	0.52	6.83	0.49	6.83	0.50	6.99	0.52
6.99	0.51	6.91	0.49	6.91	0.49	7.08	0.51
7.08	0.51	7.00	0.49	7.00	0.49	7.16	0.51
7.16	0.51	7.08	0.48	7.08	0.48	7.24	0.51
7.33	0.50	7.16	0.48	7.16	0.48	7.33	0.50
7.41	0.50	7.25	0.48	7.25	0.48	7.41	0.50
7.49	0.50	7.33	0.47	7.33	0.47	7.49	0.49
7.58	0.49	7.41	0.46	7.41	0.47	7.58	0.49
7.66	0.49	7.50	0.46	7.50	0.46	7.66	0.49
7.74	0.49	7.58	0.46	7.58	0.46	7.74	0.48
7.83	0.49	7.66	0.46	7.66	0.46	7.83	0.48
7.91	0.48	7.75	0.46	7.75	0.46	7.91	0.48
7.99	0.48	7.83	0.45	7.83	0.45	7.99	0.48
8.08	0.48	7.91	0.45	7.91	0.45	8.08	0.48
8.16	0.48	8.00	0.45	8.00	0.45	8.16	0.47
8.24	0.47	8.08	0.45	8.08	0.45	8.24	0.47
8.32	0.47	8.16	0.44	8.16	0.44	8.33	0.47
8.41	0.47	8.25	0.44	8.25	0.44	8.41	0.47
8.49	0.47	8.33	0.44	8.33	0.44	8.49	0.46
8.58	0.47	8.41	0.44	8.41	0.44	8.58	0.46
8.66	0.46	8.50	0.43	8.50	0.43	8.66	0.46
8.74	0.46	8.58	0.43	8.58	0.43	8.74	0.46
8.83	0.46	8.66	0.43	8.66	0.43	8.83	0.46

15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.83	0.46	8.75	0.43	8.75	0.43	8.91	0.45
8.91	0.46	8.83	0.43	8.83	0.43	8.99	0.45
8.99	0.46	8.91	0.42	8.91	0.43	9.08	0.45
9.07	0.46	9.00	0.42	9.00	0.43	9.16	0.45
9.24	0.46	9.08	0.42	9.08	0.42	9.24	0.45
9.32	0.45	9.16	0.42	9.16	0.42	9.33	0.45
9.41	0.45	9.25	0.42	9.25	0.42	9.41	0.44
9.49	0.45	9.33	0.42	9.33	0.42	9.49	0.44
9.57	0.45	9.41	0.41	9.41	0.42	9.58	0.44
9.66	0.44	9.50	0.41	9.50	0.41	9.66	0.44
9.74	0.44	9.58	0.41	9.58	0.41	9.74	0.44
9.82	0.44	9.66	0.41	9.66	0.41	9.83	0.44
9.91	0.44	9.75	0.41	9.75	0.41	9.91	0.43
9.99	0.44	9.83	0.41	9.83	0.41	9.99	0.43
10.07	0.44	10.00	0.41	10.00	0.41	10.08	0.43
10.16	0.44	10.08	0.40	10.08	0.40	10.16	0.43
10.24	0.44	10.16	0.40	10.16	0.40	10.24	0.43
10.32	0.44	10.25	0.40	10.25	0.40	10.33	0.43
10.41	0.43	10.33	0.40	10.33	0.40	10.41	0.43
10.49	0.43	10.41	0.40	10.41	0.40	10.49	0.43
10.57	0.43	10.50	0.40	10.50	0.40	10.58	0.43
10.66	0.43	10.58	0.40	10.58	0.40	10.66	0.42
10.74	0.43	10.66	0.40	10.66	0.40	10.74	0.42
10.82	0.43	10.75	0.40	10.75	0.40	10.83	0.42
10.91	0.43	10.83	0.39	10.83	0.39	10.91	0.42
10.99	0.42	10.91	0.39	10.91	0.39	10.99	0.42
11.07	0.43	10.99	0.39	11.00	0.39	11.07	0.42
11.24	0.42	11.08	0.39	11.08	0.39	11.16	0.42
11.32	0.42	11.16	0.39	11.16	0.39	11.24	0.41
11.41	0.42	11.24	0.39	11.25	0.39	11.32	0.42
11.57	0.42	11.33	0.39	11.33	0.39	11.41	0.41
11.66	0.42	11.33	0.39	11.33	0.39	11.49	0.41
11.74	0.42	11.41	0.39	11.41	0.39	11.57	0.41
11.82	0.42	11.49	0.39	11.50	0.39	11.66	0.41
11.91	0.42	11.58	0.38	11.58	0.38	11.74	0.41
11.99	0.41	11.66	0.38	11.66	0.38	11.82	0.41
12.07	0.41	11.74	0.38	11.75	0.38	11.91	0.41
12.16	0.41	11.83	0.38	11.83	0.38	11.99	0.41
12.24	0.41	11.96	0.38	11.96	0.38	12.07	0.41
12.32	0.41	12.04	0.38	12.04	0.38	12.16	0.41
12.32	0.41	12.13	0.38	12.13	0.38	12.24	0.41



15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
12.41	0.41	12.21	0.38	12.21	0.38	12.32	0.41
12.49	0.41	12.29	0.38	12.29	0.38	12.41	0.40
12.57	0.41	12.38	0.38	12.38	0.38	12.49	0.40
12.66	0.41	12.46	0.37	12.46	0.37	12.57	0.40
12.74	0.41	12.54	0.38	12.54	0.38	12.66	0.40
12.82	0.41	12.63	0.38	12.63	0.38	12.74	0.40
12.91	0.41	12.71	0.37	12.71	0.37	12.82	0.40
12.99	0.40	12.79	0.37	12.79	0.37	12.91	0.40
13.07	0.41	12.88	0.37	12.88	0.37	12.99	0.40
13.16	0.40	12.96	0.37	12.96	0.37	13.07	0.40
13.24	0.40	13.04	0.37	13.04	0.37	13.16	0.39
13.32	0.40	13.13	0.37	13.13	0.37	13.24	0.39
13.41	0.40	13.21	0.37	13.21	0.37	13.32	0.39
13.49	0.40	13.29	0.37	13.29	0.37	13.41	0.39
13.57	0.40	13.29	0.37	13.29	0.37	13.57	0.39
13.66	0.40	13.38	0.36	13.38	0.36	13.66	0.39
13.74	0.40	13.46	0.37	13.46	0.37	13.74	0.39
13.82	0.40	13.54	0.36	13.54	0.36	13.82	0.39
13.91	0.40	13.63	0.36	13.63	0.36	13.91	0.39
13.99	0.40	13.71	0.36	13.71	0.36	13.99	0.39
14.07	0.40	13.88	0.36	13.88	0.36	14.07	0.39
14.16	0.40	13.96	0.36	13.96	0.36	14.16	0.39
14.24	0.40	14.04	0.36	14.04	0.36	14.24	0.39
14.32	0.39	14.13	0.36	14.13	0.36	14.32	0.39
14.32	0.39	14.21	0.36	14.21	0.36	14.41	0.39
14.41	0.39	14.29	0.36	14.29	0.36	14.49	0.39
14.49	0.39	14.38	0.36	14.38	0.36	14.57	0.39
14.57	0.39	14.46	0.36	14.46	0.36	14.66	0.39
14.66	0.39	14.54	0.36	14.54	0.36	14.74	0.39
14.74	0.39	14.63	0.36	14.63	0.36	14.82	0.39
14.82	0.39	14.71	0.36	14.71	0.36	14.91	0.38
14.91	0.39	14.79	0.36	14.79	0.36	14.99	0.38
14.99	0.39	14.88	0.36	14.88	0.36	15.07	0.38
15.07	0.39	14.96	0.35	14.96	0.35	15.16	0.38
15.16	0.39	14.96	0.36	14.96	0.36	15.24	0.38
15.24	0.39	15.04	0.36	15.04	0.36	15.32	0.38
15.32	0.39	15.13	0.35	15.13	0.35	15.41	0.38
15.41	0.39	15.21	0.35	15.21	0.35	15.49	0.38
15.49	0.39	15.29	0.35	15.29	0.35	15.57	0.38
15.57	0.39	15.38	0.35	15.38	0.35	15.66	0.38
15.66	0.39	15.46	0.35	15.46	0.35	15.74	0.38

15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
15.74	0.39	15.54	0.35	15.54	0.35	15.82	0.38
15.82	0.39	15.63	0.35	15.63	0.35	15.91	0.38
15.91	0.38	15.71	0.35	15.71	0.35	15.99	0.38
15.99	0.38	15.79	0.35	15.79	0.35	16.07	0.37
16.07	0.38	15.88	0.35	15.88	0.35	16.16	0.37
16.16	0.38	15.96	0.35	15.96	0.35	16.24	0.37
16.24	0.38	16.04	0.35	16.04	0.35	16.32	0.37
16.32	0.38	16.13	0.35	16.13	0.35	16.41	0.37
16.41	0.38	16.21	0.35	16.21	0.35	16.49	0.37
16.49	0.38	16.29	0.35	16.29	0.35	16.57	0.37
16.66	0.38	16.38	0.35	16.38	0.35	16.66	0.37
16.74	0.38	16.46	0.35	16.46	0.35	16.74	0.37
16.82	0.38	16.54	0.34	16.54	0.34	16.82	0.37
16.91	0.38	16.63	0.34	16.63	0.34	16.91	0.37
16.99	0.38	16.71	0.34	16.71	0.34	16.99	0.37
17.07	0.38	16.79	0.34	16.79	0.34	17.07	0.37
17.16	0.38	16.88	0.34	16.88	0.34	17.16	0.37
17.24	0.38	16.96	0.34	16.96	0.34	17.24	0.37
17.32	0.38	17.04	0.34	17.04	0.34	17.32	0.37
17.41	0.38	17.04	0.34	17.04	0.34	17.41	0.37
17.49	0.37	17.13	0.34	17.13	0.34	17.49	0.37
17.57	0.37	17.21	0.34	17.21	0.34	17.57	0.37
17.66	0.37	17.29	0.34	17.29	0.34	17.66	0.37
17.74	0.37	17.46	0.34	17.46	0.34	17.74	0.37
17.82	0.37	17.54	0.34	17.54	0.34	17.82	0.37
17.91	0.37	17.63	0.34	17.63	0.34	17.91	0.36
17.99	0.37	17.71	0.34	17.71	0.34	17.99	0.36
18.07	0.37	17.79	0.34	17.79	0.34	18.07	0.36
18.16	0.37	17.88	0.34	17.88	0.34	18.16	0.36
18.16	0.37	17.96	0.34	17.96	0.34	18.24	0.36
18.32	0.37	18.04	0.34	18.04	0.34	18.32	0.36
18.41	0.37	18.13	0.34	18.13	0.34	18.41	0.36
18.49	0.37	18.21	0.34	18.21	0.34	18.49	0.36
18.57	0.37	18.29	0.33	18.29	0.33	18.57	0.36
18.66	0.37	18.38	0.33	18.38	0.33	18.66	0.36
18.74	0.37	18.46	0.33	18.46	0.33	18.74	0.36
18.82	0.37	18.54	0.33	18.54	0.33	18.82	0.36
18.91	0.37	18.63	0.33	18.63	0.33	18.91	0.36
18.99	0.37	18.71	0.33	18.71	0.33	18.99	0.36
19.07	0.37	18.71	0.33	18.71	0.33	19.07	0.36
19.16	0.37	18.79	0.33	18.79	0.33	19.16	0.36

15 min (NaOH)		60 min (NaOH)		15 min (EDTA)		60 min (EDTA)	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
19.24	0.37	18.88	0.33	18.88	0.33	19.24	0.36
19.32	0.37	18.96	0.33	18.96	0.33	19.32	0.36
19.41	0.37	19.04	0.33	19.04	0.33	19.41	0.36
19.49	0.37	19.13	0.33	19.13	0.33	19.49	0.36
19.57	0.36	19.29	0.33	19.29	0.33	19.57	0.36
19.66	0.36	19.29	0.33	19.29	0.33	19.66	0.36
19.74	0.36	19.38	0.33	19.38	0.33	19.74	0.36
19.82	0.36	19.46	0.33	19.46	0.33	19.82	0.36
19.82	0.36	19.54	0.33	19.54	0.33	19.91	0.36
19.91	0.36	19.63	0.33	19.63	0.33	19.99	0.36
20.07	0.36	19.71	0.33	19.71	0.33	20.07	0.36
20.57	0.45	19.88	0.33	19.88	0.33	22.19	0.90
20.66	0.45	19.96	0.33	19.96	0.33	22.27	0.90
20.74	0.45	20.04	0.33	20.04	0.33	22.36	0.90
20.83	0.45	22.12	0.46	20.62	0.63	22.44	0.90
20.90	0.45	22.20	0.46	20.70	0.63	22.52	0.90
		22.28	0.46	20.78	0.63		
		22.37	0.46	20.87	0.63		
		22.45	0.46	20.95	0.63		

**Figure 4.6b**

NaOH	
Cleaning Time (min)	Cleaning Efficiency (%)
15	14.22
60	15.49

EDTA	
Cleaning Time (min)	Cleaning Efficiency (%)
15	44.80
60	84.59

**Figure 4.7**

2 mM SDS	
Cleaning Time (min)	Cleaning Efficiency (%)
15	18.38
60	30.62

10 mM SDS	
Cleaning Time (min)	Cleaning Efficiency (%)
15	71.50
60	98.37

**Figure 4.8**

0.5 mM EDTA (pH 11)	
Crossflow velocity (cm/s)	Cleaning Efficiency (%)
10.7	43.78
21.4	45.64
42.8	44.79

2.0 mM EDTA (pH 11)	
Crossflow velocity (cm/s)	Cleaning Efficiency (%)
10.7	71.63
21.4	88.59
42.8	98.58

**Figure 4.9**

Temperature (deg C)	Cleaning Efficiency (%)
20	44.8
40	94.01

**Figure 4.10a**

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
2.08	4.22	-0.61	3.69	2.39	4.31	1.63	6.01
1.79	4.16	-0.33	3.64	1.81	4.24	1.68	5.96
1.21	4.08	-0.25	3.59	1.67	4.18	1.81	5.91
0.85	4.01	-0.14	3.54	1.58	4.12	1.76	5.85
0.51	3.95	-0.19	3.48	1.59	4.06	1.68	5.79
0.53	3.89	-0.12	3.42	1.68	4.01	1.54	5.73
0.67	3.84	-0.06	3.37	1.75	3.95	1.52	5.67
1.19	3.80	-0.03	3.32	1.51	3.89	1.36	5.61
1.82	3.76	-0.02	3.26	1.64	3.84	1.35	5.55
2.62	3.73	0.10	3.21	1.55	3.78	1.21	5.49
2.70	3.68	0.26	3.16	1.46	3.72	0.95	5.43
2.69	3.62	0.34	3.10	1.17	3.66	0.88	5.37
2.25	3.55	0.46	3.05	0.76	3.59	0.86	5.32
1.59	3.47	0.63	3.00	0.33	3.52	1.10	5.27
0.81	3.40	0.59	2.94	0.24	3.46	1.17	5.21
0.17	3.32	0.56	2.88	0.37	3.41	1.27	5.16
-0.25	3.25	0.39	2.82	0.63	3.36	1.24	5.10
-0.71	3.18	0.44	2.77	0.31	3.29	1.07	5.04

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
-0.61	3.13	0.37	2.71	0.28	3.24	0.98	4.98
-0.21	3.08	0.29	2.65	0.05	3.17	0.89	4.92
0.44	3.05	0.23	2.59	0.06	3.12	0.75	4.86
0.88	3.00	0.31	2.54	-0.13	3.06	0.67	4.80
1.30	2.96	0.27	2.48	-0.25	3.00	0.46	4.74
1.08	2.90	0.32	2.43	-0.51	2.93	0.34	4.68
0.42	2.82	0.49	2.38	-0.67	2.87	0.20	4.62
-0.18	2.75	0.56	2.32	-0.97	2.80	0.20	4.56
-0.96	2.67	0.46	2.26	-0.92	2.75	0.13	4.51
-1.40	2.60	0.39	2.20	-1.14	2.69	0.23	4.45
-1.68	2.53	0.28	2.14	-1.07	2.63	0.06	4.39
-1.77	2.47	0.30	2.09	-1.04	2.58	-0.01	4.33
-1.89	2.41	0.10	2.03	-0.62	2.53	-0.25	4.27
-1.45	2.37	0.07	1.97	-0.54	2.48	-0.56	4.20
-0.87	2.33	0.02	1.91	-0.27	2.43	-0.68	4.14
-0.32	2.29	0.02	1.85	0.08	2.39	-0.89	4.08
-0.14	2.24	-0.05	1.80	-0.18	2.32	-1.10	4.02
-0.44	2.18	-0.07	1.74	-0.49	2.26	-1.20	3.96
-0.92	2.11	0.01	1.69	-0.87	2.19	-1.34	3.90
-1.46	2.03	0.02	1.63	-1.03	2.13	-1.11	3.85
-1.86	1.97	-0.02	1.57	-1.00	2.07	-0.69	3.81
-2.34	1.90	-0.14	1.51	-0.76	2.02	-0.39	3.76
-2.44	1.84	-0.26	1.45	-0.50	1.98	-0.46	3.70
-2.49	1.78	-0.54	1.39	-0.27	1.93	-0.67	3.64
-2.43	1.72	-0.64	1.33	-0.20	1.87	-0.88	3.58
-2.31	1.67	-0.89	1.27	-0.16	1.82	-1.10	3.51
-1.93	1.63	-0.91	1.21	-0.39	1.75	-1.29	3.45
-1.27	1.59	-0.98	1.15	-0.58	1.69	-1.34	3.39
-0.76	1.55	-1.07	1.09	-0.89	1.63	-1.14	3.34
-0.76	1.49	-1.08	1.03	-1.07	1.56	-0.81	3.30
-0.96	1.43	-1.04	0.98	-1.16	1.51	-0.49	3.25
-1.14	1.37	-0.86	0.93	-1.05	1.45	-0.42	3.20
-1.44	1.30	-0.87	0.87	-1.08	1.40	-0.35	3.14
-1.60	1.24	-0.93	0.81	-0.91	1.34	-0.20	3.09
-1.67	1.18	-1.01	0.76	-0.88	1.29	-0.18	3.04
-1.41	1.14	-1.13	0.70	-0.82	1.24	-0.34	2.97
-1.01	1.09	-1.23	0.64	-0.82	1.18	-0.56	2.91
-0.97	1.04	-1.29	0.58	-0.87	1.12	-0.75	2.85
-0.56	0.99	-1.32	0.52	-0.96	1.06	-0.87	2.79
-0.04	0.95	-1.16	0.47	-1.08	1.00	-0.85	2.73
0.18	0.90	-1.06	0.42	-1.14	0.94	-0.60	2.69

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
0.28	0.85	-0.94	0.36	-1.06	0.89	-0.48	2.63
0.34	0.79	-0.62	0.32	-1.03	0.84	-0.36	2.58
0.05	0.73	-0.45	0.27	-0.90	0.78	-0.36	2.52
0.07	0.67	-0.36	0.21	-1.01	0.72	-0.31	2.47
0.37	0.63	-0.04	0.17	-0.98	0.67	-0.29	2.41
0.67	0.58	0.26	0.12	-0.87	0.62	-0.22	2.36
0.96	0.53	0.49	0.07	-0.72	0.56	-0.28	2.30
1.22	0.48	0.81	0.02	-0.62	0.51	-0.53	2.24
1.94	0.45	1.22	-0.01	-0.36	0.46	-0.90	2.17
1.99	0.42	1.76	-0.04	-0.33	0.41	-0.98	2.11
1.69	0.39	2.27	-0.07	-0.28	0.35	-1.07	2.05
1.22	0.36	2.84	-0.10	-0.30	0.29	-0.79	2.00
1.94	0.31	3.59	-0.12	0.05	0.25	-0.74	1.95
1.99	0.27	3.98	-0.15	0.10	0.19	-0.52	1.90
1.94	0.23	4.50	-0.18	0.54	0.15	-0.49	1.85
1.99	0.19	5.01	-0.21	0.68	0.10	-0.44	1.79
1.94	0.17	5.71	-0.23	0.65	0.04	-0.49	1.73
1.99	0.16	6.27	-0.26	0.80	-0.01	-0.47	1.68
1.94	0.14	6.96	-0.29	0.85	-0.06	-0.71	1.61
1.99	0.12	7.93	-0.31	0.99	-0.12	-0.90	1.55
1.94	0.10	8.69	-0.33	1.06	-0.17	-1.14	1.49
1.99	0.08	9.45	-0.35	1.23	-0.22	-1.23	1.43
1.94	0.07	10.65	-0.37	1.16	-0.28	-1.09	1.38
1.99	0.06	13.07	-0.36	1.38	-0.33	-0.99	1.32
3.03	0.05	21.66	-0.21	1.70	-0.38	-0.68	1.28
3.03	0.03	31.12	-0.06	1.90	-0.43	-0.58	1.22
3.24	0.02	33.36	-0.05	2.55	-0.46	-0.48	1.17
4.58	0.00	35.29	-0.05	3.02	-0.50	-0.43	1.12
5.75	-0.02	37.27	-0.04	3.36	-0.55	-0.36	1.06
10.15	-0.05	39.05	-0.05	3.77	-0.59	-0.43	1.00
15.02	-0.01	40.80	-0.05	4.30	-0.64	-0.70	0.94
20.61	0.00	42.66	-0.05	4.60	-0.68	-0.88	0.88
28.73	0.01	45.02	-0.04	4.96	-0.73	-0.95	0.82
34.20	0.00	47.67	-0.02	5.43	-0.77	-0.90	0.76
36.29	0.00	49.39	-0.03	5.98	-0.81	-0.90	0.71
37.97	0.00	51.32	-0.02	6.72	-0.84	-0.79	0.66
39.72	0.00	53.09	-0.03	7.30	-0.88	-0.69	0.60
41.62	0.00	55.78	-0.01	7.76	-0.92	-0.52	0.55
43.25	0.00	58.10	0.00	8.38	-0.96	-0.23	0.50
45.08	0.00	59.92	0.00	9.16	-1.00	-0.06	0.45
47.12	0.01	61.96	0.00	9.71	-1.04	0.15	0.40

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
48.79	0.00	64.01	0.01	10.32	-1.07	0.20	0.35
50.81	0.00	65.43	0.00	10.98	-1.11	0.15	0.29
52.60	0.00	67.65	0.00	11.80	-1.14	-0.10	0.23
54.53	0.00	69.55	0.00	12.75	-1.17	0.04	0.17
56.45	0.00	71.26	0.00	13.64	-1.20	0.04	0.12
58.64	0.01	73.20	0.00	14.73	-1.22	0.11	0.06
60.04	0.00	75.13	0.00	17.14	-1.21	0.30	0.01
61.89	0.00	77.06	0.01	32.39	-0.80	0.45	-0.04
63.72	0.00	78.95	0.01	60.69	-0.01	0.67	-0.09
65.30	-0.01	80.68	0.00	62.81	0.00	0.90	-0.14
67.57	0.00	82.39	0.00	64.67	0.00	0.96	-0.19
69.36	0.00	84.61	0.01	66.50	-0.01	1.10	-0.24
71.26	0.00	86.29	0.00	68.32	-0.01	1.17	-0.30
73.17	0.00	88.25	0.00	70.27	-0.01	1.07	-0.36
75.01	0.00	90.06	0.00	72.32	0.00	1.24	-0.41
77.12	0.01	92.02	0.00	74.17	0.00	1.30	-0.46
78.97	0.01	94.04	0.01	75.87	-0.01	1.51	-0.51
80.85	0.01	95.72	0.00	78.02	0.00	1.70	-0.56
82.70	0.00	97.50	0.00	79.62	-0.01	1.89	-0.61
84.51	0.00	99.19	0.00	81.69	0.00	2.21	-0.66
86.51	0.01	101.21	0.00	83.54	0.00	2.76	-0.70
88.20	0.00	103.21	0.00	85.61	0.01	3.19	-0.74
89.92	0.00	105.03	0.00	87.41	0.00	3.50	-0.79
91.93	0.00	106.96	0.00	89.28	0.00	3.67	-0.84
93.86	0.00	108.95	0.01	91.42	0.01	3.84	-0.89
95.74	0.00	110.78	0.01	93.35	0.01	4.31	-0.93
97.73	0.01	112.62	0.00	95.09	0.01	4.79	-0.98
99.61	0.01	114.77	0.01	97.08	0.01	4.91	-1.03
101.34	0.00	116.35	0.00	98.84	0.01	5.27	-1.07
103.57	0.01	118.15	0.00	100.97	0.02	5.76	-1.12
105.39	0.01	120.01	0.00	102.72	0.01	6.30	-1.16
106.98	0.00	121.87	0.00	104.71	0.02	6.79	-1.20
108.84	0.00	123.98	0.01	106.47	0.01	7.46	-1.23
110.77	0.00	125.69	0.00	108.33	0.01	8.36	-1.26
112.70	0.01	127.71	0.01	110.30	0.01	9.04	-1.30
114.46	0.00	129.24	0.00	111.92	0.01	9.61	-1.34
116.33	0.00	131.24	0.00	113.74	0.01	10.26	-1.37
118.32	0.01	133.24	0.00	115.94	0.02	11.17	-1.40
120.24	0.01	134.95	0.00	117.64	0.01	12.17	-1.43
122.17	0.01	136.94	0.00	119.34	0.01	13.06	-1.46
123.97	0.01	138.61	0.00	121.46	0.01	14.32	-1.48

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
125.84	0.01	140.54	0.00	123.45	0.02	16.72	-1.46
127.75	0.01	142.40	0.00	125.17	0.01	19.82	-1.42
129.71	0.01	144.14	-0.01	127.01	0.01	32.96	-1.09
131.40	0.00	146.16	0.00	128.88	0.01	54.12	-0.51
133.40	0.01	148.31	0.01	130.62	0.01	57.87	-0.45
135.37	0.01	149.95	0.00	132.84	0.02	59.59	-0.46
137.12	0.01	152.01	0.01	134.62	0.01	61.25	-0.46
139.20	0.01	153.70	0.00	136.28	0.01	62.71	-0.48
140.81	0.01	155.64	0.00	138.16	0.01	64.26	-0.48
142.70	0.01	157.50	0.00	140.11	0.01	65.89	-0.49
144.70	0.01	159.50	0.01	142.12	0.01	67.34	-0.51
146.55	0.01	161.16	0.00	143.93	0.01	68.49	-0.53
148.45	0.01	163.20	0.00	145.92	0.02	69.54	-0.55
150.16	0.00	164.93	0.00	147.72	0.01	71.43	-0.55
152.17	0.01	166.75	0.00	149.48	0.01	74.47	-0.52
154.05	0.01	168.80	0.00	151.28	0.01	79.55	-0.42
155.70	0.00	170.68	0.00	153.26	0.01	85.14	-0.31
157.90	0.01	172.35	0.00	154.64	0.00	91.98	-0.16
159.51	0.00	174.32	0.00	156.80	0.00	94.52	-0.14
161.44	0.01	176.45	0.01	158.54	0.00	96.64	-0.13
163.58	0.01	178.30	0.01	160.49	0.00	98.61	-0.13
165.29	0.01	180.05	0.00	162.42	0.00	100.07	-0.14
166.99	0.00	181.89	0.00	164.26	0.00	101.86	-0.14
168.84	0.00	183.78	0.00	165.92	0.00	103.39	-0.15
170.41	-0.01	185.65	0.00	168.03	0.00	105.26	-0.15
172.73	0.01	187.47	0.00	169.73	0.00	107.58	-0.14
174.28	0.00	189.42	0.00	171.62	0.00	111.12	-0.09
176.18	0.00	191.26	0.00	173.44	0.00	112.50	-0.11
178.21	0.00	193.01	0.00	175.46	0.00	114.08	-0.11
179.88	0.00	194.95	0.00	176.95	-0.01	115.38	-0.13
181.74	0.00	196.74	0.00	179.10	0.00	117.14	-0.14
183.59	0.00	198.68	0.00	180.84	-0.01	121.31	-0.07
185.60	0.00	200.65	0.00	182.81	0.00	125.56	0.00
187.38	0.00	202.34	0.00	184.55	-0.01	127.38	0.00
189.47	0.00	204.55	0.01	186.38	-0.01	129.15	0.00
191.27	0.00	206.27	0.00	188.10	-0.01	131.06	0.00
192.82	-0.01	208.20	0.00	190.07	-0.01	133.05	0.00
194.73	-0.01	210.00	0.00	191.95	-0.01	134.89	0.00
196.57	-0.01	211.77	0.00	193.82	-0.01	136.76	0.00
198.58	0.00	213.53	0.00	195.48	-0.02	138.50	0.00
200.50	0.00	215.48	0.00	197.49	-0.01	140.44	0.00



10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
202.39	0.00	217.48	0.00	199.38	-0.01	142.41	0.00
204.12	-0.01	219.01	-0.01	201.05	-0.02	144.20	0.00
205.98	-0.01	221.16	0.00	203.08	-0.01	146.07	0.00
207.83	-0.01	222.76	-0.01	205.01	-0.01	148.19	0.01
209.91	0.00	224.73	-0.01	206.71	-0.02	149.90	0.00
211.44	-0.01	226.77	0.00	208.68	-0.01	151.69	0.00
213.55	0.00	228.70	0.00	210.51	-0.01	153.58	0.00
215.37	-0.01	230.50	0.00	212.37	-0.02	155.54	0.00
217.20	-0.01	232.32	0.00	214.13	-0.02	157.28	0.00
219.15	-0.01	234.37	0.00	216.19	-0.01	159.22	0.00
221.01	-0.01	235.86	-0.01	218.09	-0.01	161.23	0.01
222.66	-0.01	237.92	0.00	219.67	-0.02	162.93	0.00
224.50	-0.01	239.94	0.00	221.64	-0.02	164.70	0.00
226.61	-0.01	241.69	0.00	223.48	-0.02	166.64	0.00
228.40	-0.01	243.44	-0.01	225.53	-0.01	168.24	-0.01
230.26	-0.01	245.40	0.00	227.17	-0.02	170.37	0.00
232.21	-0.01	247.26	0.00	229.20	-0.02	172.16	0.00
234.23	0.00	249.00	-0.01	230.99	-0.02	174.11	0.00
235.90	-0.01	250.79	-0.01	233.06	-0.01	175.94	0.00
237.91	0.00	252.68	-0.01	234.88	-0.01	177.93	0.00
239.81	0.00	254.59	-0.01	236.81	-0.01	179.68	0.00
241.52	-0.01	256.50	-0.01	238.60	-0.02	181.59	0.00
243.67	0.00	258.34	-0.01	240.61	-0.01	183.60	0.00
245.41	0.00	260.09	-0.01	242.30	-0.02	185.35	0.00
247.06	-0.01	262.14	-0.01	244.13	-0.02	187.47	0.01
249.04	-0.01	263.82	-0.01	246.29	-0.01	189.03	0.00
251.01	-0.01	265.89	-0.01	248.17	-0.01	190.75	-0.01
253.08	0.00	267.66	-0.01	250.04	-0.01	192.83	0.00
254.94	0.00	269.73	0.00	251.97	-0.01	194.66	0.00
256.55	-0.01	271.66	0.00	253.79	-0.01	196.66	0.00
258.37	-0.01	273.26	-0.01	255.72	-0.01	198.55	0.00
260.16	-0.01	275.12	-0.01	257.42	-0.01	200.59	0.01
261.99	-0.01	277.12	-0.01	259.39	-0.01	202.24	0.00
264.17	0.00	279.03	-0.01	261.44	0.00	204.17	0.00
265.86	-0.01	280.82	-0.01	263.35	0.00	205.82	-0.01
267.90	-0.01	282.74	-0.01	265.38	0.00	207.88	0.00
269.65	-0.01	284.55	-0.01	267.16	0.00	209.85	0.00
271.84	0.00	286.40	-0.01	269.17	0.00	211.86	0.01
273.38	-0.01	288.28	-0.01	270.83	0.00	213.51	0.00
275.49	0.00	290.24	-0.01	272.84	0.00	215.25	0.00
277.38	0.00	292.23	0.00	274.58	0.00	217.19	0.00

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
279.04	-0.01	293.97	-0.01	276.49	0.00	219.12	0.00
281.21	0.00	295.92	-0.01	278.44	0.00	220.94	0.00
282.89	-0.01	297.67	-0.01	280.49	0.00	223.00	0.00
284.74	-0.01	299.51	-0.01	281.98	-0.01	224.58	0.00
286.65	0.00	301.31	-0.01	283.98	0.00	226.47	0.00
288.47	-0.01	303.22	-0.01	286.22	0.01	228.65	0.01
290.44	0.00	305.22	-0.01	287.73	0.00	230.34	0.00
291.98	-0.01	307.08	-0.01	289.70	0.00	232.21	0.00
293.95	-0.01	309.39	0.00	291.63	0.00	234.05	0.00
295.88	-0.01	310.88	-0.01	293.37	0.00	235.78	-0.01
297.92	0.00	312.63	-0.01	295.55	0.01	237.88	0.00
299.73	-0.01	314.70	0.00	297.12	0.00	239.65	0.00
301.49	-0.01	316.63	0.00	299.00	0.00	241.28	-0.01
303.58	0.00	318.40	-0.01	300.83	0.00	243.22	-0.01
305.27	-0.01	320.27	-0.01	302.88	0.00	245.08	-0.01
307.25	-0.01	322.15	-0.01	304.89	0.01	247.07	0.00
308.96	-0.01	324.15	0.00	306.53	0.00	248.89	-0.01
310.84	-0.01	326.08	0.00	308.52	0.00	250.61	-0.01
312.73	-0.01	328.01	0.00	310.24	0.00	252.54	-0.01
314.78	0.00	329.95	0.00	312.25	0.00	254.37	-0.01
316.28	-0.02	331.87	0.00	314.20	0.00	256.32	-0.01
318.67	0.00	333.72	0.00	316.17	0.01	258.24	-0.01
320.26	-0.01	335.34	0.00	318.10	0.01	260.06	-0.01
322.06	-0.01	337.43	0.00	319.94	0.01	261.93	-0.01
323.87	-0.01	339.20	0.00	321.54	0.00	263.89	-0.01
325.97	-0.01	341.02	0.00	323.53	0.00	265.68	-0.01
327.86	-0.01	342.97	0.00	325.62	0.01	267.40	-0.01
329.67	-0.01	345.06	0.01	327.45	0.01	269.24	-0.01
331.49	-0.01	346.90	0.01	329.06	0.00	271.13	-0.01
333.30	-0.01	348.77	0.01	331.08	0.00	273.40	0.00
335.04	-0.01	350.46	0.00	332.94	0.00	275.08	-0.01
336.81	-0.02	352.36	0.00	334.83	0.00	277.18	0.00
339.12	0.00	354.58	0.01	336.69	0.00	278.81	-0.01
341.06	0.00	356.36	0.01	338.85	0.01	280.65	-0.01
342.75	-0.01	358.16	0.01	340.55	0.01	282.69	0.00
344.76	0.00	360.15	0.01	342.39	0.01	284.50	-0.01
346.62	0.00	361.88	0.00	344.20	0.00	286.37	-0.01
348.15	-0.01	363.71	0.00	346.10	0.00	288.33	0.00
350.03	-0.01	365.48	0.00	347.93	0.00	290.08	-0.01
352.24	0.00	367.52	0.01	349.59	0.00	292.12	0.00
353.87	-0.01	369.19	0.00	351.93	0.01	294.07	0.00

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
355.87	-0.01	371.16	0.00	353.48	0.00	295.80	0.00
357.80	-0.01	372.92	0.00	355.54	0.01	297.48	-0.01
359.68	-0.01	374.94	0.00	357.55	0.01	299.89	0.01
361.51	-0.01	376.89	0.01	359.23	0.01	301.49	0.00
363.48	0.00	378.65	0.00	361.07	0.00	303.55	0.00
365.34	-0.01	380.69	0.01	362.87	0.00	305.11	-0.01
367.23	0.00	382.53	0.01	364.99	0.01	307.12	0.00
369.34	0.00	384.31	0.00	367.02	0.01	309.34	0.01
371.02	0.00	386.06	0.00	368.62	0.01	311.04	0.00
373.23	0.01	388.01	0.00	370.50	0.01	312.78	0.00
374.91	0.00	390.01	0.01	372.49	0.01	314.58	0.00
376.92	0.00	391.85	0.00	374.30	0.01	316.64	0.00
378.89	0.01	393.63	0.00	376.21	0.01	318.59	0.00
380.93	0.01	395.69	0.01	378.15	0.01	320.32	0.00
382.56	0.01	397.44	0.00	379.90	0.01	322.16	0.00
384.62	0.01	399.24	0.00	381.84	0.01	324.00	0.00
386.51	0.01	401.24	0.01	383.75	0.01	325.94	0.00
388.34	0.01	403.15	0.01	385.64	0.01	327.85	0.00
390.28	0.01	404.84	0.00	387.40	0.01	329.63	0.00
392.21	0.01	406.96	0.01	389.43	0.01	331.56	0.00
394.12	0.02	408.63	0.00	391.03	0.00	333.57	0.00
395.90	0.01	410.50	0.00	393.08	0.01	335.68	0.01
397.99	0.02	412.32	0.00	394.76	0.00	337.25	0.00
399.71	0.01	414.34	0.00	396.71	0.01	339.08	0.00
401.42	0.01	416.14	0.00	398.41	0.00	340.91	0.00
403.41	0.01	418.13	0.01	400.37	0.00	343.09	0.01
405.29	0.01	419.88	0.00	402.49	0.01	344.70	0.00
407.26	0.02	421.95	0.01	404.04	0.00	346.80	0.01
409.02	0.01	423.70	0.00	406.08	0.01	348.74	0.01
411.41	0.03	425.61	0.01	407.78	0.00	350.32	0.00
412.90	0.02	427.41	0.00	409.66	0.00	352.33	0.01
414.76	0.02	429.36	0.01	411.49	0.00	354.15	0.00
416.55	0.01	431.12	0.00	413.25	0.00	356.18	0.01
418.38	0.01	432.81	0.00	415.41	0.00	358.02	0.01
420.38	0.02	434.93	0.00	417.15	0.00	359.81	0.00
422.05	0.01	436.95	0.01	419.03	0.00	361.90	0.01
423.97	0.01	438.58	0.00	420.83	0.00	363.67	0.01
425.80	0.01	440.48	0.00	422.83	0.00	365.58	0.01
427.71	0.01	442.30	0.00	424.44	-0.01	367.42	0.01
429.31	0.00	444.39	0.01	426.45	0.00	369.46	0.01
431.38	0.01	446.06	0.00	428.38	0.00	371.15	0.01

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
433.12	0.00	448.03	0.00	430.18	0.00	373.07	0.01
435.21	0.01	449.94	0.00	431.74	-0.01	374.96	0.01
437.30	0.02	451.80	0.00	433.79	-0.01	376.68	0.00
438.84	0.01	453.47	0.00	435.53	-0.01	378.72	0.01
440.67	0.01	455.49	0.00	437.46	-0.01	380.48	0.01
442.23	0.00	457.46	0.00	439.49	0.00	382.35	0.01
444.38	0.00	459.09	0.00	441.40	0.00	384.39	0.01
446.11	0.00	460.91	0.00	443.10	-0.01	386.06	0.01
447.95	0.00	462.93	0.00	445.00	-0.01	388.19	0.01
450.06	0.01	464.85	0.00	446.98	0.00	389.98	0.01
451.84	0.00	467.10	0.01	448.63	-0.01	391.75	0.01
453.81	0.01	468.59	0.00	450.75	0.00	393.64	0.01
455.68	0.01	470.49	0.00	452.43	-0.01	395.55	0.01
457.42	0.00	472.38	0.00	454.27	-0.01	397.28	0.00
459.17	0.00	474.09	0.00	456.18	-0.01	399.05	0.00
461.56	0.01	476.06	0.00	457.92	-0.01	401.11	0.01
462.92	0.00	477.97	0.00	459.97	-0.01	402.80	0.00
464.97	0.00	479.77	0.00	461.84	-0.01	404.72	0.00
466.83	0.00	481.77	0.00	463.56	-0.01	406.66	0.00
468.44	0.00	483.57	0.00	465.30	-0.02	408.28	0.00
470.51	0.00	485.25	0.00	467.08	-0.02	410.22	0.00
472.19	0.00	487.14	0.00	469.22	-0.01	412.20	0.00
474.20	0.00	489.09	0.00	471.27	-0.01	413.95	0.00
475.76	-0.01	490.91	0.00	473.01	-0.01	415.89	0.00
477.93	0.00	493.04	0.00	474.94	-0.01	417.69	0.00
479.74	0.00	494.67	0.00	476.78	-0.01	419.74	0.00
481.40	-0.01	496.57	0.00	478.65	-0.01	421.47	0.00
483.43	0.00	498.62	0.00	480.35	-0.02	423.33	0.00
485.15	-0.01	500.22	-0.01	482.07	-0.02	425.29	0.00
487.14	-0.01	501.99	-0.01	484.06	-0.02	426.96	0.00
488.97	-0.01	503.94	-0.01	486.20	-0.01	429.10	0.00
490.91	0.00	505.96	0.00	488.17	-0.01	430.86	0.00
492.72	-0.01	507.74	0.00	489.80	-0.01	432.51	-0.01
494.42	-0.01	509.69	0.00	491.67	-0.01	434.53	0.00
496.53	0.00	511.40	-0.01	493.68	-0.01	436.44	0.00
498.54	0.00	513.23	-0.01	495.71	0.00	438.12	-0.01
500.36	0.00	515.20	-0.01	497.72	0.00	440.24	0.00
502.03	-0.01	517.15	0.00	499.51	0.00	441.90	-0.01
504.00	-0.01	518.89	-0.01	501.37	0.00	443.91	0.00
506.26	0.01	520.95	0.00	503.40	0.00	445.77	0.00
507.81	0.00	522.68	-0.01	505.16	0.00	447.63	0.00

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
509.63	-0.01	524.57	-0.01	506.95	0.00	449.69	0.00
511.44	-0.01	526.43	-0.01	508.69	-0.01	451.54	0.00
513.21	-0.01	528.25	-0.01	510.84	0.00	453.23	0.00
515.37	0.00	530.25	0.00	512.54	-0.01	454.86	-0.01
517.22	0.00	532.13	0.00	514.70	0.00	457.06	0.00
519.12	0.00	534.09	0.00	516.46	0.00	458.76	-0.01
520.87	-0.01	535.80	-0.01	518.35	0.00	460.84	0.00
522.92	0.00	537.53	-0.01	520.01	-0.01	462.52	-0.01
524.70	0.00	539.59	0.00	522.14	0.00	464.34	-0.01
526.51	-0.01	541.39	-0.01	524.07	0.00	466.39	0.00
528.41	0.00	543.34	0.00	526.12	0.01	468.12	-0.01
530.04	-0.01	545.30	0.00	527.66	0.00	470.05	-0.01
532.31	0.00	547.09	0.00	529.71	0.00	471.85	-0.01
534.13	0.00	549.01	0.00	531.41	0.00	473.83	0.00
536.00	0.00	550.91	0.00	533.36	0.00	475.56	-0.01
537.93	0.00	552.93	0.00	535.35	0.00	477.44	-0.01
539.61	-0.01	554.71	0.00	537.44	0.01	479.36	-0.01
541.62	0.00	556.51	0.00	539.31	0.01	481.23	-0.01
543.48	0.00	558.26	-0.01	540.90	0.00	483.12	-0.01
545.53	0.00	560.37	0.00	543.15	0.01	485.27	0.00
547.22	0.00	562.21	0.00	544.89	0.01	486.96	0.00
549.22	0.00	564.01	0.00	546.54	0.00	488.59	-0.01
551.19	0.00	566.03	0.00	548.62	0.01	490.69	0.00
552.87	0.00	567.70	0.00	550.21	0.00	492.44	-0.01
554.92	0.00	569.73	0.00	552.31	0.01	494.48	0.00
556.77	0.00	571.64	0.00	553.96	0.00	496.54	0.00
558.39	0.00	573.66	0.01	556.00	0.01	498.25	0.00
560.46	0.00	575.33	0.00	557.78	0.00	499.96	-0.01
562.49	0.01	577.50	0.01	559.52	0.00	501.96	0.00
563.93	-0.01	579.13	0.00	561.63	0.01	503.80	0.00
566.08	0.00	580.97	0.00	563.60	0.01	505.69	0.00
567.84	0.00	583.10	0.01	565.41	0.01	507.46	-0.01
569.67	0.00	584.81	0.00	567.21	0.00	509.33	-0.01
571.84	0.01	586.60	0.00	569.24	0.01	511.15	-0.01
573.46	0.00	588.58	0.00	571.13	0.01	513.45	0.00
575.49	0.00	590.47	0.00	572.72	0.00	514.93	-0.01
577.29	0.00	592.15	0.00	574.76	0.01	517.08	0.00
579.28	0.00	594.02	0.00	576.83	0.01	518.81	0.00
581.01	0.00	596.08	0.00	578.59	0.01	520.53	-0.01
583.15	0.01	597.81	0.00	580.35	0.00	522.56	0.00
584.64	0.00	600.08	0.01	582.22	0.00	524.48	0.00

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
586.62	0.00	601.81	0.01	584.33	0.01	526.22	-0.01
588.33	-0.01	603.65	0.01	586.10	0.01	528.14	-0.01
590.34	0.00	605.60	0.01	587.86	0.01	530.17	0.00
592.56	0.01	607.27	0.00	589.72	0.00	532.03	0.00
593.89	-0.01	609.29	0.01	591.67	0.01	533.99	0.00
596.02	0.00	611.07	0.00	593.52	0.01	535.69	0.00
597.98	0.00	612.71	0.00	595.49	0.01	537.40	-0.01
600.19	0.01	614.86	0.00	597.35	0.01	539.38	-0.01
601.77	0.00	616.61	0.00	598.97	0.00	541.34	0.00
603.68	0.00	618.44	0.00	601.00	0.01	543.30	0.00
605.45	0.00	620.56	0.01	602.78	0.00	544.91	-0.01
607.23	0.00	622.34	0.00	604.59	0.00	547.01	0.00
609.00	0.00	624.34	0.01	606.70	0.01	548.97	0.00
611.04	0.00	626.05	0.00	608.53	0.01	551.03	0.01
613.07	0.01	627.85	0.00	610.52	0.01	552.82	0.00
615.02	0.01	629.93	0.01	612.44	0.01	554.48	0.00
616.80	0.00	631.47	0.00	614.21	0.01	556.56	0.00
618.57	0.00	633.46	0.00	616.13	0.01	558.42	0.00
620.32	0.00	635.41	0.00	618.00	0.01	560.50	0.01
622.04	-0.01	637.30	0.00	619.89	0.01	562.08	0.00
624.15	0.00	639.01	0.00	621.73	0.01	564.26	0.01
626.19	0.01	641.23	0.01	623.47	0.01	565.98	0.01
628.06	0.01	643.07	0.01	625.46	0.01	568.06	0.01
630.15	0.01	644.80	0.00	627.31	0.01	569.71	0.00
631.57	0.00	646.71	0.00	629.24	0.01	571.51	0.00
633.58	0.00	648.69	0.01	630.83	0.00	573.49	0.01
635.48	0.00	650.42	0.00	632.84	0.01	575.36	0.01
637.41	0.00	652.24	0.00	634.69	0.00	577.35	0.01
639.36	0.01	654.30	0.01	636.59	0.01	579.14	0.01
641.40	0.01	655.99	0.00	638.46	0.01	581.05	0.01
643.01	0.00	658.08	0.01	640.39	0.01	582.73	0.00
644.75	0.00	659.72	0.00	642.11	0.00	584.83	0.01
646.76	0.00	661.67	0.00	643.87	0.00	586.79	0.01
648.73	0.01	663.76	0.01	645.65	0.00	588.45	0.01
650.47	0.00	665.36	0.00	647.91	0.01	590.46	0.01
652.24	0.00	667.53	0.01	649.63	0.00	592.22	0.01
654.21	0.00	669.37	0.01	651.54	0.00	594.11	0.01
655.87	0.00	671.20	0.01	653.26	0.00	596.20	0.01
657.90	0.00	673.12	0.01	655.10	0.00	597.71	0.00
659.62	0.00	674.88	0.01	657.20	0.01	599.78	0.01
661.61	0.00	676.86	0.01	658.96	0.00	601.75	0.01

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
663.50	0.00	678.57	0.00	660.79	0.00	603.75	0.01
665.68	0.01	680.39	0.00	662.61	0.00	605.46	0.01
667.37	0.00	682.47	0.01	664.37	0.00	607.39	0.01
669.31	0.01	684.16	0.00	666.22	0.00	609.26	0.01
670.82	0.00	686.27	0.01	668.18	0.00	611.24	0.01
672.83	0.00	688.09	0.01	670.30	0.00	612.94	0.01
674.77	0.00	689.78	0.00	672.00	0.00	614.78	0.01
676.80	0.01	691.77	0.01	673.86	0.00	616.79	0.01
678.50	0.00	693.59	0.01	675.69	0.00	618.44	0.00
680.85	0.01	695.41	0.00	677.37	-0.01	620.38	0.01
682.42	0.01	697.36	0.01	679.36	0.00	622.18	0.00
684.32	0.01	698.96	0.00	681.06	-0.01	624.19	0.01
686.17	0.01	700.94	0.00	683.19	0.00	626.12	0.01
687.98	0.00	702.85	0.00	685.02	0.00	627.89	0.01
689.66	0.00	704.60	0.00	686.76	-0.01	629.67	0.00
691.47	0.00	706.47	0.00	688.66	-0.01	631.55	0.00
693.45	0.00	708.55	0.00	690.61	0.00	633.56	0.01
695.24	0.00	710.40	0.00	692.40	-0.01	635.19	0.00
697.41	0.01	712.37	0.01	694.16	-0.01	637.23	0.01
698.85	-0.01	714.14	0.00	695.92	-0.01	639.09	0.01
700.80	0.00	715.92	0.00	698.24	0.00	640.89	0.00
702.86	0.00	717.70	0.00	699.82	-0.01	642.91	0.01
704.59	0.00	719.54	0.00	701.66	-0.01	644.67	0.01
706.58	0.00	721.34	-0.01	703.40	-0.01	646.46	0.00
708.24	-0.01	723.42	0.00	705.37	-0.01	648.40	0.00
710.05	-0.01	725.25	0.00	707.11	-0.02	650.21	0.00
712.17	0.00	727.24	0.00	709.27	-0.01	652.10	0.00
713.82	-0.01	729.00	0.00	711.01	-0.01	653.90	0.00
715.69	-0.01	730.71	-0.01	712.94	-0.01	655.79	0.00
717.53	-0.01	732.48	-0.01	714.80	-0.01	657.61	0.00
719.26	-0.01	734.68	0.00	716.42	-0.02	659.52	0.00
721.85	0.01	736.61	0.00	718.60	-0.01	661.39	0.00
723.35	0.00	738.43	0.00	720.30	-0.01	663.42	0.01
725.14	-0.01	740.14	0.00	722.37	-0.01	665.12	0.00
727.16	0.00	741.89	-0.01	724.13	-0.01	666.96	0.00
728.81	-0.01	743.69	-0.01	725.79	-0.02	668.83	0.00
730.58	-0.01	745.96	0.00	727.88	-0.01	670.81	0.00
732.90	0.00	747.51	-0.01	729.81	-0.01	672.66	0.00
734.55	0.00	749.37	-0.01	731.57	-0.01	674.50	0.00
736.53	0.00	751.20	-0.01	733.65	-0.01	676.38	0.00
738.42	0.00	753.23	0.00	735.35	-0.01	678.25	0.00

10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
740.19	0.00	754.99	-0.01	737.26	-0.01	680.26	0.00
741.87	-0.01	756.96	-0.01	739.14	-0.01	682.10	0.00
744.06	0.00	758.78	-0.01	740.92	-0.01	683.83	0.00
745.88	0.00	760.85	0.00	743.00	-0.01	685.62	0.00
747.69	0.00	762.56	-0.01	744.84	-0.01	687.67	0.00
749.46	-0.01	764.44	-0.01	746.71	-0.01	689.40	0.00
751.48	0.00	766.20	-0.01	748.70	0.00	691.41	0.00
753.59	0.00	768.15	-0.01	750.61	0.00	693.35	0.00
755.22	0.00	769.95	-0.01	752.53	0.00	695.05	0.00
757.18	0.00	772.03	0.00	754.36	0.00	696.96	0.00
758.95	0.00	773.75	-0.01	756.35	0.00	698.63	-0.01
760.71	-0.01	775.63	-0.01	758.34	0.00	700.67	0.00
762.58	-0.01	777.63	0.00	760.16	0.00	702.22	-0.01
764.55	0.00	779.56	0.00	762.13	0.00	704.18	-0.01
766.53	0.00	781.54	0.00	763.96	0.00	706.21	0.00
768.32	0.00	783.24	0.00	765.72	0.00	708.13	0.00
770.24	0.00	785.26	0.00	767.67	0.00	709.85	-0.01
772.01	0.00	787.19	0.00	769.58	0.00	711.63	-0.01
774.08	0.00	789.13	0.00	771.69	0.01	713.49	-0.01
775.64	-0.01	790.73	0.00	773.31	0.00	715.57	0.00
777.93	0.00	792.41	-0.01	775.24	0.00	717.44	0.00
779.54	0.00	794.39	-0.01	777.31	0.01	719.38	0.00
781.40	0.00	796.34	0.00	779.20	0.01	721.17	-0.01
783.45	0.00	798.30	0.00	781.02	0.01	722.98	-0.01
784.95	-0.01	800.27	0.00	782.70	0.00	724.73	-0.01
787.26	0.00	802.13	0.00	784.88	0.01	726.57	-0.01
789.29	0.01	804.22	0.01	786.78	0.01	728.61	-0.01
790.91	0.00	805.91	0.00	788.55	0.01	730.35	-0.01
792.82	0.00	807.64	0.00	790.52	0.01	732.41	-0.01
794.84	0.01	809.62	0.00	792.40	0.01	734.18	-0.01
796.75	0.01	811.39	0.00	794.23	0.01	735.97	-0.01
798.74	0.01	813.34	0.00	795.94	0.01	737.98	-0.01
800.42	0.00	815.21	0.00	798.02	0.01	739.92	0.00
802.33	0.01	817.16	0.00	799.89	0.01	741.67	-0.01
804.38	0.01	819.02	0.00	801.48	0.00	743.61	-0.01
806.04	0.00	820.89	0.00	803.35	0.00	745.59	0.00
808.01	0.01	822.73	0.00	805.27	0.01	747.24	-0.01
809.83	0.01	824.79	0.01	806.89	0.00	749.13	-0.01
811.76	0.01	826.68	0.01	809.00	0.01	751.50	0.01
813.61	0.01	828.55	0.01	810.93	0.01	753.08	0.00
815.55	0.01	830.26	0.00	812.90	0.01	755.21	0.00



10 mM SDS pH 11		0.5 mM EDTA pH 11		NaOH pH 11		No cleaning agent	
D (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)	Distance (nm)	F/R (mN/m)	D (nm)	F/R (mN/m)
817.22	0.00	832.23	0.00	814.77	0.01	756.79	0.00
819.18	0.00	834.10	0.00	816.57	0.01	758.66	0.00

Figure 4.10b

Cleaning Solution	Cleaning Efficiency (%)
NaOH	15.49
EDTA	81.34
SDS	98.50

Figure 5.1

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.08	1.00	0.08	1.00	0.08	0.99
0.17	1.00	0.17	1.00	0.17	1.00	0.08	0.99
0.25	1.01	0.17	1.00	0.25	0.99	0.17	0.98
0.33	1.00	0.25	1.00	0.33	0.99	0.25	0.98
0.42	1.00	0.33	0.99	0.33	0.99	0.33	0.98
0.50	1.00	0.42	0.99	0.42	0.99	0.42	0.98
0.58	1.00	0.42	0.99	0.50	0.99	0.50	0.98
0.67	1.00	0.50	0.99	0.58	0.98	0.58	0.98
0.75	1.00	0.58	0.99	0.67	0.98	0.67	0.97
0.83	1.00	0.67	0.99	0.75	0.98	0.75	0.97
0.92	1.00	0.75	0.99	0.83	0.98	0.83	0.97
1.00	1.00	0.83	0.98	0.92	0.97	0.92	0.97
1.08	0.99	0.92	0.98	0.92	0.97	1.00	0.97
1.17	0.99	1.00	0.98	1.00	0.97	1.08	0.97
1.25	0.99	1.08	0.97	1.08	0.97	1.17	0.97
1.25	0.99	1.17	0.98	1.17	0.97	1.17	0.96
1.33	1.00	1.25	0.97	1.25	0.97	1.25	0.96
1.42	0.99	1.33	0.97	1.33	0.97	1.33	0.96
1.50	0.99	1.42	0.97	1.42	0.96	1.42	0.96
1.58	0.99	1.50	0.97	1.50	0.97	1.42	0.96
1.67	0.99	1.50	0.97	1.50	0.96	1.50	0.96
1.67	0.99	1.58	0.97	1.58	0.96	1.58	0.96
1.75	0.99	1.67	0.97	1.67	0.96	1.67	0.95
1.83	0.99	1.75	0.97	1.75	0.96	1.75	0.95
1.92	0.99	1.83	0.96	1.83	0.96	1.75	0.95

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
1.92	0.97	1.92	0.97	1.92	0.96	1.83	0.95
2.00	0.97	2.00	0.96	2.00	0.96	1.92	0.95
2.08	0.99	2.00	0.96	2.08	0.95	2.00	0.95
2.17	0.99	2.08	0.95	2.08	0.95	2.00	0.95
2.25	0.98	2.17	0.96	2.17	0.95	2.08	0.95
2.33	0.98	2.25	0.96	2.25	0.96	2.17	0.95
2.42	0.97	2.33	0.96	2.33	0.95	2.25	0.95
2.50	0.98	2.42	0.96	2.42	0.95	2.33	0.94
2.58	0.98	2.50	0.96	2.50	0.95	2.42	0.94
2.67	0.98	2.58	0.95	2.58	0.95	2.50	0.94
2.75	0.98	2.58	0.95	2.67	0.95	2.58	0.94
2.83	0.98	2.67	0.95	2.75	0.95	2.67	0.95
2.92	0.97	2.75	0.95	2.75	0.95	2.75	0.94
3.00	0.97	2.83	0.95	2.83	0.95	2.83	0.94
3.00	0.97	2.92	0.95	2.92	0.94	2.92	0.94
3.08	0.98	3.00	0.95	3.00	0.96	3.00	0.94
3.17	0.97	3.00	0.95	3.08	0.95	3.08	0.94
3.25	0.96	3.08	0.94	3.17	0.94	3.08	0.94
3.33	0.97	3.17	0.95	3.25	0.94	3.17	0.94
3.42	0.97	3.25	0.94	3.33	0.94	3.25	0.94
3.42	0.97	3.25	0.95	3.33	0.94	3.33	0.94
3.50	0.97	3.33	0.95	3.42	0.94	3.42	0.94
3.58	0.97	3.42	0.94	3.50	0.94	3.50	0.94
3.67	0.97	3.50	0.95	3.58	0.94	3.58	0.94
3.75	0.96	3.58	0.94	3.67	0.94	3.58	0.94
3.83	0.96	3.67	0.94	3.75	0.93	3.67	0.93
3.92	0.97	3.83	0.94	3.83	0.94	3.75	0.94
4.00	0.97	3.92	0.93	3.92	0.93	3.75	0.94
4.08	0.96	3.92	0.93	4.00	0.92	3.83	0.94
4.17	0.97	4.00	0.93	4.00	0.93	4.00	0.93
4.25	0.96	4.08	0.93	4.08	0.92	4.00	0.93
4.33	0.96	4.17	0.93	4.17	0.92	4.17	0.93
4.33	0.96	4.25	0.93	4.25	0.94	4.25	0.93
4.42	0.97	4.33	0.93	4.33	0.93	4.33	0.93
4.50	0.97	4.42	0.93	4.42	0.92	4.33	0.93
4.58	0.97	4.42	0.93	4.50	0.93	4.50	0.93
4.67	0.97	4.50	0.93	4.58	0.93	4.58	0.93
4.75	0.96	4.58	0.93	4.58	0.93	4.67	0.93
4.83	0.96	4.67	0.93	4.67	0.93	4.75	0.93
4.92	0.96	4.75	0.93	4.75	0.93	4.75	0.93
5.00	0.96	4.75	0.93	4.83	0.93	4.83	0.93
5.00	0.97	4.83	0.93	4.92	0.93	4.92	0.93

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.08	0.96	4.92	0.92	5.00	0.93	5.00	0.93
5.17	0.96	5.00	0.92	5.08	0.93	5.08	0.93
5.25	0.96	5.08	0.93	5.17	0.92	5.08	0.93
5.33	0.96	5.17	0.92	5.17	0.92	5.17	0.93
5.33	0.96	5.25	0.92	5.25	0.92	5.25	0.93
5.42	0.96	5.33	0.93	5.33	0.92	5.33	0.93
5.48	0.96	5.33	0.92	5.42	0.92	5.33	0.93
5.57	0.95	5.50	0.92	5.50	0.92	5.42	0.92
5.65	0.96	5.58	0.91	5.58	0.93	5.50	0.92
5.73	0.96	5.58	0.92	5.67	0.93	5.58	0.92
5.82	0.96	5.67	0.92	5.75	0.93	5.67	0.93
5.90	0.96	5.75	0.92	5.83	0.92	5.67	0.92
5.98	0.96	5.83	0.91	5.83	0.92	5.83	0.92
6.07	0.95	5.92	0.92	5.92	0.92	5.92	0.92
6.15	0.96	6.00	0.91	6.00	0.92	6.00	0.92
6.23	0.95	6.08	0.91	6.08	0.92	6.15	0.92
6.32	0.96	6.17	0.91	6.20	0.92	6.24	0.92
6.40	0.96	6.25	0.92	6.28	0.92	6.32	0.92
6.48	0.96	6.33	0.91	6.37	0.92	6.40	0.92
6.57	0.95	6.33	0.92	6.45	0.92	6.49	0.92
6.65	0.96	6.42	0.92	6.45	0.92	6.57	0.92
6.73	0.96	6.50	0.91	6.53	0.93	6.65	0.91
6.82	0.95	6.58	0.91	6.62	0.91	6.74	0.91
6.90	0.95	6.67	0.91	6.70	0.91	6.82	0.91
6.90	0.96	6.75	0.91	6.78	0.93	6.90	0.91
6.98	0.95	6.75	0.91	6.87	0.92	6.99	0.91
7.07	0.95	6.83	0.91	6.95	0.91	7.07	0.91
7.15	0.95	6.92	0.91	7.03	0.93	7.15	0.91
7.23	0.94	7.00	0.90	7.03	0.92	7.16	0.91
7.23	0.95	7.08	0.91	7.12	0.93	7.24	0.91
7.32	0.95	7.17	0.90	7.20	0.92	7.32	0.91
7.40	0.95	7.25	0.91	7.28	0.91	7.40	0.91
7.48	0.95	7.33	0.91	7.37	0.92	7.49	0.91
7.57	0.95	7.42	0.90	7.45	0.91	7.49	0.90
7.65	0.95	7.50	0.90	7.53	0.92	7.65	0.90
7.73	0.94	7.58	0.90	7.62	0.92	7.66	0.91
7.82	0.94	7.58	0.90	7.62	0.92	7.74	0.91
7.90	0.95	7.70	0.89	7.70	0.92	7.82	0.91
7.98	0.94	7.78	0.90	7.78	0.93	7.99	0.91
8.07	0.93	7.86	0.89	7.87	0.93	7.99	0.90
8.15	0.95	7.95	0.89	7.95	0.92	8.07	0.90
8.23	0.95	8.03	0.89	8.03	0.91	8.15	0.90

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.32	0.94	8.11	0.90	8.12	0.91	8.32	0.90
8.40	0.95	8.20	0.90	8.12	0.91	8.32	0.90
8.48	0.95	8.28	0.90	8.20	0.91	8.40	0.90
8.48	0.95	8.36	0.90	8.28	0.92	8.49	0.90
8.57	0.94	8.36	0.90	8.37	0.91	8.57	0.90
8.65	0.95	8.45	0.90	8.45	0.91	8.65	0.90
8.73	0.94	8.53	0.90	8.53	0.91	8.74	0.90
8.82	0.94	8.61	0.89	8.62	0.91	8.82	0.90
8.90	0.94	8.70	0.89	8.70	0.92	8.82	0.90
8.90	0.94	8.70	0.89	8.70	0.92	8.90	0.90
8.98	0.95	8.86	0.89	8.78	0.92	8.99	0.90
9.07	0.93	8.86	0.89	8.87	0.92	9.07	0.90
9.15	0.94	8.95	0.89	8.95	0.91	9.15	0.90
9.23	0.94	9.11	0.89	9.03	0.91	9.15	0.90
9.32	0.93	9.20	0.89	9.12	0.91	9.24	0.90
9.40	0.94	9.28	0.89	9.20	0.91	9.32	0.90
9.48	0.94	9.28	0.89	9.28	0.91	9.40	0.90
9.57	0.93	9.36	0.89	9.28	0.91	9.57	0.90
9.65	0.94	9.45	0.89	9.37	0.92	9.65	0.90
9.73	0.94	9.53	0.89	9.45	0.91	9.65	0.90
9.82	0.94	9.61	0.89	9.53	0.91	9.74	0.90
9.90	0.93	9.70	0.89	9.62	0.92	9.82	0.90
9.98	0.94	9.78	0.89	9.70	0.91	9.90	0.90
10.07	0.94	9.86	0.89	9.78	0.91	9.99	0.90
10.15	0.93	9.95	0.89	9.87	0.92	10.07	0.90
10.23	0.93	10.03	0.89	9.87	0.92	10.15	0.90
10.32	0.94	10.11	0.88	9.95	0.92	10.24	0.90
10.40	0.94	10.20	0.88	10.03	0.92	10.32	0.90
10.48	0.94	10.20	0.88	10.12	0.92	10.40	0.90
10.57	0.93	10.28	0.88	10.20	0.92	10.49	0.90
10.57	0.93	10.36	0.88	10.28	0.91	10.49	0.90
10.65	0.94	10.45	0.89	10.37	0.92	10.57	0.90
10.73	0.94	10.45	0.89	10.45	0.91	10.65	0.90
10.82	0.93	10.53	0.89	10.45	0.91	10.82	0.90
10.90	0.93	10.61	0.88	10.53	0.91	10.82	0.90
10.90	0.94	10.70	0.88	10.62	0.91	10.90	0.90
10.98	0.94	10.78	0.88	10.70	0.91	10.99	0.90
11.07	0.93	10.78	0.88	10.78	0.91	11.07	0.90
11.15	0.94	10.86	0.88	10.87	0.91	11.15	0.89
11.23	0.94	10.95	0.88	10.95	0.91	11.15	0.90
11.23	0.93	11.03	0.88	11.03	0.91	11.24	0.90
11.32	0.94	11.11	0.88	11.03	0.91	11.32	0.90

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.40	0.94	11.20	0.88	11.12	0.91	11.40	0.90
11.48	0.93	11.28	0.88	11.20	0.92	11.49	0.89
11.57	0.93	11.36	0.88	11.28	0.90	11.57	0.90
11.65	0.93	11.45	0.87	11.37	0.92	11.65	0.89
11.73	0.93	11.53	0.88	11.45	0.92	11.74	0.89
11.82	0.93	11.61	0.88	11.53	0.90	11.82	0.89
11.90	0.93	11.70	0.87	11.62	0.90	11.90	0.90
11.98	0.93	11.70	0.88	11.62	0.90	11.99	0.89
12.07	0.93	11.78	0.88	11.70	0.90	12.07	0.89
12.15	0.93	11.86	0.88	11.78	0.91	12.15	0.89
12.23	0.93	11.95	0.88	11.87	0.91	12.24	0.89
12.23	0.93	12.03	0.86	11.95	0.91	12.32	0.89
12.32	0.93	12.11	0.87	12.03	0.91	12.40	0.89
12.40	0.93	12.11	0.87	12.12	0.91	12.49	0.89
12.48	0.93	12.20	0.87	12.20	0.92	12.49	0.89
12.57	0.93	12.28	0.88	12.20	0.92	12.57	0.90
12.57	0.93	12.36	0.88	12.28	0.91	12.65	0.89
12.65	0.93	12.45	0.87	12.37	0.91	12.74	0.89
12.73	0.92	12.53	0.88	12.45	0.91	12.82	0.89
12.82	0.93	12.61	0.86	12.53	0.90	12.90	0.90
12.90	0.92	12.70	0.87	12.62	0.90	12.99	0.90
12.90	0.93	12.86	0.86	12.70	0.92	13.07	0.89
12.98	0.93	12.95	0.86	12.78	0.90	13.07	0.90
13.07	0.93	12.95	0.86	12.78	0.90	13.24	0.89
13.15	0.93	13.11	0.86	12.87	0.90	13.24	0.90
13.23	0.93	13.20	0.87	12.95	0.91	13.32	0.90
13.32	0.91	13.28	0.86	13.03	0.91	13.40	0.89
13.40	0.92	13.28	0.86	13.12	0.90	13.49	0.90
13.48	0.93	13.36	0.86	13.20	0.90	13.57	0.89
13.57	0.92	13.45	0.86	13.28	0.90	13.65	0.90
13.65	0.93	13.53	0.86	13.37	0.90	13.74	0.90
13.73	0.93	13.61	0.86	13.45	0.90	13.82	0.89
13.82	0.92	13.70	0.86	13.45	0.90	13.90	0.89
13.90	0.93	13.70	0.86	13.53	0.90	13.99	0.90
13.98	0.93	13.78	0.86	13.61	0.90	14.07	0.89
14.07	0.92	13.86	0.86	13.70	0.90	14.15	0.90
14.15	0.92	13.95	0.86	13.78	0.90	14.15	0.90
14.15	0.92	14.03	0.86	13.87	0.90	14.24	0.89
14.23	0.93	14.03	0.86	13.95	0.90	14.32	0.90
14.32	0.93	14.11	0.86	14.03	0.90	14.40	0.89
14.40	0.92	14.20	0.86	14.12	0.90	14.49	0.89
14.48	0.93	14.28	0.86	14.12	0.90	14.49	0.90

25 mg/L alginate		25 mg/L BSA		25 mg/L SRNOM		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.57	0.93	14.36	0.86	14.20	0.89	14.57	0.89
14.57	0.93	14.45	0.86	14.28	0.90	14.65	0.89
14.65	0.93	14.45	0.86	14.36	0.90	14.74	0.89
14.73	0.92	14.53	0.86	14.45	0.90	14.82	0.89
14.82	0.92	14.61	0.86	14.53	0.90	14.82	0.89
14.90	0.93	14.70	0.86	14.61	0.90	14.90	0.89
14.98	0.93	14.78	0.86	14.70	0.90	14.99	0.90
15.07	0.93	14.86	0.86	14.78	0.90	15.07	0.89
15.15	0.93	14.95	0.86	14.86	0.90	15.15	0.89
15.23	0.93	15.03	0.85	14.87	0.89	15.32	0.89
15.32	0.92	15.11	0.86	14.95	0.89	15.32	0.89
15.40	0.92	15.20	0.85	15.03	0.90	15.40	0.89
15.48	0.92	15.28	0.86	15.11	0.90	15.49	0.89
15.57	0.92	15.36	0.85	15.20	0.91	15.57	0.89
15.65	0.93	15.36	0.85	15.28	0.90	15.65	0.89
15.73	0.92	15.45	0.86	15.36	0.90	15.74	0.89
15.82	0.92	15.53	0.85	15.45	0.90	15.82	0.89
15.90	0.92	15.61	0.86	15.53	0.90	15.90	0.89
15.98	0.92	15.70	0.85	15.53	0.90	15.99	0.89
15.98	0.92	15.70	0.85	15.61	0.90	16.07	0.89
16.07	0.91	15.78	0.85	15.70	0.90	16.07	0.89
16.15	0.92	15.86	0.85	15.78	0.91	16.15	0.89
16.23	0.92	15.95	0.85	15.86	0.91	16.24	0.89
16.32	0.93	16.03	0.85	15.95	0.90	16.32	0.89
16.32	0.93	16.11	0.86	16.03	0.90	16.40	0.89
16.40	0.92	16.11	0.85	16.11	0.90	16.49	0.88
16.48	0.92	16.20	0.85	16.20	0.90	16.49	0.88
16.57	0.93	16.28	0.85	16.20	0.90	16.57	0.88
16.57	0.92	16.36	0.85	16.28	0.90	16.65	0.88
16.65	0.92	16.45	0.85	16.36	0.89	16.74	0.89
16.73	0.93	16.53	0.85	16.45	0.89	16.82	0.88
16.82	0.93	16.61	0.85	16.53	0.90	16.82	0.88
16.90	0.93	16.70	0.85	16.61	0.89	16.90	0.88
16.98	0.93	16.78	0.85	16.70	0.89	16.99	0.88
17.07	0.92	16.95	0.85	16.78	0.89	17.07	0.87
		16.95	0.85	16.86	0.90		
		17.03	0.85	16.95	0.90		
				16.95	0.89		
				17.03	0.90		

**Figure 5.2**

25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.08	1.00	0.08	1.00	0.08	1.00
0.17	1.00	0.17	1.00	0.17	1.00	0.17	1.00
0.25	0.99	0.25	1.00	0.17	1.00	0.25	1.00
0.33	0.99	0.33	0.99	0.25	1.00	0.33	0.99
0.33	0.99	0.42	0.98	0.33	1.00	0.33	0.99
0.42	0.99	0.50	0.98	0.42	0.99	0.50	0.99
0.50	0.98	0.50	0.97	0.50	1.00	0.58	0.99
0.58	0.96	0.58	0.98	0.58	0.99	0.58	0.99
0.67	0.95	0.67	0.97	0.67	0.99	0.67	0.99
0.75	0.94	0.75	0.97	0.75	0.99	0.75	0.99
0.75	0.92	0.83	0.97	0.83	0.99	0.83	0.98
0.83	0.93	0.92	0.97	0.92	0.99	0.92	0.98
0.92	0.92	1.00	0.97	1.00	0.99	1.00	0.98
1.00	0.91	1.08	0.97	1.00	0.99	1.00	0.98
1.00	0.90	1.08	0.97	1.08	0.99	1.08	0.97
1.08	0.90	1.17	0.97	1.17	0.99	1.17	0.97
1.17	0.89	1.25	0.97	1.25	0.99	1.25	0.97
1.25	0.89	1.33	0.97	1.33	0.99	1.33	0.97
1.33	0.89	1.42	0.97	1.42	0.99	1.33	0.97
1.42	0.88	1.50	0.97	1.50	0.99	1.50	0.96
1.50	0.88	1.58	0.97	1.58	0.98	1.50	0.96
1.58	0.87	1.67	0.97	1.67	0.99	1.67	0.96
1.67	0.86	1.75	0.97	1.75	0.99	1.75	0.96
1.75	0.86	1.83	0.97	1.83	0.98	1.83	0.96
1.83	0.86	1.92	0.97	1.83	0.99	1.92	0.96
1.92	0.85	1.92	0.97	1.92	0.99	2.00	0.95
2.00	0.85	2.00	0.97	2.00	0.99	2.00	0.95
2.08	0.85	2.08	0.97	2.08	0.97	2.08	0.95
2.17	0.84	2.17	0.96	2.17	0.98	2.17	0.94
2.25	0.84	2.25	0.96	2.25	0.99	2.25	0.95
2.33	0.83	2.33	0.96	2.42	0.98	2.33	0.94
2.42	0.83	2.33	0.96	2.42	0.97	2.42	0.94
2.42	0.83	2.42	0.96	2.50	0.97	2.50	0.94
2.50	0.82	2.50	0.96	2.58	0.98	2.58	0.94
2.58	0.83	2.58	0.96	2.75	0.98	2.67	0.94
2.67	0.82	2.67	0.96	2.75	0.97	2.75	0.94
2.75	0.82	2.75	0.97	2.83	0.97	2.83	0.93
2.75	0.82	2.83	0.96	2.92	0.97	2.92	0.93
2.83	0.82	2.92	0.96	2.92	0.97	2.92	0.93
2.92	0.81	3.00	0.96	3.00	0.97	3.00	0.93

25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
3.00	0.82	3.08	0.96	3.08	0.97	3.08	0.93
3.08	0.81	3.17	0.96	3.17	0.97	3.17	0.92
3.17	0.81	3.17	0.96	3.25	0.97	3.25	0.93
3.25	0.81	3.25	0.96	3.25	0.97	3.33	0.92
3.33	0.80	3.33	0.96	3.33	0.97	3.50	0.93
3.42	0.81	3.42	0.96	3.42	0.97	3.58	0.92
3.50	0.80	3.50	0.96	3.50	0.96	3.58	0.92
3.58	0.80	3.58	0.96	3.58	0.96	3.75	0.92
3.67	0.79	3.67	0.96	3.67	0.97	3.83	0.91
3.75	0.79	3.75	0.96	3.67	0.96	3.92	0.92
3.83	0.79	3.75	0.96	3.75	0.96	3.92	0.91
3.92	0.79	3.83	0.96	3.83	0.96	4.08	0.91
4.00	0.79	3.92	0.96	3.92	0.96	4.17	0.91
4.00	0.79	4.00	0.96	4.00	0.96	4.25	0.91
4.08	0.77	4.08	0.96	4.08	0.96	4.33	0.91
4.17	0.79	4.17	0.96	4.17	0.96	4.33	0.91
4.25	0.79	4.25	0.96	4.25	0.96	4.42	0.91
4.33	0.78	4.33	0.96	4.33	0.96	4.50	0.91
4.33	0.78	4.42	0.96	4.42	0.96	4.58	0.91
4.42	0.78	4.42	0.96	4.50	0.96	4.67	0.91
4.50	0.78	4.50	0.96	4.58	0.96	4.67	0.91
4.58	0.78	4.58	0.96	4.67	0.96	4.83	0.91
4.67	0.78	4.67	0.96	4.75	0.95	4.92	0.90
4.75	0.78	4.75	0.96	4.83	0.96	5.00	0.90
4.83	0.78	4.83	0.96	4.83	0.95	5.08	0.90
4.92	0.78	4.92	0.95	4.92	0.95	5.08	0.90
5.00	0.77	5.00	0.95	5.00	0.95	5.25	0.90
5.08	0.77	5.08	0.96	5.08	0.94	5.25	0.90
5.17	0.77	5.17	0.96	5.08	0.94	5.42	0.90
5.18	0.76	5.17	0.95	5.17	0.95	5.50	0.90
5.26	0.77	5.25	0.95	5.25	0.95	5.58	0.90
5.26	0.77	5.33	0.95	5.33	0.95	5.58	0.90
5.34	0.77	5.42	0.96	5.33	0.94	5.75	0.90
5.43	0.76	5.50	0.95	5.42	0.95	5.83	0.89
5.51	0.76	5.58	0.95	5.50	0.95	5.92	0.90
5.59	0.76	5.67	0.95	5.50	0.94	6.00	0.89
5.68	0.76	5.82	0.95	5.58	0.94	6.00	0.90
5.76	0.76	5.91	0.95	5.67	0.94	6.08	0.90
5.84	0.76	5.99	0.95	5.75	0.94	6.17	0.90
5.93	0.76	5.99	0.95	5.83	0.94	6.25	0.90
5.93	0.76	6.07	0.95	5.85	0.94	6.33	0.90
6.01	0.76	6.16	0.95	6.02	0.94	6.43	0.89



25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
6.09	0.76	6.24	0.95	6.10	0.94	6.51	0.89
6.18	0.75	6.32	0.95	6.10	0.94	6.59	0.89
6.26	0.75	6.41	0.96	6.27	0.94	6.59	0.89
6.26	0.75	6.49	0.95	6.35	0.94	6.68	0.89
6.34	0.75	6.49	0.95	6.43	0.94	6.76	0.89
6.43	0.75	6.57	0.95	6.43	0.94	6.76	0.89
6.51	0.75	6.66	0.95	6.52	0.94	6.84	0.89
6.59	0.75	6.74	0.95	6.60	0.94	6.93	0.89
6.68	0.75	6.82	0.95	6.68	0.94	7.01	0.89
6.76	0.74	6.90	0.95	6.77	0.94	7.09	0.89
6.84	0.75	6.99	0.95	6.85	0.94	7.18	0.90
6.93	0.75	7.07	0.94	6.93	0.93	7.26	0.89
7.01	0.75	7.16	0.94	7.02	0.93	7.34	0.89
7.09	0.74	7.24	0.94	7.10	0.94	7.43	0.89
7.18	0.75	7.24	0.94	7.10	0.93	7.51	0.88
7.26	0.74	7.32	0.95	7.18	0.93	7.59	0.89
7.34	0.74	7.41	0.94	7.27	0.93	7.68	0.87
7.43	0.74	7.49	0.95	7.35	0.93	7.68	0.88
7.51	0.74	7.57	0.95	7.43	0.93	7.76	0.88
7.51	0.74	7.65	0.95	7.52	0.93	7.84	0.88
7.59	0.74	7.74	0.95	7.60	0.93	7.93	0.88
7.68	0.74	7.82	0.95	7.68	0.93	8.01	0.88
7.76	0.74	7.82	0.94	7.77	0.93	8.09	0.89
7.84	0.74	7.90	0.94	7.85	0.93	8.18	0.89
7.93	0.74	7.99	0.94	7.93	0.93	8.26	0.87
7.93	0.74	8.07	0.94	8.02	0.93	8.34	0.87
8.01	0.74	8.15	0.95	8.10	0.93	8.34	0.87
8.09	0.73	8.24	0.94	8.18	0.93	8.43	0.87
8.18	0.73	8.32	0.94	8.27	0.93	8.51	0.87
8.26	0.73	8.40	0.94	8.35	0.93	8.59	0.88
8.34	0.73	8.49	0.94	8.43	0.92	8.68	0.88
8.42	0.73	8.49	0.95	8.52	0.93	8.76	0.89
8.51	0.73	8.57	0.95	8.60	0.93	8.84	0.88
8.59	0.73	8.65	0.94	8.68	0.92	8.93	0.88
8.68	0.73	8.74	0.94	8.77	0.92	9.01	0.87
8.76	0.73	8.82	0.94	8.77	0.92	9.09	0.88
8.84	0.73	8.90	0.94	8.85	0.92	9.18	0.88
8.92	0.73	8.99	0.94	8.93	0.92	9.26	0.87
9.01	0.73	9.07	0.95	9.02	0.92	9.34	0.88
9.09	0.73	9.07	0.94	9.02	0.92	9.43	0.87
9.17	0.72	9.15	0.94	9.10	0.92	9.59	0.87
9.26	0.73	9.24	0.95	9.18	0.92	9.59	0.88

25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
9.34	0.72	9.32	0.94	9.18	0.93	9.68	0.87
9.42	0.72	9.40	0.94	9.27	0.92	9.76	0.87
9.51	0.72	9.49	0.94	9.35	0.92	9.84	0.87
9.59	0.72	9.57	0.94	9.43	0.92	9.93	0.87
9.67	0.72	9.65	0.94	9.52	0.92	10.01	0.87
9.76	0.72	9.74	0.94	9.52	0.92	10.09	0.86
9.84	0.72	9.82	0.94	9.68	0.92	10.18	0.87
9.92	0.72	9.90	0.94	9.68	0.92	10.26	0.87
10.01	0.72	9.99	0.94	9.77	0.92	10.34	0.87
10.09	0.72	10.07	0.94	9.85	0.92	10.34	0.87
10.17	0.72	10.07	0.94	9.93	0.92	10.43	0.88
10.26	0.71	10.15	0.94	10.02	0.92	10.51	0.87
10.34	0.70	10.24	0.94	10.10	0.92	10.59	0.86
10.42	0.72	10.32	0.94	10.18	0.92	10.68	0.86
10.51	0.71	10.40	0.94	10.27	0.92	10.68	0.87
10.67	0.71	10.49	0.94	10.35	0.92	10.76	0.87
10.76	0.71	10.57	0.93	10.43	0.91	10.84	0.87
10.84	0.71	10.57	0.94	10.43	0.92	10.93	0.87
10.92	0.71	10.65	0.93	10.52	0.91	11.01	0.87
11.01	0.71	10.74	0.94	10.60	0.91	11.09	0.86
11.09	0.71	10.82	0.93	10.68	0.92	11.18	0.86
11.17	0.71	10.90	0.94	10.77	0.91	11.26	0.86
11.26	0.71	10.99	0.94	10.85	0.92	11.34	0.86
11.34	0.71	11.07	0.94	10.85	0.91	11.43	0.86
11.42	0.71	11.15	0.93	10.93	0.91	11.51	0.87
11.51	0.71	11.24	0.93	11.02	0.91	11.59	0.87
11.59	0.71	11.32	0.93	11.10	0.91	11.68	0.86
11.67	0.71	11.40	0.93	11.18	0.91	11.68	0.86
11.68	0.71	11.40	0.93	11.27	0.91	11.76	0.86
11.76	0.71	11.49	0.93	11.35	0.91	11.84	0.86
11.84	0.71	11.57	0.93	11.43	0.91	11.93	0.86
11.92	0.71	11.65	0.94	11.52	0.91	12.01	0.86
12.01	0.71	11.74	0.93	11.68	0.90	12.09	0.86
12.09	0.71	11.82	0.93	11.68	0.90	12.18	0.86
12.17	0.70	11.90	0.93	11.77	0.90	12.26	0.86
12.26	0.70	11.99	0.93	11.85	0.91	12.26	0.86
12.42	0.70	12.07	0.93	11.93	0.90	12.34	0.86
12.51	0.69	12.15	0.93	12.02	0.90	12.43	0.86
12.59	0.70	12.15	0.93	12.10	0.90	12.51	0.86
12.67	0.70	12.24	0.93	12.18	0.90	12.59	0.85
12.76	0.70	12.32	0.93	12.27	0.90	12.68	0.86
12.84	0.70	12.40	0.93	12.35	0.90	12.76	0.86

25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
12.92	0.70	12.49	0.93	12.43	0.90	12.84	0.86
13.01	0.70	12.57	0.93	12.43	0.90	12.93	0.86
13.09	0.70	12.65	0.93	12.52	0.90	13.01	0.86
13.17	0.70	12.74	0.93	12.60	0.90	13.09	0.86
13.26	0.70	12.82	0.93	12.68	0.90	13.18	0.85
13.34	0.69	12.90	0.93	12.77	0.90	13.26	0.86
13.42	0.69	12.90	0.93	12.85	0.90	13.34	0.86
13.51	0.70	12.99	0.93	12.85	0.90	13.43	0.86
13.51	0.69	13.07	0.93	12.93	0.90	13.51	0.86
13.59	0.70	13.15	0.93	13.02	0.90	13.59	0.86
13.67	0.69	13.24	0.93	13.10	0.90	13.68	0.86
13.76	0.69	13.32	0.93	13.18	0.90	13.68	0.86
13.84	0.69	13.40	0.93	13.18	0.90	13.76	0.86
13.92	0.69	13.49	0.93	13.35	0.89	13.84	0.86
14.01	0.69	13.57	0.93	13.35	0.90	13.93	0.86
14.09	0.69	13.65	0.93	13.43	0.90	14.01	0.86
14.17	0.69	13.74	0.93	13.52	0.90	14.09	0.86
14.26	0.69	13.74	0.93	13.68	0.90	14.18	0.86
14.34	0.69	13.82	0.93	13.68	0.89	14.26	0.85
14.42	0.69	13.90	0.93	13.77	0.89	14.34	0.85
14.51	0.69	13.99	0.94	13.85	0.89	14.51	0.85
14.59	0.69	14.07	0.93	13.93	0.89	14.51	0.85
14.67	0.69	14.15	0.93	14.02	0.89	14.59	0.86
14.76	0.69	14.24	0.93	14.10	0.90	14.68	0.86
14.84	0.69	14.32	0.93	14.18	0.89	14.84	0.85
14.92	0.69	14.32	0.93	14.27	0.89	14.84	0.86
15.01	0.69	14.40	0.93	14.35	0.90	14.93	0.85
15.09	0.69	14.49	0.93	14.35	0.89	15.01	0.85
15.17	0.69	14.57	0.93	14.43	0.89	15.01	0.84
15.26	0.69	14.65	0.93	14.52	0.89	15.09	0.84
15.34	0.68	14.74	0.93	14.60	0.89	15.18	0.85
15.42	0.68	14.82	0.92	14.68	0.89	15.26	0.86
15.51	0.69	14.90	0.92	14.77	0.89	15.34	0.85
15.59	0.69	14.99	0.93	14.77	0.89	15.43	0.85
15.67	0.69	14.99	0.92	14.85	0.89	15.51	0.84
15.76	0.68	15.07	0.93	14.93	0.89	15.59	0.84
15.92	0.68	15.15	0.92	15.02	0.89	15.59	0.85
16.01	0.68	15.24	0.92	15.10	0.89	15.68	0.85
16.09	0.68	15.32	0.92	15.18	0.88	15.76	0.85
16.17	0.68	15.40	0.92	15.27	0.89	15.84	0.86
16.26	0.68	15.49	0.92	15.43	0.89	15.93	0.85
16.34	0.68	15.57	0.92	15.43	0.89	15.93	0.85

25 mg/L alginate		25 mg/L SRNOM		25 mg/L BSA		25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
16.42	0.68	15.57	0.92	15.52	0.89	16.01	0.84
16.51	0.68	15.65	0.92	15.60	0.89	16.09	0.85
16.59	0.68	15.74	0.92	15.68	0.88	16.18	0.85
16.67	0.68	15.82	0.92	15.77	0.89	16.26	0.84
16.76	0.68	15.90	0.92	15.85	0.89	16.34	0.84
16.84	0.68	15.99	0.92	15.85	0.88	16.34	0.84
16.92	0.68	16.07	0.92	15.93	0.88	16.51	0.84
17.01	0.68	16.15	0.92	16.02	0.88	16.51	0.84
		16.24	0.92	16.10	0.89	16.59	0.84
		16.32	0.92	16.18	0.88	16.68	0.84
		16.40	0.92	16.18	0.88	16.76	0.84
		16.49	0.92	16.27	0.88	16.84	0.84
		16.57	0.92	16.35	0.88	16.93	0.84
		16.57	0.92	16.43	0.88	17.01	0.84
		16.65	0.92	16.52	0.88		
		16.74	0.92	16.52	0.88		
		16.82	0.93	16.68	0.88		
		16.90	0.92	16.77	0.88		
		16.99	0.91	16.77	0.88		
				16.93	0.88		
				17.02	0.89		
				17.03	0.85		

**Figure 5.3**

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.08	1.00	0.08	0.99
0.17	1.00	0.08	1.00	0.17	0.98
0.25	1.00	0.17	0.99	0.25	0.97
0.33	0.99	0.25	1.00	0.33	0.97
0.42	0.99	0.33	0.99	0.42	0.97
0.50	0.99	0.42	0.99	0.42	0.96
0.50	0.99	0.50	0.99	0.50	0.97
0.58	0.99	0.58	0.99	0.58	0.96
0.67	0.99	0.67	0.99	0.67	0.96
0.75	0.98	0.67	0.99	0.75	0.96
0.83	0.98	0.75	0.98	0.83	0.96
0.83	0.98	0.83	0.98	0.92	0.96
0.92	0.98	0.92	0.98	1.00	0.96
1.00	0.98	1.00	0.98	1.00	0.96

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
1.08	0.98	1.08	0.98	1.08	0.96
1.17	0.98	1.17	0.98	1.17	0.96
1.25	0.98	1.17	0.98	1.25	0.95
1.25	0.97	1.25	0.98	1.33	0.95
1.33	0.97	1.33	0.98	1.42	0.95
1.42	0.97	1.42	0.98	1.50	0.95
1.50	0.97	1.50	0.98	1.58	0.95
1.58	0.97	1.58	0.98	1.58	0.95
1.67	0.97	1.67	0.98	1.67	0.95
1.75	0.97	1.75	0.98	1.75	0.95
1.83	0.97	1.75	0.98	1.83	0.95
1.92	0.97	1.83	0.98	1.92	0.94
2.00	0.97	1.92	0.98	2.00	0.94
2.08	0.97	2.00	0.98	2.08	0.94
2.17	0.97	2.08	0.98	2.17	0.94
2.25	0.97	2.17	0.98	2.17	0.94
2.33	0.97	2.25	0.98	2.25	0.94
2.42	0.97	2.33	0.98	2.33	0.94
2.50	0.97	2.42	0.98	2.42	0.94
2.58	0.97	2.42	0.98	2.50	0.93
2.58	0.96	2.50	0.98	2.58	0.93
2.67	0.97	2.58	0.98	2.67	0.93
2.75	0.97	2.67	0.98	2.75	0.93
2.83	0.96	2.75	0.98	2.83	0.93
2.92	0.96	2.83	0.97	2.92	0.93
2.92	0.96	2.92	0.98	3.00	0.93
3.00	0.96	3.00	0.98	3.08	0.93
3.08	0.96	3.00	0.97	3.17	0.93
3.17	0.96	3.08	0.98	3.25	0.93
3.17	0.96	3.17	0.97	3.33	0.93
3.25	0.96	3.25	0.98	3.33	0.93
3.33	0.96	3.33	0.97	3.42	0.93
3.42	0.96	3.42	0.97	3.50	0.92
3.50	0.96	3.50	0.98	3.58	0.93
3.58	0.96	3.58	0.97	3.67	0.92
3.67	0.96	3.67	0.97	3.75	0.92
3.75	0.96	3.67	0.97	3.83	0.92
3.83	0.96	3.75	0.98	3.83	0.92
3.92	0.96	3.83	0.98	3.92	0.92
4.00	0.95	3.92	0.97	4.00	0.92
4.08	0.96	4.00	0.97	4.08	0.92
4.17	0.96	4.08	0.97	4.17	0.92

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
4.25	0.95	4.17	0.97	4.25	0.92
4.33	0.96	4.25	0.97	4.33	0.92
4.42	0.95	4.25	0.97	4.42	0.92
4.42	0.95	4.33	0.97	4.50	0.92
4.50	0.95	4.42	0.97	4.50	0.92
4.58	0.96	4.50	0.97	4.58	0.92
4.67	0.95	4.58	0.97	4.67	0.92
4.75	0.95	4.67	0.97	4.75	0.91
4.83	0.95	4.75	0.97	4.83	0.92
4.92	0.95	4.83	0.97	4.92	0.91
4.92	0.95	4.83	0.97	5.00	0.91
5.00	0.95	4.92	0.97	5.00	0.91
5.08	0.95	5.00	0.97	5.08	0.91
5.17	0.95	5.08	0.97	5.17	0.91
5.25	0.95	5.17	0.97	5.25	0.91
5.33	0.95	5.25	0.97	5.33	0.91
5.42	0.95	5.33	0.97	5.42	0.91
5.50	0.95	5.42	0.97	5.50	0.91
5.58	0.95	5.42	0.97	5.58	0.91
5.67	0.95	5.50	0.97	5.67	0.91
5.75	0.95	5.58	0.97	5.83	0.91
5.83	0.95	5.67	0.97	5.91	0.91
5.92	0.95	5.75	0.97	5.99	0.90
6.00	0.95	5.83	0.97	6.08	0.90
6.08	0.95	5.92	0.97	6.16	0.90
6.08	0.95	5.92	0.97	6.16	0.90
6.17	0.95	6.00	0.97	6.24	0.90
6.25	0.95	6.00	0.97	6.33	0.90
6.33	0.95	6.08	0.97	6.41	0.90
6.42	0.94	6.17	0.97	6.49	0.90
6.50	0.94	6.25	0.97	6.58	0.90
6.58	0.94	6.33	0.97	6.66	0.90
6.58	0.94	6.42	0.97	6.74	0.90
6.67	0.94	6.50	0.97	6.83	0.90
6.78	0.94	6.58	0.97	6.91	0.90
6.86	0.94	6.58	0.97	6.99	0.90
6.94	0.94	6.67	0.97	7.08	0.90
7.03	0.94	6.75	0.97	7.08	0.90
7.11	0.94	6.83	0.97	7.16	0.90
7.19	0.94	6.92	0.97	7.24	0.90
7.28	0.94	7.00	0.97	7.33	0.90
7.36	0.94	7.08	0.97	7.41	0.90

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
7.44	0.94	7.17	0.97	7.49	0.90
7.53	0.94	7.17	0.97	7.58	0.90
7.61	0.94	7.25	0.97	7.66	0.90
7.69	0.94	7.33	0.97	7.66	0.90
7.78	0.93	7.42	0.97	7.74	0.90
7.86	0.93	7.50	0.97	7.83	0.90
7.94	0.93	7.58	0.97	7.91	0.89
8.03	0.93	7.67	0.97	7.99	0.90
8.11	0.93	7.67	0.97	8.08	0.89
8.11	0.93	7.75	0.97	8.16	0.89
8.19	0.93	7.83	0.97	8.24	0.89
8.28	0.93	7.92	0.97	8.24	0.89
8.36	0.93	8.00	0.96	8.33	0.89
8.44	0.93	8.08	0.96	8.41	0.89
8.53	0.93	8.17	0.96	8.49	0.89
8.53	0.93	8.25	0.97	8.58	0.89
8.61	0.93	8.25	0.97	8.66	0.89
8.69	0.93	8.33	0.97	8.74	0.89
8.78	0.93	8.42	0.97	8.83	0.89
8.86	0.93	8.50	0.97	8.83	0.89
8.94	0.93	8.58	0.97	8.91	0.89
9.03	0.93	8.67	0.96	8.99	0.89
9.03	0.93	8.75	0.97	9.08	0.89
9.11	0.93	8.83	0.96	9.16	0.89
9.19	0.93	8.83	0.97	9.24	0.89
9.28	0.93	8.92	0.97	9.33	0.89
9.36	0.93	9.00	0.97	9.41	0.89
9.44	0.93	9.08	0.97	9.49	0.89
9.53	0.93	9.17	0.96	9.58	0.89
9.61	0.93	9.25	0.97	9.58	0.89
9.69	0.93	9.25	0.96	9.66	0.89
9.78	0.92	9.33	0.97	9.74	0.88
9.86	0.93	9.42	0.96	9.83	0.89
9.94	0.92	9.50	0.96	9.91	0.89
10.03	0.92	9.58	0.97	9.99	0.88
10.03	0.92	9.67	0.96	10.08	0.88
10.11	0.92	9.75	0.96	10.16	0.88
10.19	0.92	9.83	0.96	10.24	0.88
10.28	0.92	9.92	0.96	10.24	0.88
10.36	0.92	10.00	0.96	10.33	0.88
10.36	0.92	10.00	0.96	10.41	0.88
10.44	0.92	10.08	0.96	10.49	0.88

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
10.53	0.92	10.17	0.96	10.58	0.88
10.61	0.92	10.25	0.96	10.66	0.88
10.69	0.92	10.33	0.96	10.74	0.88
10.78	0.92	10.42	0.96	10.83	0.88
10.86	0.92	10.50	0.96	10.91	0.88
10.94	0.92	10.58	0.96	10.99	0.88
11.03	0.92	10.58	0.96	11.08	0.88
11.11	0.92	10.67	0.96	11.16	0.88
11.19	0.92	10.75	0.96	11.16	0.88
11.28	0.92	10.83	0.96	11.24	0.88
11.36	0.92	10.92	0.96	11.33	0.88
11.44	0.92	11.00	0.96	11.41	0.88
11.53	0.92	11.08	0.96	11.49	0.88
11.61	0.92	11.17	0.96	11.58	0.88
11.61	0.92	11.25	0.96	11.66	0.88
11.69	0.92	11.25	0.96	11.74	0.88
11.78	0.92	11.33	0.96	11.74	0.88
11.86	0.92	11.42	0.96	11.83	0.88
11.94	0.92	11.50	0.96	11.91	0.88
12.03	0.92	11.58	0.96	11.99	0.88
12.03	0.92	11.67	0.96	12.08	0.88
12.11	0.92	11.75	0.96	12.16	0.88
12.19	0.92	11.83	0.96	12.24	0.88
12.28	0.92	11.92	0.96	12.33	0.88
12.28	0.92	11.92	0.96	12.41	0.87
12.36	0.92	12.00	0.96	12.41	0.87
12.44	0.92	12.08	0.96	12.49	0.88
12.53	0.92	12.17	0.96	12.58	0.87
12.61	0.92	12.25	0.96	12.66	0.87
12.69	0.92	12.33	0.96	12.74	0.87
12.78	0.91	12.42	0.96	12.83	0.87
12.86	0.91	12.50	0.96	12.91	0.87
12.94	0.91	12.58	0.96	12.99	0.87
13.03	0.92	12.58	0.96	13.08	0.87
13.11	0.91	12.67	0.96	13.16	0.87
13.19	0.91	12.75	0.96	13.16	0.87
13.28	0.91	12.83	0.96	13.24	0.87
13.36	0.91	12.91	0.96	13.33	0.87
13.44	0.91	13.00	0.96	13.41	0.87
13.44	0.91	13.08	0.96	13.49	0.87
13.53	0.91	13.17	0.96	13.58	0.87
13.61	0.91	13.17	0.96	13.66	0.87



Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
13.69	0.91	13.25	0.96	13.74	0.87
13.69	0.91	13.33	0.96	13.83	0.87
13.78	0.91	13.41	0.96	13.83	0.87
13.86	0.91	13.50	0.96	13.91	0.87
13.94	0.91	13.58	0.96	13.99	0.87
13.94	0.91	13.66	0.96	14.08	0.87
14.03	0.91	13.75	0.96	14.16	0.87
14.11	0.91	13.83	0.96	14.24	0.87
14.19	0.91	13.91	0.96	14.33	0.87
14.28	0.91	14.00	0.96	14.33	0.87
14.36	0.91	14.08	0.96	14.41	0.87
14.44	0.91	14.16	0.96	14.49	0.87
14.53	0.91	14.17	0.96	14.58	0.87
14.61	0.90	14.25	0.96	14.66	0.87
14.69	0.90	14.33	0.96	14.74	0.86
14.78	0.91	14.41	0.96	14.83	0.87
14.86	0.90	14.50	0.96	14.91	0.87
14.94	0.90	14.58	0.95	14.99	0.86
15.03	0.91	14.66	0.96	15.08	0.87
15.11	0.90	14.75	0.96	15.16	0.87
15.19	0.91	14.75	0.96	15.24	0.87
15.19	0.90	14.83	0.96	15.24	0.86
15.28	0.90	14.91	0.95	15.33	0.86
15.36	0.90	15.00	0.96	15.41	0.86
15.44	0.90	15.08	0.95	15.49	0.86
15.53	0.90	15.16	0.95	15.58	0.86
15.61	0.90	15.25	0.95	15.66	0.86
15.61	0.90	15.33	0.95	15.74	0.86
15.69	0.90	15.41	0.95	15.83	0.86
15.78	0.90	15.50	0.95	15.91	0.86
15.86	0.90	15.50	0.95	15.91	0.86
15.94	0.90	15.58	0.95	15.99	0.86
16.03	0.90	15.66	0.95	16.08	0.86
16.11	0.90	15.75	0.95	16.16	0.86
16.19	0.90	15.83	0.95	16.24	0.86
16.28	0.90	15.91	0.95	16.33	0.86
16.36	0.90	16.00	0.95	16.41	0.86
16.44	0.90	16.00	0.95	16.49	0.86
16.53	0.90	16.08	0.96	16.58	0.86
16.61	0.90	16.16	0.95	16.66	0.86
16.69	0.90	16.25	0.95	16.74	0.86
16.78	0.90	16.33	0.95	16.74	0.86

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
16.86	0.90	16.41	0.95	16.83	0.86
16.94	0.90	16.50	0.95	16.91	0.86
17.03	0.90	16.58	0.95	16.99	0.86
		16.66	0.95	17.08	0.86
		16.75	0.95		
		16.75	0.95		
		16.83	0.95		
		16.91	0.95		

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.08	1.01	0.08	1.00
0.17	1.00	0.17	0.99	0.17	1.00
0.17	0.99	0.25	0.98	0.25	1.00
0.25	0.99	0.33	0.98	0.33	1.00
0.33	0.99	0.42	0.98	0.42	0.99
0.42	0.99	0.50	0.97	0.50	0.99
0.50	0.99	0.50	0.98	0.58	0.99
0.58	0.99	0.58	0.97	0.67	0.99
0.67	0.99	0.67	0.97	0.75	0.99
0.75	0.99	0.75	0.97	0.83	0.99
0.75	0.99	0.83	0.97	0.92	0.99
0.83	0.99	0.92	0.96	0.92	0.99
0.92	0.99	1.00	0.96	1.08	0.99
1.00	0.99	1.08	0.96	1.17	0.99
1.08	0.99	1.17	0.95	1.17	0.99
1.17	0.99	1.25	0.95	1.25	0.99
1.25	0.99	1.25	0.95	1.33	0.99
1.33	0.99	1.33	0.95	1.50	0.99
1.33	0.99	1.42	0.95	1.58	0.99
1.42	0.99	1.50	0.95	1.58	0.99
1.50	0.99	1.58	0.95	1.75	0.99
1.58	0.98	1.67	0.95	1.83	0.99
1.67	0.98	1.75	0.95	1.83	0.99
1.75	0.98	1.83	0.95	1.92	0.99
1.83	0.98	1.92	0.95	2.00	0.99
1.92	0.98	1.92	0.95	2.08	0.99
2.00	0.98	2.00	0.95	2.17	0.99

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
2.00	0.98	2.08	0.95	2.25	0.99
2.08	0.98	2.17	0.95	2.33	0.99
2.17	0.98	2.25	0.94	2.42	0.99
2.25	0.98	2.33	0.94	2.50	0.99
2.33	0.98	2.42	0.94	2.58	0.99
2.42	0.98	2.42	0.94	2.58	0.99
2.50	0.98	2.50	0.94	2.67	0.99
2.58	0.98	2.58	0.94	2.75	0.99
2.58	0.98	2.67	0.94	2.83	0.99
2.67	0.98	2.75	0.94	2.92	0.99
2.75	0.98	2.83	0.94	3.00	0.98
2.83	0.98	2.92	0.94	3.08	0.99
2.92	0.98	3.00	0.94	3.17	0.98
3.00	0.98	3.08	0.93	3.25	0.98
3.08	0.98	3.17	0.93	3.33	0.98
3.17	0.98	3.25	0.94	3.42	0.98
3.17	0.98	3.33	0.93	3.50	0.99
3.25	0.97	3.42	0.93	3.58	0.99
3.33	0.98	3.50	0.93	3.58	0.98
3.42	0.97	3.58	0.93	3.67	0.98
3.50	0.97	3.58	0.93	3.75	0.98
3.58	0.97	3.67	0.93	3.83	0.98
3.67	0.98	3.75	0.93	3.92	0.98
3.75	0.97	3.83	0.93	4.00	0.98
3.75	0.97	3.92	0.93	4.00	0.98
3.83	0.97	4.00	0.93	4.08	0.98
3.92	0.97	4.08	0.93	4.17	0.98
4.00	0.97	4.08	0.92	4.25	0.98
4.08	0.97	4.17	0.93	4.25	0.98
4.17	0.97	4.25	0.92	4.33	0.98
4.25	0.97	4.33	0.92	4.42	0.98
4.25	0.97	4.42	0.92	4.50	0.98
4.33	0.97	4.50	0.92	4.58	0.98
4.42	0.97	4.58	0.92	4.58	0.98
4.50	0.97	4.67	0.92	4.75	0.98
4.58	0.97	4.75	0.92	4.75	0.98
4.67	0.97	4.83	0.92	4.83	0.98
4.75	0.97	4.92	0.92	4.92	0.98
4.83	0.97	5.00	0.92	5.00	0.98
4.83	0.97	5.00	0.92	5.08	0.98
4.92	0.97	5.08	0.92	5.17	0.98
5.00	0.97	5.17	0.92	5.25	0.98

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.08	0.97	5.25	0.92	5.25	0.97
5.17	0.97	5.33	0.92	5.42	0.97
5.25	0.97	5.37	0.92	5.50	0.97
5.33	0.97	5.45	0.92	5.50	0.97
5.42	0.97	5.53	0.92	5.54	0.97
5.42	0.97	5.62	0.92	5.62	0.97
5.50	0.97	5.70	0.92	5.70	0.97
5.58	0.97	5.70	0.92	5.79	0.97
5.67	0.97	5.78	0.92	5.87	0.97
5.75	0.97	5.87	0.92	5.95	0.97
5.83	0.97	5.95	0.91	6.04	0.97
5.92	0.97	6.03	0.91	6.12	0.97
5.92	0.97	6.12	0.91	6.20	0.97
6.00	0.97	6.20	0.91	6.28	0.97
6.08	0.97	6.28	0.91	6.29	0.97
6.17	0.97	6.37	0.91	6.37	0.97
6.25	0.97	6.45	0.91	6.45	0.97
6.33	0.97	6.45	0.91	6.53	0.97
6.42	0.97	6.53	0.91	6.70	0.97
6.50	0.97	6.62	0.91	6.79	0.97
6.50	0.97	6.70	0.91	6.79	0.97
6.58	0.97	6.78	0.91	6.95	0.97
6.67	0.97	6.87	0.90	7.03	0.97
6.75	0.97	6.95	0.91	7.12	0.97
6.83	0.97	7.03	0.90	7.20	0.97
6.94	0.97	7.03	0.90	7.20	0.97
7.02	0.96	7.12	0.90	7.28	0.97
7.11	0.96	7.20	0.90	7.37	0.97
7.11	0.96	7.28	0.91	7.45	0.97
7.19	0.97	7.37	0.90	7.53	0.97
7.27	0.96	7.45	0.90	7.62	0.97
7.36	0.97	7.53	0.90	7.62	0.97
7.44	0.96	7.62	0.90	7.70	0.97
7.52	0.96	7.70	0.91	7.78	0.97
7.61	0.96	7.78	0.90	7.87	0.97
7.69	0.96	7.78	0.90	7.95	0.97
7.69	0.96	7.87	0.90	8.03	0.97
7.77	0.96	7.95	0.90	8.12	0.97
7.86	0.96	8.03	0.90	8.12	0.97
7.94	0.96	8.12	0.90	8.20	0.97
8.02	0.96	8.20	0.90	8.28	0.96
8.11	0.96	8.28	0.90	8.29	0.96

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.19	0.96	8.37	0.90	8.37	0.96
8.19	0.96	8.45	0.90	8.45	0.96
8.27	0.97	8.53	0.90	8.53	0.96
8.36	0.96	8.62	0.90	8.62	0.96
8.44	0.96	8.62	0.90	8.62	0.96
8.52	0.96	8.70	0.90	8.70	0.96
8.61	0.96	8.78	0.90	8.78	0.96
8.69	0.96	8.87	0.90	8.87	0.96
8.77	0.96	8.95	0.90	8.95	0.96
8.77	0.96	9.03	0.90	9.03	0.97
8.86	0.96	9.12	0.90	9.12	0.97
8.94	0.96	9.20	0.90	9.20	0.97
9.02	0.96	9.28	0.90	9.20	0.96
9.11	0.96	9.37	0.90	9.28	0.96
9.19	0.96	9.45	0.89	9.45	0.96
9.27	0.96	9.45	0.90	9.53	0.96
9.36	0.96	9.53	0.90	9.53	0.96
9.36	0.96	9.62	0.90	9.62	0.96
9.44	0.96	9.70	0.90	9.70	0.96
9.52	0.96	9.78	0.90	9.78	0.96
9.61	0.96	9.87	0.89	9.87	0.96
9.69	0.96	9.95	0.89	9.95	0.96
9.77	0.96	10.03	0.89	10.03	0.96
9.86	0.96	10.12	0.89	10.12	0.96
9.94	0.96	10.20	0.89	10.20	0.96
9.94	0.96	10.28	0.89	10.20	0.96
10.02	0.96	10.28	0.89	10.37	0.96
10.11	0.96	10.37	0.89	10.45	0.96
10.19	0.96	10.45	0.89	10.53	0.96
10.27	0.96	10.53	0.89	10.53	0.96
10.36	0.96	10.62	0.89	10.70	0.96
10.44	0.96	10.70	0.89	10.78	0.96
10.44	0.96	10.78	0.89	10.87	0.96
10.52	0.96	10.87	0.89	10.87	0.96
10.61	0.96	10.95	0.89	10.95	0.96
10.69	0.96	10.95	0.89	11.03	0.96
10.77	0.96	11.03	0.89	11.12	0.96
10.86	0.96	11.12	0.89	11.20	0.96
10.94	0.96	11.20	0.89	11.28	0.95
11.02	0.96	11.28	0.89	11.37	0.95
11.02	0.96	11.37	0.89	11.45	0.96
11.11	0.96	11.45	0.89	11.53	0.95

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.19	0.96	11.53	0.89	11.53	0.95
11.27	0.96	11.53	0.89	11.62	0.95
11.36	0.96	11.62	0.89	11.70	0.96
11.44	0.96	11.70	0.89	11.78	0.96
11.52	0.96	11.78	0.89	11.87	0.95
11.61	0.96	11.87	0.89	11.87	0.95
11.61	0.96	11.95	0.89	11.95	0.95
11.69	0.95	12.03	0.88	12.03	0.95
11.77	0.95	12.12	0.89	12.12	0.96
11.86	0.96	12.20	0.88	12.20	0.95
11.94	0.95	12.28	0.88	12.28	0.95
12.02	0.95	12.28	0.88	12.37	0.95
12.11	0.95	12.37	0.88	12.45	0.95
12.19	0.95	12.45	0.88	12.53	0.94
12.19	0.95	12.53	0.88	12.62	0.95
12.27	0.95	12.62	0.88	12.70	0.95
12.36	0.95	12.70	0.88	12.78	0.95
12.44	0.95	12.78	0.88	12.87	0.95
12.52	0.95	12.87	0.88	12.95	0.95
12.61	0.95	12.95	0.88	13.03	0.94
12.69	0.95	13.03	0.88	13.03	0.95
12.77	0.95	13.03	0.88	13.12	0.95
12.77	0.95	13.12	0.88	13.20	0.94
12.86	0.95	13.20	0.88	13.28	0.94
12.94	0.95	13.28	0.88	13.37	0.94
13.02	0.95	13.37	0.88	13.45	0.94
13.11	0.95	13.45	0.88	13.53	0.95
13.19	0.95	13.53	0.88	13.62	0.94
13.27	0.95	13.62	0.88	13.62	0.94
13.36	0.95	13.70	0.88	13.70	0.94
13.36	0.95	13.78	0.88	13.78	0.94
13.44	0.95	13.78	0.88	13.87	0.94
13.52	0.95	13.87	0.88	13.95	0.94
13.61	0.95	13.95	0.88	14.03	0.94
13.69	0.95	14.03	0.88	14.12	0.94
13.77	0.95	14.12	0.88	14.20	0.94
13.86	0.95	14.20	0.88	14.28	0.94
13.94	0.95	14.28	0.88	14.37	0.94
13.94	0.95	14.37	0.88	14.45	0.94
14.02	0.95	14.45	0.88	14.53	0.94
14.11	0.95	14.45	0.88	14.62	0.94
14.19	0.95	14.53	0.88	14.70	0.94

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.27	0.95	14.62	0.87	14.78	0.94
14.36	0.95	14.70	0.88	14.87	0.94
14.44	0.95	14.78	0.88	14.87	0.94
14.44	0.95	14.87	0.88	15.03	0.94
14.52	0.95	14.95	0.88	15.03	0.94
14.61	0.94	15.03	0.88	15.12	0.94
14.69	0.95	15.12	0.87	15.20	0.94
14.77	0.95	15.20	0.87	15.28	0.94
14.86	0.95	15.28	0.88	15.28	0.94
14.94	0.95	15.36	0.88	15.37	0.94
15.02	0.95	15.45	0.87	15.45	0.94
15.02	0.95	15.53	0.87	15.53	0.94
15.11	0.95	15.61	0.87	15.62	0.94
15.19	0.95	15.62	0.87	15.70	0.94
15.27	0.95	15.70	0.87	15.78	0.93
15.36	0.95	15.78	0.87	15.87	0.94
15.44	0.95	15.86	0.87	15.95	0.93
15.52	0.95	15.95	0.87	16.03	0.93
15.61	0.95	16.03	0.87	16.12	0.94
15.61	0.95	16.11	0.87	16.12	0.93
15.69	0.95	16.20	0.87	16.20	0.93
15.77	0.95	16.28	0.87	16.28	0.93
15.86	0.95	16.36	0.87	16.37	0.93
15.94	0.95	16.45	0.87	16.45	0.93
16.02	0.95	16.45	0.87	16.53	0.93
16.11	0.95	16.53	0.87	16.62	0.93
16.19	0.95	16.61	0.87	16.70	0.93
16.19	0.95	16.70	0.87	16.78	0.93
16.27	0.95	16.78	0.87	16.87	0.93
16.36	0.95	16.86	0.87	16.95	0.93
16.44	0.95	16.95	0.87	16.95	0.93
16.52	0.94	16.95	0.86	17.03	0.93
16.61	0.95	17.03	0.86		
16.69	0.95				
16.77	0.95				
16.77	0.94				
16.86	0.94				

**Figure 5.4**

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00
0.00	1.00	0.08	0.99	0.08	1.01
0.08	1.00	0.17	0.97	0.17	0.99
0.17	0.96	0.25	0.95	0.25	0.97
0.25	0.94	0.33	0.94	0.33	0.96
0.33	0.92	0.42	0.93	0.42	0.95
0.33	0.91	0.50	0.92	0.50	0.94
0.50	0.90	0.50	0.91	0.58	0.94
0.50	0.87	0.58	0.91	0.67	0.93
0.58	0.87	0.67	0.90	0.75	0.92
0.67	0.87	0.75	0.89	0.83	0.92
0.83	0.85	0.83	0.88	0.92	0.91
0.83	0.84	0.83	0.87	1.00	0.91
0.92	0.84	1.00	0.87	1.08	0.89
1.08	0.83	1.00	0.85	1.17	0.88
1.17	0.82	1.08	0.85	1.25	0.88
1.25	0.81	1.17	0.84	1.25	0.87
1.25	0.81	1.25	0.84	1.33	0.87
1.33	0.81	1.42	0.83	1.42	0.87
1.42	0.81	1.42	0.83	1.50	0.86
1.50	0.80	1.50	0.83	1.58	0.86
1.58	0.80	1.67	0.82	1.67	0.85
1.67	0.79	1.75	0.82	1.67	0.85
1.75	0.79	1.83	0.81	1.83	0.85
1.83	0.79	1.83	0.81	1.92	0.85
1.92	0.78	1.92	0.81	1.92	0.84
2.00	0.78	2.00	0.80	2.08	0.84
2.00	0.78	2.00	0.80	2.17	0.84
2.17	0.78	2.08	0.80	2.25	0.84
2.17	0.77	2.17	0.80	2.33	0.83
2.25	0.77	2.25	0.80	2.42	0.83
2.33	0.77	2.33	0.79	2.50	0.83
2.50	0.77	2.42	0.79	2.58	0.83
2.58	0.76	2.50	0.78	2.67	0.83
2.67	0.76	2.58	0.78	2.67	0.82
2.75	0.76	2.58	0.78	2.75	0.82
2.83	0.75	2.67	0.78	2.83	0.82
2.92	0.75	2.75	0.78	2.92	0.82
3.00	0.75	2.83	0.77	3.00	0.82
3.08	0.75	2.92	0.77	3.00	0.81
3.17	0.75	2.92	0.77	3.08	0.81



Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
3.25	0.75	3.08	0.77	3.17	0.81
3.33	0.74	3.17	0.77	3.25	0.81
3.42	0.74	3.25	0.77	3.42	0.81
3.50	0.74	3.33	0.76	3.42	0.81
3.58	0.74	3.42	0.76	3.50	0.81
3.58	0.74	3.50	0.76	3.58	0.80
3.67	0.74	3.58	0.76	3.67	0.80
3.75	0.73	3.67	0.76	3.75	0.80
3.83	0.73	3.75	0.76	3.83	0.80
3.92	0.73	3.83	0.76	3.92	0.80
4.00	0.73	3.92	0.75	4.00	0.80
4.08	0.73	3.92	0.75	4.08	0.79
4.17	0.73	4.00	0.75	4.17	0.80
4.25	0.73	4.08	0.75	4.25	0.79
4.25	0.73	4.17	0.75	4.25	0.79
4.42	0.73	4.25	0.75	4.33	0.79
4.50	0.72	4.25	0.74	4.42	0.79
4.58	0.72	4.33	0.74	4.42	0.79
4.75	0.72	4.42	0.74	4.50	0.79
4.83	0.72	4.50	0.74	4.58	0.79
4.92	0.72	4.58	0.74	4.67	0.79
5.00	0.72	4.58	0.74	4.67	0.79
5.08	0.71	4.75	0.74	4.75	0.79
5.17	0.71	4.75	0.73	4.83	0.79
5.25	0.71	4.83	0.74	4.92	0.78
5.33	0.71	5.00	0.74	5.00	0.78
5.42	0.71	5.08	0.73	5.00	0.78
5.50	0.71	5.17	0.73	5.08	0.78
5.58	0.71	5.25	0.73	5.17	0.78
5.67	0.71	5.33	0.73	5.25	0.78
5.75	0.71	5.42	0.73	5.33	0.78
5.83	0.71	5.50	0.73	5.42	0.77
5.92	0.70	5.58	0.73	5.50	0.77
6.00	0.71	5.67	0.73	5.58	0.77
6.00	0.70	5.75	0.73	5.67	0.77
6.08	0.70	5.83	0.73	5.70	0.77
6.17	0.70	5.92	0.72	5.78	0.77
6.25	0.70	5.92	0.72	5.86	0.77
6.42	0.70	6.08	0.72	5.95	0.77
6.50	0.70	6.17	0.72	6.03	0.77
6.58	0.70	6.25	0.72	6.11	0.77
6.67	0.70	6.25	0.72	6.20	0.77

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
6.75	0.70	6.33	0.72	6.20	0.76
6.83	0.70	6.42	0.72	6.28	0.76
6.83	0.70	6.50	0.72	6.36	0.76
6.92	0.70	6.58	0.72	6.45	0.76
6.92	0.70	6.67	0.72	6.53	0.76
7.01	0.70	6.75	0.72	6.61	0.76
7.09	0.69	6.83	0.72	6.61	0.76
7.17	0.69	7.00	0.72	6.70	0.76
7.26	0.69	7.08	0.72	6.78	0.76
7.34	0.69	7.17	0.71	6.86	0.76
7.42	0.69	7.25	0.71	6.95	0.76
7.51	0.69	7.25	0.71	7.03	0.76
7.59	0.69	7.30	0.71	7.11	0.76
7.67	0.69	7.38	0.71	7.20	0.76
7.76	0.69	7.47	0.71	7.28	0.76
7.84	0.69	7.55	0.71	7.36	0.76
8.01	0.69	7.63	0.71	7.36	0.75
8.09	0.69	7.72	0.71	7.45	0.75
8.09	0.69	7.80	0.71	7.53	0.75
8.17	0.69	7.88	0.71	7.61	0.75
8.34	0.68	7.97	0.71	7.69	0.75
8.42	0.69	8.05	0.70	7.78	0.75
8.51	0.68	8.13	0.70	7.86	0.75
8.51	0.68	8.22	0.70	7.94	0.75
8.59	0.68	8.30	0.70	7.95	0.75
8.67	0.68	8.38	0.70	8.03	0.75
8.76	0.68	8.47	0.70	8.11	0.75
8.84	0.68	8.63	0.70	8.19	0.75
8.92	0.68	8.72	0.70	8.28	0.75
9.01	0.68	8.80	0.70	8.28	0.75
9.09	0.68	8.88	0.70	8.36	0.75
9.17	0.68	8.97	0.70	8.44	0.75
9.26	0.68	9.05	0.70	8.53	0.74
9.26	0.68	9.13	0.70	8.61	0.74
9.34	0.68	9.22	0.70	8.69	0.74
9.42	0.68	9.38	0.70	8.70	0.74
9.51	0.68	9.38	0.69	8.78	0.74
9.59	0.68	9.47	0.70	8.86	0.74
9.67	0.68	9.55	0.70	8.94	0.74
9.76	0.68	9.63	0.70	8.95	0.74
9.84	0.68	9.72	0.69	9.11	0.74
9.92	0.68	9.80	0.69	9.11	0.74

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
10.01	0.68	9.88	0.69	9.19	0.74
10.09	0.68	9.97	0.69	9.28	0.74
10.17	0.67	10.05	0.69	9.36	0.74
10.26	0.67	10.13	0.69	9.44	0.73
10.34	0.68	10.30	0.69	9.53	0.73
10.42	0.67	10.38	0.69	9.61	0.73
10.51	0.67	10.47	0.69	9.61	0.73
10.59	0.67	10.47	0.69	9.69	0.73
10.67	0.67	10.63	0.69	9.78	0.73
10.76	0.67	10.72	0.69	9.86	0.73
10.84	0.67	10.72	0.69	9.94	0.73
10.92	0.67	10.88	0.68	9.95	0.73
11.01	0.67	10.97	0.69	10.03	0.73
11.09	0.67	11.05	0.69	10.11	0.73
11.17	0.67	11.13	0.69	10.19	0.73
11.26	0.67	11.22	0.69	10.28	0.73
11.34	0.67	11.30	0.68	10.28	0.73
11.42	0.67	11.38	0.68	10.36	0.73
11.51	0.67	11.47	0.68	10.44	0.73
11.59	0.67	11.55	0.68	10.53	0.73
11.76	0.67	11.55	0.68	10.61	0.73
11.84	0.67	11.63	0.68	10.61	0.73
11.84	0.67	11.72	0.68	10.78	0.73
11.92	0.67	11.80	0.68	10.86	0.73
12.01	0.67	11.88	0.68	10.86	0.73
12.17	0.67	11.97	0.68	11.03	0.73
12.17	0.67	12.05	0.68	11.11	0.73
12.26	0.67	12.22	0.68	11.19	0.73
12.34	0.67	12.30	0.68	11.28	0.73
12.51	0.67	12.38	0.68	11.36	0.73
12.51	0.67	12.47	0.68	11.44	0.72
12.59	0.67	12.55	0.68	11.53	0.72
12.67	0.66	12.63	0.68	11.61	0.72
12.76	0.67	12.72	0.68	11.69	0.72
12.84	0.66	12.80	0.68	11.78	0.72
12.92	0.66	12.88	0.68	11.86	0.72
13.01	0.66	13.05	0.68	11.94	0.72
13.09	0.66	13.05	0.68	12.03	0.72
13.26	0.66	13.13	0.68	12.11	0.72
13.34	0.66	13.22	0.68	12.19	0.72
13.42	0.66	13.30	0.68	12.28	0.72
13.51	0.66	13.38	0.67	12.28	0.72

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
13.67	0.66	13.47	0.67	12.36	0.72
13.76	0.66	13.55	0.67	12.44	0.72
13.84	0.66	13.63	0.67	12.53	0.72
13.92	0.66	13.71	0.67	12.61	0.72
14.01	0.66	13.88	0.67	12.78	0.72
14.09	0.66	13.96	0.67	12.86	0.72
14.17	0.66	14.05	0.67	12.94	0.72
14.26	0.66	14.13	0.67	13.11	0.72
14.26	0.66	14.21	0.67	13.19	0.71
14.42	0.66	14.30	0.67	13.19	0.72
14.51	0.65	14.38	0.67	13.28	0.72
14.51	0.65	14.46	0.67	13.36	0.71
14.59	0.66	14.55	0.67	13.44	0.71
14.67	0.65	14.63	0.67	13.53	0.71
14.76	0.65	14.71	0.67	13.61	0.71
14.84	0.65	14.80	0.67	13.69	0.71
14.92	0.65	14.88	0.67	13.78	0.71
14.92	0.65	14.96	0.67	13.86	0.71
15.09	0.65	15.05	0.67	13.94	0.71
15.17	0.65	15.13	0.67	14.03	0.71
15.26	0.65	15.21	0.67	14.11	0.71
15.34	0.65	15.22	0.67	14.19	0.71
15.42	0.65	15.30	0.67	14.28	0.71
15.51	0.65	15.38	0.67	14.28	0.71
15.59	0.65	15.46	0.67	14.44	0.71
15.67	0.65	15.55	0.67	14.53	0.71
15.76	0.65	15.63	0.66	14.61	0.71
15.84	0.65	15.71	0.67	14.78	0.71
15.92	0.65	15.80	0.67	14.86	0.71
16.01	0.65	15.88	0.66	14.94	0.71
16.01	0.65	15.96	0.66	15.03	0.71
16.17	0.65	16.05	0.66	15.11	0.71
16.17	0.65	16.13	0.67	15.19	0.71
16.26	0.65	16.21	0.66	15.28	0.70
16.34	0.65	16.30	0.66	15.36	0.70
16.51	0.65	16.38	0.66	15.44	0.70
16.59	0.65	16.46	0.66	15.53	0.70
16.59	0.65	16.55	0.66	15.61	0.70
16.76	0.65	16.71	0.66	15.69	0.70
16.84	0.65	16.72	0.66	15.78	0.70
17.01	0.65	16.80	0.66	15.86	0.70
17.09	0.65	16.88	0.66	15.94	0.70

Alginate + BSA		Alginate + SRNOM		Alginate + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
		16.96	0.66	16.03	0.70
		17.05	0.66	16.11	0.70
				16.19	0.70
				16.36	0.70
				16.44	0.70
				16.53	0.70
				16.61	0.70
				16.69	0.70
				16.78	0.70
				16.86	0.70
				16.94	0.70
				17.03	0.70

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00
0.00	1.00	0.08	0.99	0.00	1.00
0.17	1.00	0.17	0.99	0.08	0.99
0.25	0.99	0.25	0.99	0.17	0.99
0.33	0.99	0.33	0.99	0.25	0.99
0.33	0.99	0.42	0.99	0.33	0.98
0.42	0.99	0.42	0.99	0.33	0.99
0.50	0.99	0.58	0.99	0.50	0.99
0.58	0.98	0.58	0.99	0.58	0.99
0.67	0.98	0.75	0.99	0.67	0.99
0.75	0.98	0.75	0.97	0.75	0.99
0.75	0.98	0.92	0.98	0.83	0.98
0.83	0.98	1.00	0.97	0.92	0.98
0.92	0.98	1.08	0.97	1.00	0.98
1.00	0.98	1.17	0.97	1.08	0.98
1.08	0.97	1.25	0.97	1.17	0.98
1.17	0.97	1.33	0.97	1.25	0.98
1.25	0.97	1.33	0.97	1.33	0.98
1.33	0.97	1.42	0.97	1.42	0.98
1.33	0.97	1.50	0.97	1.50	0.98
1.42	0.97	1.58	0.97	1.58	0.98
1.50	0.97	1.67	0.96	1.67	0.98
1.58	0.97	1.67	0.97	1.67	0.98
1.67	0.97	1.75	0.97	1.75	0.98
1.67	0.97	1.83	0.97	1.83	0.98
1.83	0.97	1.92	0.97	1.92	0.97

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
1.92	0.97	2.00	0.96	1.92	0.97
2.00	0.97	2.08	0.96	2.00	0.98
2.00	0.97	2.08	0.96	2.08	0.98
2.17	0.97	2.25	0.96	2.17	0.97
2.17	0.97	2.25	0.96	2.25	0.98
2.25	0.97	2.33	0.96	2.33	0.97
2.33	0.97	2.50	0.96	2.42	0.98
2.42	0.97	2.58	0.96	2.50	0.97
2.50	0.96	2.67	0.96	2.58	0.97
2.58	0.96	2.75	0.96	2.67	0.97
2.67	0.96	2.75	0.96	2.75	0.97
2.67	0.96	2.83	0.96	2.83	0.97
2.75	0.96	2.92	0.95	2.92	0.97
2.83	0.97	3.00	0.96	3.00	0.97
2.92	0.97	3.08	0.95	3.00	0.97
3.00	0.97	3.17	0.95	3.08	0.97
3.08	0.96	3.25	0.96	3.17	0.97
3.17	0.96	3.33	0.95	3.25	0.97
3.25	0.96	3.42	0.95	3.33	0.97
3.25	0.96	3.42	0.95	3.33	0.97
3.33	0.96	3.50	0.95	3.42	0.97
3.42	0.96	3.58	0.95	3.50	0.97
3.50	0.96	3.67	0.95	3.50	0.96
3.58	0.96	3.75	0.95	3.58	0.97
3.75	0.96	3.83	0.95	3.67	0.97
3.83	0.96	3.92	0.95	3.75	0.97
3.92	0.96	4.00	0.95	3.75	0.97
3.92	0.96	4.08	0.95	3.83	0.97
4.00	0.96	4.08	0.95	3.92	0.96
4.08	0.96	4.17	0.95	4.00	0.97
4.25	0.96	4.25	0.95	4.08	0.97
4.25	0.96	4.33	0.95	4.08	0.96
4.33	0.96	4.42	0.95	4.17	0.96
4.42	0.96	4.50	0.95	4.25	0.96
4.50	0.96	4.58	0.95	4.33	0.96
4.58	0.96	4.67	0.95	4.42	0.96
4.67	0.96	4.75	0.95	4.50	0.96
4.75	0.96	4.83	0.94	4.58	0.96
4.83	0.96	4.92	0.94	4.67	0.96
4.92	0.96	5.00	0.94	4.75	0.96
5.00	0.96	5.08	0.94	4.75	0.96
5.00	0.96	5.08	0.94	4.83	0.96

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.08	0.96	5.17	0.94	4.92	0.96
5.17	0.95	5.25	0.95	5.00	0.96
5.25	0.95	5.33	0.94	5.08	0.96
5.33	0.96	5.38	0.94	5.08	0.96
5.42	0.95	5.47	0.94	5.25	0.96
5.50	0.96	5.47	0.94	5.33	0.95
5.58	0.95	5.55	0.94	5.33	0.96
5.67	0.96	5.63	0.94	5.42	0.95
5.67	0.95	5.72	0.94	5.50	0.95
5.83	0.95	5.80	0.93	5.58	0.95
5.92	0.95	5.88	0.94	5.67	0.95
6.00	0.95	5.97	0.93	5.67	0.95
6.00	0.95	6.05	0.94	5.75	0.95
6.07	0.95	6.13	0.93	5.78	0.95
6.15	0.95	6.22	0.93	5.86	0.95
6.23	0.95	6.30	0.93	5.86	0.95
6.32	0.95	6.38	0.93	5.94	0.95
6.40	0.95	6.47	0.93	6.03	0.95
6.48	0.95	6.55	0.93	6.11	0.95
6.48	0.95	6.63	0.93	6.19	0.95
6.57	0.95	6.72	0.93	6.28	0.95
6.65	0.95	6.72	0.93	6.36	0.94
6.73	0.95	6.88	0.93	6.44	0.94
6.73	0.95	6.88	0.93	6.53	0.94
6.82	0.95	6.97	0.93	6.61	0.95
6.90	0.95	7.05	0.93	6.69	0.94
6.98	0.95	7.13	0.93	6.78	0.94
7.07	0.95	7.22	0.93	6.86	0.95
7.15	0.95	7.22	0.93	6.94	0.94
7.23	0.95	7.30	0.93	6.95	0.94
7.32	0.95	7.38	0.93	7.03	0.94
7.40	0.95	7.38	0.93	7.11	0.95
7.48	0.95	7.47	0.93	7.19	0.94
7.57	0.95	7.55	0.93	7.28	0.94
7.65	0.95	7.63	0.93	7.36	0.94
7.73	0.94	7.72	0.93	7.36	0.94
7.82	0.94	7.80	0.93	7.44	0.94
7.90	0.94	7.88	0.93	7.53	0.94
7.98	0.94	7.97	0.93	7.61	0.94
7.98	0.94	8.05	0.92	7.69	0.94
8.07	0.94	8.05	0.92	7.70	0.94
8.15	0.94	8.13	0.92	7.86	0.94

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.23	0.94	8.22	0.92	7.86	0.94
8.32	0.94	8.30	0.92	7.94	0.94
8.40	0.94	8.38	0.92	8.03	0.94
8.40	0.94	8.38	0.92	8.11	0.94
8.48	0.94	8.47	0.92	8.19	0.94
8.57	0.94	8.55	0.92	8.28	0.94
8.65	0.94	8.63	0.92	8.44	0.94
8.65	0.94	8.72	0.92	8.53	0.94
8.73	0.94	8.80	0.92	8.61	0.94
8.82	0.94	8.88	0.92	8.61	0.94
8.90	0.94	8.97	0.92	8.69	0.94
8.98	0.94	8.97	0.92	8.78	0.94
8.98	0.94	9.05	0.92	8.86	0.93
9.15	0.94	9.13	0.92	8.94	0.94
9.23	0.94	9.13	0.92	8.95	0.94
9.32	0.94	9.22	0.92	9.03	0.93
9.40	0.94	9.30	0.92	9.11	0.93
9.48	0.94	9.38	0.92	9.19	0.93
9.57	0.94	9.47	0.92	9.28	0.94
9.65	0.94	9.55	0.92	9.28	0.93
9.73	0.94	9.63	0.92	9.36	0.93
9.82	0.94	9.72	0.92	9.44	0.93
9.90	0.94	9.88	0.92	9.53	0.93
9.98	0.94	9.88	0.91	9.61	0.93
9.98	0.94	9.97	0.91	9.61	0.93
10.07	0.94	10.05	0.91	9.78	0.93
10.15	0.94	10.13	0.91	9.86	0.93
10.23	0.94	10.22	0.91	9.94	0.93
10.32	0.94	10.30	0.91	9.94	0.93
10.32	0.94	10.30	0.91	10.11	0.93
10.40	0.94	10.38	0.91	10.19	0.93
10.48	0.94	10.47	0.91	10.28	0.93
10.57	0.94	10.55	0.91	10.28	0.93
10.65	0.94	10.63	0.91	10.36	0.93
10.65	0.94	10.72	0.91	10.44	0.93
10.82	0.94	10.80	0.91	10.53	0.93
10.82	0.94	10.80	0.91	10.61	0.92
10.90	0.94	10.88	0.91	10.69	0.92
10.98	0.94	10.97	0.91	10.69	0.92
11.07	0.94	11.05	0.91	10.78	0.92
11.15	0.94	11.05	0.91	10.86	0.92
11.23	0.94	11.22	0.91	10.94	0.92



BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.32	0.94	11.30	0.91	11.03	0.92
11.40	0.94	11.38	0.91	11.03	0.92
11.48	0.94	11.47	0.91	11.19	0.92
11.57	0.93	11.55	0.91	11.28	0.92
11.65	0.94	11.63	0.91	11.28	0.92
11.73	0.94	11.72	0.91	11.44	0.92
11.82	0.94	11.72	0.91	11.53	0.92
11.90	0.93	11.88	0.91	11.61	0.92
11.98	0.94	11.97	0.91	11.69	0.92
11.98	0.93	11.97	0.90	11.78	0.92
12.07	0.93	12.05	0.91	11.86	0.92
12.15	0.93	12.13	0.90	11.94	0.92
12.23	0.93	12.22	0.90	11.94	0.91
12.32	0.93	12.30	0.90	12.03	0.91
12.32	0.93	12.38	0.90	12.11	0.91
12.48	0.93	12.47	0.90	12.19	0.91
12.57	0.93	12.55	0.90	12.28	0.91
12.65	0.93	12.63	0.90	12.36	0.91
12.65	0.93	12.63	0.90	12.44	0.91
12.82	0.93	12.72	0.90	12.53	0.91
12.90	0.93	12.80	0.90	12.61	0.91
12.98	0.93	12.80	0.90	12.61	0.91
12.98	0.93	12.88	0.90	12.69	0.91
13.15	0.93	13.05	0.90	12.78	0.91
13.23	0.93	13.05	0.90	12.86	0.91
13.32	0.93	13.13	0.90	12.94	0.91
13.32	0.93	13.22	0.90	12.94	0.90
13.40	0.93	13.30	0.90	13.03	0.91
13.48	0.93	13.38	0.90	13.11	0.90
13.57	0.93	13.47	0.89	13.19	0.90
13.65	0.93	13.55	0.89	13.28	0.90
13.73	0.93	13.63	0.89	13.28	0.90
13.82	0.93	13.72	0.89	13.44	0.90
13.90	0.93	13.80	0.89	13.44	0.90
13.98	0.93	13.88	0.89	13.53	0.90
14.07	0.93	13.97	0.90	13.61	0.90
14.07	0.93	13.97	0.89	13.69	0.90
14.15	0.93	14.05	0.89	13.78	0.90
14.23	0.93	14.13	0.89	13.86	0.90
14.32	0.93	14.22	0.90	13.94	0.90
14.40	0.93	14.30	0.89	14.03	0.90
14.40	0.93	14.38	0.89	14.11	0.90

BSA +SRNOM		BSA + OA		SRNOM +OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.57	0.93	14.47	0.89	14.19	0.90
14.57	0.93	14.47	0.89	14.28	0.90
14.65	0.93	14.55	0.89	14.36	0.90
14.73	0.93	14.63	0.89	14.44	0.90
14.82	0.93	14.72	0.89	14.53	0.89
14.90	0.93	14.80	0.89	14.61	0.89
14.98	0.93	14.80	0.89	14.61	0.90
15.07	0.93	14.88	0.89	14.69	0.90
15.15	0.93	15.05	0.89	14.78	0.89
15.23	0.93	15.05	0.89	14.86	0.89
15.23	0.92	15.22	0.89	14.94	0.89
15.32	0.93	15.30	0.89	14.94	0.89
15.40	0.92	15.30	0.89	15.11	0.89
15.40	0.93	15.47	0.89	15.19	0.89
15.48	0.93	15.55	0.89	15.19	0.89
15.57	0.92	15.63	0.89	15.28	0.89
15.65	0.93	15.71	0.89	15.36	0.89
15.73	0.92	15.80	0.89	15.44	0.89
15.82	0.92	15.80	0.89	15.53	0.89
15.90	0.92	15.88	0.89	15.61	0.89
15.98	0.92	15.97	0.89	15.69	0.89
16.07	0.93	16.05	0.89	15.78	0.89
16.07	0.92	16.13	0.89	15.86	0.89
16.15	0.92	16.21	0.88	15.94	0.89
16.23	0.92	16.30	0.89	15.94	0.89
16.32	0.92	16.30	0.89	16.03	0.89
16.40	0.92	16.38	0.89	16.11	0.89
16.48	0.92	16.46	0.88	16.19	0.89
16.57	0.92	16.55	0.89	16.28	0.89
16.65	0.92	16.55	0.88	16.36	0.89
16.73	0.92	16.63	0.88	16.44	0.89
16.82	0.92	16.71	0.88	16.44	0.89
16.90	0.92	16.80	0.88	16.53	0.88
16.98	0.92	16.88	0.88	16.61	0.88
17.07	0.92	16.96	0.88	16.69	0.88
		16.97	0.88	16.78	0.88
				16.86	0.88
				16.94	0.88
				17.03	0.88

**Figure 5.5**

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	1.00	0.00	1.00	0.08	1.00	0.08	1.00	0.08	0.99
0.17	1.00	0.08	0.99	0.08	1.00	0.17	0.99	0.17	0.98
0.17	0.99	0.17	0.98	0.17	1.00	0.25	0.99	0.17	0.97
0.25	0.99	0.25	0.97	0.25	1.00	0.33	0.98	0.25	0.96
0.33	0.99	0.25	0.97	0.33	0.99	0.33	0.97	0.33	0.96
0.42	0.99	0.33	0.97	0.42	1.00	0.42	0.97	0.42	0.95
0.50	0.99	0.42	0.96	0.50	0.99	0.50	0.97	0.50	0.95
0.58	0.99	0.50	0.95	0.58	0.99	0.58	0.97	0.58	0.95
0.67	0.99	0.58	0.96	0.67	0.99	0.67	0.97	0.67	0.94
0.75	0.99	0.67	0.96	0.75	0.99	0.75	0.97	0.75	0.94
0.75	0.98	0.75	0.95	0.83	0.99	0.83	0.97	0.75	0.94
0.83	0.99	0.83	0.96	0.92	0.99	0.92	0.97	0.83	0.93
0.92	0.98	0.92	0.96	1.00	0.99	1.00	0.97	0.92	0.93
1.00	0.98	1.00	0.95	1.08	0.99	1.08	0.97	1.00	0.93
1.08	0.98	1.08	0.95	1.17	0.98	1.17	0.97	1.08	0.93
1.17	0.98	1.17	0.95	1.25	0.99	1.17	0.97	1.17	0.93
1.25	0.97	1.25	0.95	1.33	0.99	1.25	0.97	1.25	0.93
1.25	0.97	1.33	0.94	1.42	0.99	1.33	0.97	1.25	0.93
1.33	0.98	1.42	0.95	1.50	0.99	1.42	0.97	1.33	0.93
1.42	0.98	1.50	0.94	1.58	0.99	1.50	0.97	1.42	0.93
1.50	0.97	1.58	0.94	1.67	0.99	1.58	0.97	1.50	0.93
1.58	0.97	1.67	0.94	1.67	0.99	1.67	0.96	1.58	0.93
1.67	0.97	1.75	0.94	1.75	0.99	1.75	0.97	1.67	0.93
1.67	0.97	1.75	0.94	1.83	0.98	1.75	0.96	1.75	0.93
1.75	0.97	1.83	0.94	1.92	0.99	1.83	0.97	1.83	0.92
1.83	0.97	1.92	0.94	2.00	0.99	1.92	0.96	1.83	0.92
1.92	0.97	2.00	0.94	2.00	0.99	2.00	0.96	1.92	0.92
2.00	0.96	2.08	0.94	2.08	0.99	2.08	0.97	2.00	0.92
2.08	0.97	2.08	0.94	2.17	0.99	2.17	0.96	2.08	0.92
2.17	0.97	2.17	0.93	2.25	0.99	2.25	0.96	2.17	0.92
2.25	0.97	2.25	0.94	2.25	0.99	2.33	0.96	2.25	0.92
2.25	0.97	2.33	0.94	2.33	0.99	2.42	0.95	2.33	0.92
2.33	0.97	2.42	0.94	2.42	0.99	2.50	0.96	2.42	0.92
2.42	0.97	2.50	0.94	2.50	0.99	2.50	0.96	2.50	0.92
2.50	0.97	2.50	0.94	2.58	0.99	2.58	0.95	2.50	0.92
2.58	0.96	2.58	0.94	2.67	0.99	2.67	0.96	2.58	0.92
2.67	0.97	2.67	0.94	2.75	0.99	2.75	0.96	2.67	0.92
2.75	0.97	2.75	0.93	2.83	0.99	2.83	0.96	2.75	0.91
2.83	0.97	2.83	0.93	2.92	0.99	2.92	0.95	2.83	0.92

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
2.92	0.97	2.92	0.93	3.00	0.99	3.00	0.96	2.92	0.92
2.92	0.97	3.00	0.93	3.08	0.99	3.08	0.96	2.92	0.92
3.00	0.97	3.08	0.93	3.17	0.99	3.17	0.96	3.00	0.92
3.08	0.97	3.17	0.93	3.25	0.98	3.25	0.96	3.08	0.92
3.17	0.95	3.25	0.93	3.33	0.99	3.25	0.96	3.17	0.92
3.25	0.97	3.33	0.93	3.33	0.98	3.33	0.96	3.25	0.91
3.33	0.97	3.42	0.93	3.42	0.98	3.42	0.96	3.33	0.92
3.42	0.97	3.50	0.93	3.50	0.99	3.50	0.96	3.42	0.91
3.50	0.97	3.50	0.93	3.58	0.99	3.58	0.96	3.50	0.91
3.58	0.97	3.58	0.93	3.67	0.98	3.67	0.96	3.58	0.91
3.58	0.97	3.67	0.92	3.67	0.99	3.75	0.96	3.67	0.91
3.67	0.97	3.75	0.93	3.75	0.98	3.83	0.96	3.67	0.91
3.75	0.97	3.83	0.93	3.83	0.98	3.92	0.95	3.75	0.91
3.83	0.97	3.83	0.93	3.92	0.98	3.92	0.96	3.83	0.91
3.92	0.97	3.92	0.93	3.92	0.99	4.00	0.96	3.92	0.91
4.00	0.97	4.00	0.93	4.00	0.99	4.08	0.96	4.00	0.91
4.08	0.97	4.08	0.93	4.08	0.98	4.17	0.95	4.08	0.91
4.17	0.96	4.17	0.93	4.17	0.98	4.25	0.96	4.17	0.91
4.17	0.97	4.25	0.93	4.25	0.99	4.33	0.96	4.17	0.91
4.25	0.97	4.33	0.93	4.33	0.99	4.42	0.96	4.25	0.91
4.33	0.96	4.42	0.92	4.42	0.99	4.50	0.95	4.33	0.91
4.42	0.96	4.50	0.93	4.50	0.98	4.58	0.95	4.42	0.91
4.50	0.96	4.50	0.92	4.58	0.98	4.58	0.96	4.50	0.90
4.58	0.96	4.58	0.93	4.67	0.98	4.67	0.95	4.58	0.90
4.67	0.96	4.67	0.92	4.67	0.98	4.75	0.94	4.67	0.91
4.75	0.95	4.75	0.92	4.75	0.98	4.83	0.96	4.75	0.90
4.75	0.96	4.83	0.92	4.83	0.98	4.92	0.94	4.83	0.90
4.83	0.96	4.92	0.92	4.92	0.98	5.00	0.95	4.92	0.90
4.92	0.96	5.00	0.91	5.00	0.98	5.08	0.95	5.00	0.90
5.00	0.96	5.08	0.92	5.08	0.98	5.17	0.96	5.00	0.90
5.08	0.96	5.17	0.92	5.17	0.98	5.25	0.95	5.08	0.90
5.17	0.97	5.17	0.92	5.25	0.99	5.25	0.95	5.17	0.90
5.17	0.96	5.25	0.92	5.33	0.98	5.33	0.95	5.25	0.90
5.25	0.96	5.33	0.92	5.33	0.98	5.42	0.95	5.33	0.90
5.33	0.96	5.42	0.92	5.42	0.98	5.50	0.95	5.42	0.90
5.42	0.96	5.50	0.92	5.50	0.98	5.58	0.95	5.50	0.90
5.50	0.95	5.58	0.92	5.63	0.98	5.67	0.95	5.58	0.90
5.58	0.96	5.58	0.91	5.72	0.98	5.75	0.94	5.67	0.90
5.67	0.96	5.67	0.91	5.80	0.98	5.83	0.94	5.67	0.90
5.75	0.96	5.75	0.91	5.80	0.98	5.83	0.95	5.75	0.90
5.75	0.96	5.83	0.90	5.88	0.98	5.92	0.95	5.83	0.90

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.83	0.96	5.92	0.91	5.97	0.98	6.00	0.95	5.92	0.90
5.92	0.96	6.00	0.92	6.05	0.97	6.06	0.95	5.92	0.90
6.00	0.96	6.08	0.90	6.13	0.98	6.15	0.94	6.00	0.90
6.07	0.96	6.17	0.92	6.22	0.98	6.23	0.95	6.08	0.90
6.15	0.96	6.25	0.92	6.22	0.98	6.31	0.94	6.17	0.90
6.23	0.96	6.33	0.91	6.30	0.98	6.40	0.95	6.25	0.89
6.32	0.96	6.42	0.91	6.38	0.98	6.48	0.95	6.33	0.90
6.32	0.94	6.50	0.91	6.47	0.98	6.48	0.95	6.42	0.90
6.40	0.96	6.58	0.91	6.55	0.98	6.56	0.95	6.50	0.90
6.48	0.96	6.67	0.91	6.63	0.98	6.65	0.95	6.58	0.90
6.57	0.96	6.75	0.90	6.72	0.98	6.73	0.95	6.67	0.89
6.65	0.96	6.83	0.89	6.80	0.98	6.81	0.95	6.74	0.89
6.73	0.95	6.92	0.91	6.88	0.98	6.90	0.94	6.83	0.89
6.82	0.95	7.00	0.91	6.97	0.98	6.98	0.95	6.91	0.89
6.90	0.95	7.08	0.91	7.05	0.99	7.06	0.95	6.99	0.89
6.90	0.94	7.17	0.91	7.13	0.97	7.15	0.94	7.08	0.89
6.98	0.95	7.17	0.91	7.22	0.97	7.23	0.95	7.16	0.89
7.07	0.95	7.25	0.91	7.22	0.98	7.31	0.95	7.24	0.89
7.15	0.95	7.41	0.90	7.30	0.98	7.31	0.94	7.33	0.89
7.23	0.95	7.49	0.90	7.38	0.98	7.40	0.95	7.33	0.89
7.32	0.95	7.57	0.90	7.46	0.98	7.48	0.94	7.41	0.90
7.40	0.95	7.57	0.89	7.55	0.98	7.56	0.94	7.49	0.89
7.40	0.95	7.66	0.89	7.63	0.98	7.65	0.94	7.57	0.89
7.48	0.95	7.74	0.90	7.63	0.97	7.73	0.95	7.58	0.89
7.57	0.95	7.82	0.89	7.71	0.98	7.81	0.93	7.66	0.89
7.65	0.95	7.91	0.89	7.80	0.98	7.90	0.94	7.74	0.89
7.73	0.95	7.99	0.90	7.88	0.98	7.98	0.95	7.82	0.88
7.82	0.95	8.07	0.90	7.96	0.97	7.98	0.94	7.91	0.89
7.90	0.95	8.07	0.90	8.05	0.98	8.06	0.94	7.99	0.89
7.98	0.95	8.16	0.90	8.13	0.98	8.15	0.92	8.07	0.89
7.98	0.95	8.24	0.90	8.21	0.98	8.23	0.94	8.16	0.89
8.07	0.95	8.32	0.90	8.30	0.98	8.31	0.94	8.24	0.89
8.15	0.95	8.41	0.90	8.38	0.98	8.40	0.94	8.33	0.88
8.23	0.95	8.49	0.90	8.46	0.97	8.48	0.94	8.41	0.89
8.32	0.95	8.57	0.90	8.55	0.98	8.56	0.93	8.49	0.89
8.40	0.94	8.66	0.90	8.63	0.98	8.56	0.94	8.57	0.89
8.48	0.95	8.74	0.90	8.71	0.98	8.65	0.94	8.66	0.89
8.48	0.95	8.82	0.89	8.80	0.97	8.73	0.94	8.74	0.89
8.57	0.95	8.91	0.89	8.88	0.98	8.81	0.94	8.82	0.88
8.65	0.95	8.99	0.90	8.96	0.97	8.90	0.94	8.91	0.89
8.73	0.95	8.99	0.90	8.97	0.98	8.98	0.94	8.91	0.89

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.82	0.95	9.07	0.90	9.05	0.98	9.06	0.94	8.99	0.88
8.90	0.94	9.16	0.90	9.13	0.98	9.15	0.94	9.07	0.88
8.98	0.94	9.24	0.90	9.21	0.97	9.23	0.94	9.16	0.88
9.07	0.95	9.32	0.90	9.30	0.98	9.23	0.94	9.24	0.88
9.15	0.94	9.32	0.90	9.38	0.98	9.31	0.94	9.32	0.88
9.15	0.95	9.41	0.90	9.38	0.98	9.40	0.94	9.33	0.88
9.23	0.94	9.49	0.89	9.46	0.97	9.48	0.94	9.41	0.88
9.32	0.94	9.57	0.90	9.55	0.97	9.56	0.94	9.49	0.89
9.40	0.94	9.66	0.89	9.63	0.97	9.65	0.92	9.57	0.88
9.48	0.94	9.74	0.89	9.71	0.98	9.73	0.94	9.66	0.88
9.57	0.94	9.74	0.89	9.80	0.98	9.81	0.94	9.74	0.88
9.65	0.94	9.82	0.89	9.88	0.98	9.90	0.93	9.82	0.88
9.73	0.94	9.91	0.89	9.96	0.98	9.98	0.94	9.91	0.88
9.73	0.94	9.99	0.89	10.05	0.98	10.06	0.94	9.99	0.88
9.82	0.94	10.07	0.89	10.13	0.98	10.06	0.94	10.07	0.88
9.90	0.94	10.16	0.89	10.21	0.98	10.15	0.94	10.16	0.88
9.98	0.94	10.24	0.89	10.30	0.98	10.23	0.93	10.24	0.88
10.07	0.94	10.32	0.89	10.38	0.98	10.31	0.94	10.32	0.88
10.15	0.94	10.41	0.89	10.46	0.97	10.40	0.93	10.41	0.87
10.23	0.94	10.49	0.89	10.55	0.97	10.48	0.94	10.49	0.88
10.32	0.94	10.57	0.89	10.63	0.97	10.56	0.94	10.57	0.88
10.32	0.94	10.66	0.89	10.71	0.97	10.65	0.93	10.66	0.88
10.40	0.94	10.74	0.89	10.80	0.97	10.73	0.93	10.74	0.87
10.48	0.94	10.82	0.89	10.88	0.97	10.73	0.93	10.74	0.87
10.57	0.94	10.82	0.89	10.96	0.98	10.81	0.93	10.82	0.87
10.65	0.94	10.91	0.89	11.05	0.98	10.89	0.94	10.91	0.87
10.73	0.94	10.99	0.89	11.05	0.98	10.98	0.93	10.99	0.88
10.82	0.94	11.07	0.89	11.13	0.98	11.06	0.93	11.07	0.87
10.90	0.93	11.16	0.89	11.21	0.98	11.15	0.93	11.16	0.87
10.90	0.94	11.24	0.89	11.30	0.97	11.23	0.93	11.24	0.87
10.98	0.93	11.24	0.89	11.38	0.97	11.31	0.93	11.32	0.87
11.07	0.93	11.32	0.89	11.38	0.97	11.31	0.93	11.32	0.87
11.15	0.93	11.41	0.89	11.46	0.97	11.40	0.93	11.41	0.88
11.23	0.93	11.49	0.88	11.55	0.97	11.48	0.93	11.49	0.87
11.32	0.93	11.49	0.89	11.63	0.97	11.56	0.93	11.57	0.87
11.40	0.93	11.57	0.88	11.71	0.97	11.64	0.93	11.66	0.87
11.48	0.94	11.66	0.89	11.80	0.97	11.73	0.93	11.74	0.87
11.57	0.94	11.74	0.88	11.88	0.97	11.81	0.93	11.82	0.87
11.65	0.94	11.82	0.89	11.96	0.97	11.89	0.93	11.91	0.87
11.65	0.94	11.91	0.89	12.05	0.97	11.90	0.93	11.99	0.87
11.73	0.94	11.99	0.88	12.13	0.97	11.98	0.93	12.07	0.87
11.82	0.93	12.07	0.88	12.21	0.97	12.06	0.93	12.16	0.87

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.90	0.93	12.16	0.89	12.30	0.97	12.14	0.93	12.24	0.87
11.98	0.93	12.24	0.88	12.38	0.97	12.23	0.93	12.32	0.87
12.07	0.93	12.32	0.89	12.38	0.97	12.31	0.93	12.41	0.87
12.15	0.93	12.41	0.88	12.46	0.97	12.39	0.93	12.41	0.87
12.15	0.93	12.49	0.88	12.55	0.97	12.48	0.93	12.49	0.88
12.23	0.93	12.57	0.88	12.63	0.97	12.48	0.93	12.57	0.87
12.32	0.93	12.66	0.89	12.71	0.97	12.56	0.93	12.66	0.88
12.40	0.93	12.74	0.88	12.80	0.97	12.64	0.93	12.74	0.87
12.48	0.93	12.82	0.88	12.80	0.97	12.73	0.93	12.82	0.87
12.57	0.93	12.82	0.88	12.88	0.97	12.81	0.92	12.91	0.87
12.65	0.93	12.91	0.88	12.96	0.97	12.89	0.93	12.91	0.87
12.73	0.93	12.99	0.88	13.05	0.97	12.98	0.92	12.99	0.87
12.82	0.93	13.07	0.88	13.05	0.97	13.06	0.93	13.07	0.87
12.82	0.93	13.16	0.88	13.13	0.97	13.14	0.93	13.16	0.87
12.90	0.93	13.16	0.88	13.21	0.97	13.23	0.93	13.16	0.87
12.98	0.93	13.24	0.87	13.30	0.97	13.23	0.93	13.24	0.87
13.07	0.93	13.32	0.88	13.38	0.97	13.31	0.93	13.32	0.87
13.15	0.93	13.41	0.87	13.46	0.97	13.39	0.93	13.41	0.87
13.23	0.93	13.49	0.87	13.55	0.97	13.48	0.93	13.49	0.86
13.32	0.93	13.57	0.88	13.63	0.97	13.56	0.92	13.57	0.87
13.40	0.93	13.66	0.88	13.71	0.97	13.64	0.93	13.66	0.86
13.40	0.93	13.74	0.88	13.80	0.97	13.73	0.93	13.74	0.87
13.48	0.93	13.74	0.88	13.88	0.97	13.81	0.93	13.82	0.86
13.57	0.93	13.82	0.88	13.96	0.97	13.81	0.93	13.91	0.86
13.65	0.93	13.91	0.88	14.05	0.97	13.89	0.93	13.99	0.86
13.73	0.93	13.99	0.88	14.13	0.96	13.98	0.93	14.07	0.87
13.82	0.92	14.07	0.88	14.21	0.96	14.06	0.92	14.16	0.86
13.90	0.93	14.16	0.88	14.30	0.97	14.14	0.92	14.24	0.86
13.98	0.93	14.24	0.88	14.38	0.96	14.23	0.93	14.32	0.86
14.07	0.91	14.32	0.88	14.38	0.96	14.31	0.92	14.41	0.86
14.15	0.92	14.41	0.86	14.46	0.96	14.39	0.93	14.41	0.86
14.15	0.92	14.49	0.87	14.55	0.96	14.48	0.93	14.49	0.86
14.23	0.92	14.57	0.88	14.63	0.96	14.56	0.92	14.57	0.86
14.32	0.92	14.57	0.87	14.71	0.97	14.56	0.92	14.66	0.86
14.40	0.92	14.66	0.88	14.80	0.97	14.64	0.92	14.74	0.86
14.48	0.93	14.74	0.88	14.80	0.97	14.73	0.92	14.82	0.86
14.57	0.92	14.82	0.87	14.88	0.97	14.81	0.92	14.82	0.86
14.65	0.92	14.91	0.88	14.96	0.97	14.89	0.92	14.91	0.86
14.73	0.92	14.91	0.86	15.05	0.97	14.98	0.92	14.99	0.86
14.82	0.92	14.99	0.88	15.13	0.96	15.06	0.92	15.07	0.86
14.90	0.92	15.07	0.88	15.21	0.97	15.14	0.92	15.16	0.86

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.98	0.92	15.16	0.88	15.30	0.97	15.23	0.92	15.24	0.86
14.98	0.92	15.24	0.87	15.38	0.96	15.23	0.92	15.32	0.86
15.07	0.92	15.32	0.86	15.46	0.96	15.31	0.92	15.41	0.86
15.15	0.92	15.41	0.87	15.63	0.96	15.39	0.92	15.49	0.86
15.23	0.92	15.41	0.87	15.71	0.96	15.48	0.92	15.57	0.86
15.32	0.92	15.49	0.88	15.80	0.96	15.56	0.92	15.66	0.86
15.40	0.92	15.57	0.87	15.88	0.96	15.64	0.92	15.74	0.86
15.48	0.92	15.65	0.87	15.96	0.96	15.73	0.92	15.82	0.86
15.57	0.92	15.74	0.87	16.05	0.96	15.81	0.92	15.91	0.86
15.65	0.92	15.82	0.87	16.13	0.96	15.89	0.92	15.99	0.86
15.73	0.92	15.90	0.87	16.21	0.96	15.98	0.92	16.07	0.86
15.82	0.92	15.99	0.87	16.30	0.96	16.06	0.92	16.16	0.85
15.82	0.92	16.07	0.87	16.30	0.96	16.14	0.92	16.24	0.86
15.90	0.92	16.15	0.87	16.38	0.96	16.15	0.92	16.32	0.86
15.98	0.92	16.24	0.87	16.46	0.96	16.23	0.92	16.41	0.86
16.07	0.91	16.32	0.87	16.55	0.96	16.31	0.92	16.49	0.86
16.15	0.92	16.40	0.87	16.63	0.96	16.39	0.91	16.57	0.85
16.23	0.91	16.49	0.87	16.71	0.96	16.48	0.91	16.57	0.85
16.32	0.92	16.49	0.87	16.71	0.96	16.56	0.91	16.66	0.85
16.40	0.91	16.57	0.87	16.80	0.96	16.64	0.91	16.74	0.86
16.40	0.91	16.65	0.86	16.88	0.96	16.73	0.91	16.82	0.85
16.48	0.91	16.74	0.87	16.96	0.96	16.81	0.91	16.82	0.85
16.57	0.91	16.82	0.87	17.05	0.96	16.89	0.91	16.91	0.85
16.65	0.92	16.82	0.86			16.89	0.91	16.99	0.85
16.73	0.92	16.90	0.86			16.98	0.91	17.07	0.85
16.82	0.91	16.99	0.87			17.06	0.91		
16.90	0.92	17.07	0.86						
16.98	0.91								
17.07	0.91								

**Figure 5.6**

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.08	0.99	0.08	0.99	0.08	0.99	0.08	1.00	0.08	0.99
0.17	0.98	0.17	0.97	0.17	0.97	0.25	0.99	0.17	0.96
0.25	0.94	0.25	0.96	0.25	0.96	0.33	0.98	0.25	0.92
0.33	0.91	0.33	0.94	0.25	0.95	0.42	0.99	0.33	0.89
0.42	0.88	0.42	0.92	0.33	0.95	0.42	0.98	0.42	0.87



Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.50	0.86	0.50	0.92	0.42	0.94	0.50	0.98	0.42	0.85
0.58	0.84	0.58	0.90	0.50	0.93	0.58	0.98	0.50	0.85
0.67	0.83	0.67	0.90	0.58	0.93	0.67	0.99	0.58	0.84
0.75	0.81	0.75	0.89	0.58	0.92	0.75	0.98	0.67	0.82
0.75	0.80	0.75	0.88	0.67	0.92	0.75	0.97	0.75	0.80
0.83	0.80	0.83	0.88	0.75	0.90	0.83	0.97	0.83	0.79
0.92	0.78	0.92	0.88	0.83	0.91	0.92	0.97	0.83	0.78
1.00	0.77	1.00	0.86	0.92	0.90	1.00	0.96	0.92	0.78
1.08	0.76	1.08	0.86	1.00	0.90	1.08	0.96	1.00	0.78
1.08	0.76	1.17	0.85	1.08	0.88	1.08	0.96	1.08	0.78
1.17	0.76	1.25	0.85	1.17	0.89	1.25	0.96	1.08	0.77
1.25	0.74	1.25	0.84	1.25	0.88	1.33	0.96	1.17	0.77
1.33	0.74	1.33	0.84	1.25	0.88	1.42	0.95	1.25	0.77
1.42	0.74	1.42	0.84	1.42	0.88	1.50	0.96	1.33	0.76
1.50	0.73	1.50	0.83	1.42	0.87	1.58	0.95	1.42	0.76
1.58	0.73	1.58	0.82	1.50	0.86	1.67	0.95	1.50	0.75
1.67	0.72	1.67	0.82	1.67	0.87	1.75	0.95	1.58	0.74
1.75	0.72	1.75	0.82	1.75	0.87	1.83	0.95	1.67	0.74
1.83	0.72	1.83	0.81	1.83	0.86	1.92	0.95	1.75	0.74
1.92	0.71	1.92	0.81	1.92	0.86	2.00	0.95	1.75	0.73
2.00	0.71	2.00	0.80	1.92	0.85	2.08	0.95	1.83	0.73
2.08	0.70	2.08	0.80	2.00	0.85	2.17	0.95	1.92	0.73
2.17	0.70	2.17	0.79	2.08	0.85	2.25	0.95	2.00	0.72
2.25	0.70	2.25	0.79	2.17	0.85	2.33	0.95	2.08	0.72
2.33	0.69	2.33	0.79	2.25	0.85	2.42	0.95	2.17	0.71
2.42	0.69	2.42	0.79	2.25	0.84	2.50	0.95	2.25	0.71
2.50	0.69	2.50	0.79	2.33	0.85	2.50	0.95	2.33	0.71
2.58	0.68	2.58	0.78	2.42	0.84	2.58	0.95	2.42	0.71
2.67	0.68	2.67	0.78	2.50	0.83	2.67	0.95	2.50	0.71
2.75	0.68	2.67	0.78	2.50	0.84	2.75	0.95	2.58	0.71
2.83	0.68	2.75	0.78	2.58	0.84	2.75	0.95	2.58	0.70
2.92	0.67	2.83	0.77	2.67	0.83	2.92	0.95	2.67	0.70
3.00	0.67	2.92	0.77	2.75	0.83	3.00	0.95	2.75	0.70
3.08	0.67	3.00	0.76	2.83	0.82	3.00	0.95	2.83	0.70
3.17	0.67	3.00	0.76	2.92	0.83	3.17	0.95	2.92	0.69
3.25	0.67	3.08	0.76	2.92	0.83	3.25	0.95	3.00	0.69
3.33	0.67	3.17	0.76	3.08	0.83	3.33	0.95	3.08	0.69
3.42	0.66	3.25	0.76	3.08	0.83	3.42	0.94	3.17	0.69
3.50	0.66	3.33	0.76	3.17	0.83	3.50	0.95	3.25	0.69
3.58	0.66	3.33	0.75	3.25	0.83	3.58	0.95	3.33	0.68
3.67	0.66	3.42	0.76	3.42	0.82	3.67	0.94	3.42	0.68

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
3.75	0.66	3.50	0.75	3.42	0.82	3.75	0.94	3.50	0.68
3.83	0.65	3.58	0.75	3.50	0.82	3.83	0.94	3.58	0.68
3.92	0.65	3.67	0.75	3.58	0.81	3.92	0.94	3.67	0.68
4.00	0.65	3.75	0.75	3.67	0.81	4.00	0.94	3.75	0.68
4.08	0.65	3.75	0.74	3.75	0.81	4.08	0.94	3.83	0.67
4.17	0.64	3.83	0.75	3.83	0.81	4.08	0.94	3.92	0.67
4.25	0.65	3.92	0.74	3.92	0.81	4.17	0.94	4.00	0.67
4.33	0.64	4.00	0.74	3.92	0.81	4.25	0.94	4.08	0.67
4.42	0.65	4.08	0.74	4.00	0.81	4.33	0.94	4.17	0.67
4.50	0.64	4.17	0.74	4.08	0.81	4.42	0.94	4.25	0.67
4.58	0.64	4.25	0.74	4.17	0.80	4.50	0.94	4.33	0.67
4.67	0.64	4.33	0.74	4.25	0.80	4.58	0.94	4.42	0.66
4.75	0.64	4.42	0.73	4.25	0.80	4.67	0.94	4.50	0.66
4.83	0.64	4.50	0.73	4.33	0.80	4.67	0.94	4.58	0.66
4.92	0.64	4.58	0.73	4.42	0.80	4.75	0.94	4.67	0.66
5.00	0.64	4.67	0.73	4.50	0.80	4.83	0.94	4.75	0.66
5.00	0.64	4.75	0.73	4.58	0.80	4.83	0.94	4.92	0.66
5.08	0.64	4.83	0.73	4.67	0.80	4.92	0.94	5.00	0.65
5.17	0.63	4.92	0.73	4.75	0.80	5.00	0.94	5.08	0.66
5.25	0.63	4.92	0.72	4.83	0.79	5.08	0.94	5.17	0.65
5.33	0.63	5.08	0.73	4.83	0.79	5.17	0.94	5.25	0.65
5.50	0.63	5.08	0.72	5.00	0.79	5.25	0.94	5.33	0.65
5.58	0.63	5.25	0.72	5.08	0.79	5.33	0.94	5.42	0.65
5.67	0.62	5.25	0.72	5.17	0.79	5.42	0.93	5.53	0.65
5.75	0.62	5.42	0.72	5.25	0.79	5.50	0.93	5.69	0.65
5.84	0.62	5.50	0.72	5.33	0.79	5.58	0.94	5.78	0.65
5.92	0.62	5.58	0.71	5.42	0.79	5.67	0.94	5.78	0.65
6.00	0.62	5.67	0.71	5.50	0.79	5.75	0.93	5.86	0.65
6.09	0.62	5.75	0.71	5.58	0.78	5.83	0.93	5.94	0.65
6.17	0.62	5.83	0.71	5.58	0.79	5.92	0.93	6.03	0.64
6.25	0.62	5.92	0.71	5.67	0.79	5.92	0.93	6.11	0.64
6.34	0.62	6.00	0.71	5.75	0.78	6.00	0.93	6.19	0.64
6.42	0.62	6.08	0.71	5.83	0.78	6.03	0.94	6.28	0.64
6.50	0.62	6.17	0.71	5.92	0.78	6.11	0.93	6.36	0.64
6.58	0.62	6.25	0.71	5.92	0.78	6.20	0.93	6.44	0.64
6.67	0.61	6.33	0.71	6.00	0.78	6.28	0.93	6.53	0.64
6.75	0.61	6.49	0.70	6.08	0.78	6.36	0.93	6.53	0.64
6.84	0.61	6.57	0.70	6.17	0.78	6.36	0.93	6.69	0.64
6.92	0.61	6.66	0.70	6.25	0.77	6.45	0.93	6.78	0.64
7.00	0.61	6.74	0.70	6.25	0.78	6.53	0.93	6.86	0.64
7.00	0.61	6.82	0.70	6.33	0.78	6.61	0.93	7.03	0.64

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
7.17	0.61	6.91	0.70	6.42	0.77	6.70	0.93	7.11	0.64
7.25	0.61	6.99	0.70	6.50	0.77	6.78	0.93	7.11	0.63
7.33	0.61	7.07	0.70	6.58	0.77	6.86	0.93	7.28	0.64
7.42	0.61	7.16	0.70	6.67	0.77	6.95	0.93	7.36	0.64
7.50	0.61	7.24	0.70	6.67	0.77	7.03	0.93	7.44	0.63
7.58	0.61	7.32	0.70	6.75	0.77	7.03	0.93	7.53	0.63
7.67	0.61	7.41	0.70	6.83	0.77	7.20	0.93	7.61	0.63
7.75	0.61	7.49	0.70	6.92	0.77	7.20	0.93	7.69	0.63
7.83	0.60	7.57	0.69	7.00	0.76	7.28	0.93	7.78	0.63
7.92	0.60	7.66	0.69	7.13	0.77	7.36	0.93	7.86	0.63
8.00	0.60	7.74	0.69	7.13	0.77	7.45	0.93	7.94	0.63
8.08	0.60	7.82	0.69	7.21	0.77	7.53	0.93	8.03	0.63
8.17	0.60	7.91	0.69	7.29	0.77	7.61	0.93	8.11	0.63
8.25	0.59	7.99	0.69	7.38	0.77	7.70	0.92	8.19	0.63
8.33	0.60	8.07	0.69	7.46	0.77	7.78	0.93	8.28	0.63
8.42	0.60	8.16	0.69	7.46	0.77	7.86	0.93	8.36	0.63
8.50	0.60	8.24	0.69	7.54	0.76	7.95	0.93	8.44	0.63
8.58	0.60	8.32	0.69	7.63	0.77	7.95	0.93	8.61	0.63
8.67	0.60	8.41	0.69	7.71	0.76	8.03	0.93	8.69	0.63
8.75	0.60	8.49	0.69	7.79	0.76	8.11	0.93	8.78	0.63
8.83	0.60	8.57	0.69	7.88	0.76	8.20	0.93	8.86	0.62
8.92	0.59	8.66	0.68	7.88	0.76	8.28	0.93	9.03	0.63
9.00	0.59	8.74	0.69	7.96	0.76	8.28	0.93	9.03	0.62
9.08	0.59	8.82	0.68	8.04	0.76	8.36	0.93	9.11	0.62
9.17	0.59	8.82	0.68	8.13	0.76	8.45	0.93	9.19	0.62
9.25	0.59	8.91	0.68	8.21	0.76	8.53	0.93	9.36	0.62
9.33	0.59	8.99	0.68	8.29	0.76	8.61	0.93	9.44	0.62
9.50	0.59	9.07	0.68	8.38	0.76	8.61	0.92	9.44	0.62
9.58	0.59	9.16	0.68	8.46	0.76	8.78	0.93	9.53	0.62
9.67	0.59	9.32	0.68	8.54	0.76	8.86	0.92	9.61	0.62
9.75	0.59	9.41	0.68	8.63	0.75	8.95	0.92	9.69	0.62
9.83	0.59	9.49	0.68	8.71	0.75	9.03	0.92	9.78	0.62
9.92	0.59	9.57	0.68	8.79	0.75	9.11	0.93	9.86	0.62
10.00	0.59	9.66	0.68	8.88	0.75	9.20	0.93	9.86	0.62
10.08	0.59	9.74	0.68	8.96	0.75	9.28	0.92	9.94	0.62
10.17	0.59	9.82	0.68	9.04	0.76	9.36	0.92	10.03	0.62
10.25	0.59	9.91	0.67	9.13	0.75	9.36	0.92	10.11	0.62
10.33	0.59	9.99	0.67	9.21	0.75	9.45	0.92	10.19	0.62
10.42	0.59	10.07	0.67	9.29	0.75	9.53	0.92	10.36	0.62
10.50	0.58	10.16	0.67	9.29	0.75	9.61	0.92	10.44	0.62
10.58	0.58	10.24	0.67	9.38	0.75	9.70	0.92	10.53	0.62

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
10.67	0.58	10.32	0.67	9.46	0.75	9.78	0.92	10.69	0.62
10.75	0.58	10.41	0.67	9.54	0.75	9.86	0.92	10.78	0.61
10.83	0.58	10.49	0.67	9.63	0.75	9.95	0.92	10.86	0.61
10.92	0.58	10.57	0.66	9.71	0.75	9.95	0.92	10.94	0.61
11.00	0.58	10.66	0.67	9.79	0.75	10.03	0.92	11.03	0.61
11.08	0.58	10.74	0.67	9.88	0.75	10.11	0.92	11.11	0.61
11.17	0.58	10.82	0.67	9.88	0.75	10.20	0.92	11.19	0.61
11.25	0.58	10.91	0.67	9.96	0.75	10.28	0.92	11.28	0.61
11.33	0.58	11.07	0.67	10.04	0.75	10.28	0.92	11.36	0.61
11.42	0.58	11.16	0.66	10.13	0.74	10.36	0.92	11.44	0.61
11.50	0.58	11.24	0.67	10.21	0.75	10.45	0.92	11.53	0.61
11.58	0.58	11.32	0.66	10.21	0.74	10.53	0.92	11.69	0.61
11.67	0.58	11.41	0.66	10.38	0.75	10.61	0.92	11.78	0.61
11.75	0.58	11.49	0.67	10.46	0.74	10.61	0.92	11.78	0.61
11.92	0.58	11.57	0.66	10.54	0.74	10.78	0.92	11.86	0.61
12.00	0.58	11.66	0.66	10.63	0.74	10.86	0.92	11.94	0.61
12.08	0.57	11.74	0.66	10.71	0.73	10.95	0.92	12.03	0.61
12.08	0.58	11.82	0.66	10.79	0.73	11.03	0.92	12.11	0.61
12.17	0.57	11.91	0.66	10.88	0.73	11.11	0.92	12.19	0.61
12.25	0.58	11.99	0.66	10.88	0.74	11.20	0.92	12.28	0.61
12.33	0.57	12.07	0.66	10.96	0.74	11.28	0.92	12.36	0.61
12.42	0.57	12.16	0.66	11.04	0.74	11.28	0.92	12.44	0.61
12.50	0.57	12.24	0.66	11.04	0.74	11.36	0.92	12.53	0.61
12.58	0.57	12.24	0.66	11.13	0.73	11.45	0.92	12.69	0.61
12.67	0.57	12.32	0.66	11.21	0.74	11.53	0.92	12.78	0.61
12.75	0.57	12.41	0.66	11.29	0.73	11.61	0.92	12.86	0.61
12.83	0.57	12.49	0.65	11.38	0.74	11.70	0.92	12.94	0.61
12.92	0.57	12.57	0.65	11.46	0.73	11.70	0.92	13.03	0.61
13.00	0.57	12.66	0.65	11.54	0.73	11.78	0.92	13.11	0.61
13.17	0.57	12.74	0.65	11.54	0.73	11.86	0.91	13.19	0.61
13.25	0.57	12.82	0.65	11.63	0.73	11.95	0.92	13.28	0.61
13.33	0.57	12.91	0.65	11.71	0.73	12.03	0.92	13.36	0.61
13.42	0.57	12.99	0.66	11.79	0.73	12.11	0.92	13.44	0.61
13.50	0.57	13.07	0.65	11.88	0.73	12.20	0.92	13.53	0.61
13.58	0.57	13.16	0.65	11.88	0.73	12.28	0.92	13.61	0.60
13.67	0.56	13.24	0.65	11.96	0.73	12.36	0.91	13.69	0.60
13.75	0.57	13.32	0.65	12.04	0.73	12.45	0.92	13.78	0.60
13.83	0.57	13.41	0.65	12.13	0.73	12.53	0.91	13.86	0.60
13.83	0.57	13.49	0.65	12.21	0.73	12.61	0.91	13.86	0.60
13.92	0.57	13.57	0.65	12.29	0.73	12.61	0.92	13.94	0.60
14.00	0.57	13.66	0.65	12.38	0.73	12.78	0.92	14.03	0.60

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.08	0.57	13.74	0.65	12.46	0.73	12.86	0.91	14.11	0.60
14.17	0.56	13.82	0.65	12.54	0.73	12.95	0.92	14.19	0.60
14.25	0.56	13.91	0.65	12.63	0.73	13.03	0.92	14.28	0.60
14.33	0.56	13.99	0.65	12.71	0.73	13.03	0.91	14.44	0.60
14.42	0.56	14.07	0.64	12.79	0.73	13.11	0.92	14.44	0.60
14.50	0.56	14.16	0.64	12.88	0.73	13.20	0.92	14.61	0.60
14.58	0.56	14.16	0.65	12.96	0.73	13.28	0.91	14.69	0.60
14.67	0.56	14.24	0.65	13.04	0.73	13.36	0.91	14.78	0.60
14.75	0.56	14.32	0.65	13.13	0.73	13.45	0.91	14.86	0.60
14.83	0.56	14.41	0.64	13.21	0.73	13.53	0.91	14.94	0.60
14.92	0.56	14.49	0.64	13.29	0.73	13.61	0.91	15.03	0.60
15.00	0.56	14.57	0.64	13.29	0.73	13.61	0.91	15.11	0.60
15.08	0.56	14.66	0.64	13.46	0.72	13.70	0.91	15.19	0.60
15.17	0.56	14.74	0.65	13.54	0.72	13.78	0.91	15.28	0.60
15.25	0.56	14.82	0.64	13.54	0.72	13.86	0.91	15.36	0.60
15.33	0.56	14.91	0.64	13.63	0.72	13.95	0.91	15.44	0.60
15.42	0.56	14.99	0.64	13.71	0.72	13.95	0.91	15.53	0.60
15.50	0.56	15.07	0.64	13.79	0.72	14.03	0.91	15.61	0.60
15.58	0.56	15.16	0.64	13.88	0.72	14.11	0.91	15.61	0.60
15.67	0.56	15.24	0.63	14.04	0.72	14.20	0.91	15.69	0.60
15.75	0.56	15.32	0.64	14.13	0.72	14.28	0.91	15.78	0.60
15.83	0.56	15.41	0.64	14.21	0.72	14.36	0.91	15.86	0.60
15.92	0.56	15.49	0.64	14.29	0.72	14.53	0.91	15.94	0.60
16.00	0.55	15.57	0.64	14.46	0.72	14.53	0.91	16.03	0.60
16.08	0.55	15.66	0.64	14.54	0.72	14.61	0.91	16.11	0.60
16.17	0.56	15.74	0.63	14.54	0.72	14.70	0.91	16.19	0.60
16.25	0.56	15.82	0.64	14.71	0.72	14.78	0.91	16.28	0.59
16.33	0.55	15.91	0.64	14.71	0.72	14.78	0.91	16.36	0.59
16.42	0.55	15.99	0.64	14.79	0.72	14.86	0.91	16.44	0.59
16.50	0.56	16.07	0.64	14.88	0.72	14.95	0.91	16.53	0.59
16.58	0.55	16.16	0.64	14.96	0.71	15.03	0.91	16.61	0.59
16.67	0.55	16.24	0.64	15.04	0.71	15.11	0.91	16.69	0.59
16.75	0.55	16.32	0.64	15.13	0.72	15.20	0.91	16.78	0.59
16.83	0.55	16.41	0.63	15.21	0.71	15.28	0.91	16.86	0.59
17.00	0.55	16.49	0.64	15.29	0.71	15.36	0.91	16.94	0.59
		16.57	0.63	15.29	0.72	15.36	0.91	17.03	0.59
		16.66	0.63	15.37	0.71	15.45	0.91		
		16.74	0.63	15.46	0.71	15.53	0.91		
		16.82	0.64	15.54	0.71	15.61	0.91		
		16.90	0.63	15.62	0.71	15.70	0.91		
		16.99	0.64	15.71	0.71	15.78	0.91		

Alginate + BSA + SRNOM		Alginate + BSA + OA		Alginate + SRNOM + OA		BSA + SRNOM + OA		Alginate + BSA + SRNOM + OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
		17.07	0.64	15.79	0.71	15.86	0.91		
				15.88	0.71	15.95	0.91		
				15.96	0.71	16.03	0.91		
				16.04	0.71	16.11	0.91		
				16.12	0.71	16.20	0.90		
				16.21	0.71	16.28	0.90		
				16.29	0.71	16.36	0.91		
				16.37	0.71	16.44	0.90		
				16.54	0.71	16.53	0.90		
				16.54	0.71	16.61	0.90		
				16.62	0.71	16.69	0.90		
				16.71	0.71	16.78	0.90		
				16.79	0.71	16.86	0.90		
				16.87	0.71	16.94	0.90		
				16.96	0.71	17.03	0.90		
				17.04	0.71				
				17.05	0.71				

Figure 5.7

	Absence of Ca <sup>2+</sup>		Presence of Ca <sup>2+</sup>	
	Na <sup>+</sup> Rejection (%)	Std Dev	Na <sup>+</sup> Rejection (%)	Std Dev
<b>Before</b>	96.30	--	96.15	0.60
<b>Start</b>	96.98	0.12	97.23	0.42
<b>End</b>	97.97	0.04	98.60	0.20

Figure 5.8

Cleaning Agent	Cleaning Efficiency (%)
DI water	19.4
NaOH (pH 11)	75.1
NaCl (unadjusted pH)	83.3
10 mM SDS (pH 11)	78.6
0.5 mM EDTA (pH 11)	90.7

**Figure 5.9**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
NaOH (pH 6.5)	46.7
NaOH (pH 11)	76.0
0.5 mM EDTA (pH 4.8)	34.5
0.5 mM EDTA (pH11)	90.7

**Figure 5.10**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>	
	<b>15 min</b>	<b>60 min</b>
DI Water	19.40	28.30
0.5 mM EDTA (pH 11)	90.70	125.10
10 mM SDS (pH 11)	78.60	123.90

**Figure 5.11a**

<b>Alginate:BSA:SRNOM:OA = 1:1:1:1</b>		<b>Alginate:BSA:SRNOM:OA = 3:1:1:1</b>	
<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>	<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
0	0.00256	0	0.00254
0.1	0.00256	0.1	0.00254
0.2	0.00255	0.2	0.00254
0.2	0.00255	0.2	0.00254
0.2	0.00256	0.2	0.00253
0.3	0.00255	0.4	0.00254
0.4	0.00256	0.5	0.00253
0.5	0.00255	0.6	0.00254
0.6	0.00253	0.7	0.00253
0.6	0.00253	0.7	0.00253
0.7	0.00253	0.8	0.00252
0.7	0.00252	0.8	0.00252
0.8	0.00252	0.9	0.00251
0.9	0.00251	1	0.00252
1	0.00252	1.1	0.00251
1.1	0.00251	1.2	0.00227
1.2	0.00231	1.2	0.00228
1.2	0.00231	1.3	0.00228
1.3	0.00231	1.4	0.00228
1.4	0.00229	1.5	0.00228
1.5	0.0023	1.6	0.00228
1.6	0.00229	1.7	0.00228
1.6	0.00229	1.7	0.00228

Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
1.7	0.00229	1.7	0.00228
1.7	0.00229	1.8	0.00228
1.8	0.00229	1.9	0.00227
1.9	0.00228	2	0.00227
2	0.00227	2	0.00227
2.1	0.00228	2.1	0.00228
2.2	0.00228	2.2	0.00227
2.2	0.00227	2.2	0.00226
2.3	0.00226	2.3	0.00226
2.4	0.00226	2.4	0.00226
2.5	0.00227	2.5	0.00226
2.6	0.00227	2.6	0.00226
2.7	0.00227	2.7	0.00226
2.7	0.00228	2.7	0.00226
2.8	0.00226	2.8	0.00226
2.9	0.00227	2.9	0.00226
3	0.00226	2.9	0.00226
3	0.00229	3	0.00226
3.1	0.00228	3.1	0.00226
3.2	0.00225	3.2	0.00224
3.2	0.00218	3.2	0.00221
3.3	0.00211	3.3	0.00214
3.4	0.00204	3.4	0.00212
3.5	0.00199	3.5	0.00208
3.5	0.00195	3.5	0.002
3.6	0.00195	3.6	0.002
3.7	0.00191	3.7	0.00194
3.7	0.00186	3.7	0.0019
3.8	0.00183	3.8	0.0019
3.9	0.0018	3.9	0.00185
3.9	0.00179	3.9	0.0018
4	0.00179	4	0.00176
4.1	0.00179	4.1	0.00174
4.2	0.00177	4.2	0.00173
4.2	0.00177	4.2	0.00171
4.2	0.00176	4.2	0.00171
4.3	0.00175	4.4	0.00171
4.4	0.00174	4.5	0.00168
4.5	0.00172	4.6	0.00167
4.6	0.00171	4.6	0.00167
4.7	0.0017	4.7	0.00167



Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
4.7	0.00168	4.8	0.00165
4.8	0.00168	4.9	0.00164
4.8	0.00167	4.9	0.00163
4.9	0.00167	5.1	0.00164
5	0.00166	5.1	0.00162
5.1	0.00165	5.2	0.00162
5.2	0.00165	5.2	0.00161
5.2	0.00163	5.3	0.00161
5.3	0.00163	5.4	0.0016
5.4	0.00163	5.4	0.0016
5.5	0.00162	5.5	0.00159
5.6	0.00161	5.6	0.00159
5.7	0.00161	5.7	0.00159
5.7	0.0016	5.7	0.00158
5.7	0.0016	5.8	0.00157
5.8	0.0016	5.9	0.00158
5.9	0.00159	6	0.00157
6	0.00158	6	0.00156
6.1	0.00158	6.1	0.00157
6.2	0.00158	6.2	0.00156
6.2	0.00157	6.2	0.00156
6.3	0.00157	6.3	0.00156
6.4	0.00156	6.4	0.00155
6.5	0.00156	6.5	0.00154
6.6	0.00155	6.6	0.00154
6.7	0.00155	6.7	0.00154
6.7	0.00154	6.7	0.00153
6.8	0.00154	6.8	0.00153
6.9	0.00154	6.9	0.00153
7	0.00153	7	0.00152
7.1	0.00153	7.1	0.00152
7.2	0.00153	7.2	0.00152
7.2	0.00152	7.2	0.00152
7.3	0.00152	7.3	0.00151
7.4	0.00152	7.4	0.00151
7.5	0.00152	7.5	0.00151
7.6	0.00151	7.6	0.0015
7.7	0.00151	7.6	0.0015
7.7	0.00151	7.7	0.0015
7.8	0.0015	7.7	0.0015
8	0.0015	7.8	0.0015

Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
8.1	0.00149	7.9	0.00149
8.2	0.0015	8	0.00149
8.2	0.00149	8.2	0.00149
8.3	0.00149	8.2	0.00148
8.4	0.00149	8.2	0.00148
8.5	0.00149	8.4	0.00148
8.6	0.00148	8.5	0.00148
8.8	0.00148	8.6	0.00147
8.9	0.00148	8.7	0.00147
8.9	0.00147	8.7	0.00147
8.9	0.00147	8.8	0.00147
9	0.00147	8.9	0.00147
9.1	0.00147	9	0.00146
9.2	0.00147	9.1	0.00146
9.3	0.00147	9.2	0.00146
9.4	0.00147	9.2	0.00146
9.4	0.00146	9.3	0.00146
9.5	0.00146	9.3	0.00145
9.6	0.00146	9.4	0.00145
9.6	0.00146	9.6	0.00145
9.8	0.00146	9.6	0.00145
9.9	0.00146	9.7	0.00145
9.9	0.00146	9.8	0.00144
10.1	0.00146	9.9	0.00144
10.2	0.00145	10	0.00144
10.2	0.00145	10.2	0.00144
10.4	0.00145	10.2	0.00144
10.4	0.00145	10.2	0.00144
10.5	0.00145	10.4	0.00144
10.6	0.00145	10.5	0.00144
10.7	0.00144	10.6	0.00143
10.8	0.00145	10.7	0.00143
10.9	0.00144	10.8	0.00143
10.9	0.00144	10.9	0.00143
11	0.00144	11	0.00143
11.1	0.00144	11.1	0.00142
11.2	0.00144	11.1	0.00142
11.3	0.00144	11.1	0.00143
11.4	0.00144	11.2	0.00142
11.4	0.00143	11.3	0.00142
11.5	0.00143	11.4	0.00142

Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
11.7	0.00143	11.5	0.00142
11.8	0.00143	11.6	0.00142
11.9	0.00143	11.6	0.00141
11.9	0.00143	11.6	0.00141
12.1	0.00143	11.8	0.00141
12.1	0.00143	11.9	0.00141
12.2	0.00142	12	0.00141
12.3	0.00142	12.1	0.00141
12.4	0.00142	12.1	0.00141
12.5	0.00142	12.2	0.0014
12.5	0.00142	12.3	0.0014
12.6	0.00142	12.4	0.00141
12.7	0.00142	12.5	0.00141
12.8	0.00142	12.6	0.0014
12.9	0.00142	12.6	0.0014
12.9	0.00142	12.7	0.0014
12.9	0.00142	12.8	0.0014
13	0.00141	12.9	0.0014
13.1	0.00141	13	0.0014
13.2	0.00141	13.1	0.00139
13.3	0.00141	13.2	0.00139
13.4	0.00141	13.3	0.00139
13.5	0.00141	13.3	0.00139
13.6	0.00141	13.5	0.00139
13.8	0.00141	13.6	0.00138
13.9	0.0014	13.6	0.00138
13.9	0.0014	13.7	0.00138
14	0.0014	13.8	0.00138
14.1	0.0014	13.9	0.00138
14.2	0.0014	14	0.00138
14.3	0.0014	14.1	0.00138
14.4	0.0014	14.2	0.00138
14.4	0.0014	14.2	0.00138
14.5	0.00139	14.3	0.00138
14.6	0.0014	14.4	0.00138
14.8	0.00139	14.5	0.00137
14.9	0.00139	14.6	0.00138
14.9	0.00139	14.6	0.00137
14.9	0.00138	14.7	0.00138
15	0.00139	14.8	0.00138
15.1	0.00139	14.9	0.00137

Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
15.2	0.00139	15	0.00137
15.3	0.00139	15.1	0.00137
15.4	0.00138	15.1	0.00137
15.4	0.00139	15.2	0.00137
15.5	0.00139	15.3	0.00137
15.6	0.00139	15.4	0.00137
15.8	0.00139	15.5	0.00137
15.9	0.00139	15.6	0.00136
15.9	0.00139	15.6	0.00136
16	0.00138	15.7	0.00136
16.1	0.00138	15.9	0.00136
16.2	0.00138	16	0.00136
16.3	0.00138	16.1	0.00135
16.4	0.00138	16.1	0.00136
16.4	0.00138	16.2	0.00136
16.5	0.00138	16.3	0.00136
16.6	0.00138	16.4	0.00136
16.7	0.00138	16.5	0.00136
16.8	0.00138	16.6	0.00135
16.9	0.00138	16.6	0.00135
16.9	0.00138	16.6	0.00135
16.9	0.00138	16.7	0.00135
17	0.00138	16.8	0.00135
17.1	0.00138	16.9	0.00135
17.2	0.00138	17	0.00135
17.3	0.00138	17.1	0.00135
17.4	0.00138	17.1	0.00135
17.5	0.00138	17.2	0.00135
17.5	0.00137	17.3	0.00135
17.7	0.00137	17.5	0.00134
17.8	0.00137	17.6	0.00134
17.9	0.00137	17.6	0.00134
17.9	0.00137	17.7	0.00134
18	0.00137	17.8	0.00134
18.1	0.00137	17.9	0.00134
18.2	0.00137	18	0.00134
18.3	0.00137	18.1	0.00134
18.4	0.00137	18.1	0.00134
18.4	0.00137	18.2	0.00133
18.5	0.00137	18.3	0.00133
18.6	0.00136	18.4	0.00134

Alginate:BSA:SRNOM:OA = 1:1:1:1		Alginate:BSA:SRNOM:OA = 3:1:1:1	
Time (h)	Permeate Flux (m/s)	Time (h)	Permeate Flux (m/s)
18.7	0.00136	18.4	0.00134
18.7	0.00136	18.5	0.00134
18.8	0.00136	18.6	0.00133
18.9	0.00137	18.6	0.00133
18.9	0.00136	18.7	0.00134
19	0.00136	18.8	0.00134
19.1	0.00136	18.9	0.00134
19.2	0.00136	19	0.00133
19.3	0.00136	19.1	0.00133
19.4	0.00136	19.2	0.00133
19.4	0.00136	19.3	0.00133
19.5	0.00135	19.4	0.00133
19.6	0.00135	19.5	0.00133
19.7	0.00135	19.6	0.00133
19.8	0.00135	19.6	0.00133
19.9	0.00135	19.7	0.00133
19.9	0.00135	19.8	0.00133
20	0.00135	22.5	0.00261
20.1	0.00136	20.5	0.00261
20.2	0.00136	20.6	0.00261
20.7	0.00241	20.7	0.0026
20.8	0.00241	20.7	0.0026
21	0.00241	20.8	0.0026
21.1	0.00241	20.9	0.0026
21.1	0.0024	21	0.0026
21.2	0.00239	21	0.0026
21.2	0.0024		

**Figure 5.11b**

Cleaning Agent	Cleaning Efficiency (%)	
	Alginate:BSA:SRNOM:OA = 1:1:1:1	Alginate:BSA:SRNOM:OA = 3:1:1:1
DI Water	19.40	38.00
NaOH (pH 11)	75.00	96.70
10 mM SDS (pH 11)	90.70	107.50

**Figure 5.12**

<b>Organic Foulant</b>	<b>F/R (mN/m)</b>	<b>Std Dev</b>
Alginate	0.707	0.035
BSA	0.227	0.011
SRNOM	0.554	0.028
OA	0.601	0.030
Combined	0.697	0.035

**Figure 5.13**

<b>Organic Foulant</b>	<b>F/R (mN/m)</b>	<b>Std Dev</b>
Alginate	1.451	0.031
BSA	0.316	0.011
SRNOM	0.763	0.042
OA	0.699	0.028
Combined	0.784	0.046

**Figure 5.14a**

<b>pH</b>	<b>F/R (mN/m)</b>	<b>Std Dev</b>
6.0	0.808	0.051
7.0	0.796	0.042
8.0	0.781	0.045
9.0	0.759	0.040
10.0	0.759	0.037
11.0	0.738	0.040

**Figure 5.14b**

<b>pH</b>	<b>Reduction in F/R (%)</b>
6.0	0
7.0	1.49
8.0	3.29
9.0	6.00
10.0	5.99
11.0	8.61

**Figure 5.15a**

NaCl at pH 6 (mM)	F/R (mN/m)	Std Dev
0	0.791	0.037
10	0.703	0.046
25	0.598	0.048
50	0.416	0.049
100	0.364	0.020
200	0.333	0.023

**Figure 5.15b**

NaCl at pH 6 (mM)	Reduction in F/R (%)
0	0
10	11.22
25	24.43
50	47.43
100	54.01
200	57.87

**Figure 5.16a**

SDS at pH 11 (mM)	F/R (mN/m)	Std Dev
0	0.736	0.033
1	0.610	0.039
2	0.604	0.047
5	0.599	0.050
8	0.495	0.029
10	0.261	0.025
12	0.216	0.020

**Figure 5.16b**

SDS at pH 11 (mM)	Reduction in F/R (%)
0	0
1	17.08
2	17.96
5	18.65
8	32.74
10	64.57
12	70.70

**Figure 5.17a**

EDTA at pH 11 (mM)	F/R (mN/m)	Std Dev
0	0.786	0.036
0.1	0.637	0.034
0.2	0.601	0.033
0.5	0.413	0.028
1.0	0.315	0.026
1.5	0.283	0.023
2.0	0.316	0.019

**Figure 5.17b**

EDTA at pH 11 (mM)	Reduction in F/R (%)
0	0
0.1	19.01
0.2	23.58
0.5	47.42
1.0	59.98
1.5	63.95
2.0	59.83

**Figure 5.18**

Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-SA	1.027	0.348
BSA-SA	0.730	0.191
SRNOM-SA	0.422	0.139
OA-SA	0.326	0.132

Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-BSA	0.788	0.182
BSA-BSA	0.505	0.142
SRNOM-BSA	0.595	0.177
OA-BSA	0.590	0.191

Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-SRNOM	0.491	0.107
BSA-SRNOM	0.483	0.227
SRNOM-SRNOM	0.364	0.102
OA-SRNOM	0.411	0.165



Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-OA	0.556	0.142
BSA-OA	0.469	0.109
SRNOM-OA	0.537	0.217
OA-OA	0.902	0.196

**Figure 5.19**

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
0.00	1.00	0.00	1.00	0.08	0.99	0.08	1.01
0.17	1.00	0.08	0.99	0.17	0.99	0.17	0.99
0.25	0.99	0.17	0.99	0.25	0.99	0.25	0.97
0.33	0.99	0.25	0.99	0.33	0.99	0.33	0.96
0.33	0.99	0.33	0.98	0.42	0.99	0.42	0.95
0.42	0.99	0.33	0.99	0.42	0.99	0.50	0.94
0.50	0.99	0.50	0.99	0.58	0.99	0.58	0.94
0.58	0.98	0.58	0.99	0.58	0.99	0.67	0.93
0.67	0.98	0.67	0.99	0.75	0.99	0.75	0.92
0.75	0.98	0.75	0.99	0.75	0.97	0.83	0.92
0.75	0.98	0.83	0.98	0.92	0.98	0.92	0.91
0.83	0.98	0.92	0.98	1.00	0.97	1.00	0.91
0.92	0.98	1.00	0.98	1.08	0.97	1.08	0.89
1.00	0.98	1.08	0.98	1.17	0.97	1.17	0.88
1.08	0.97	1.17	0.98	1.25	0.97	1.25	0.88
1.17	0.97	1.25	0.98	1.33	0.97	1.25	0.87
1.25	0.97	1.33	0.98	1.33	0.97	1.33	0.87
1.33	0.97	1.42	0.98	1.42	0.97	1.42	0.87
1.33	0.97	1.50	0.98	1.50	0.97	1.50	0.86
1.42	0.97	1.58	0.98	1.58	0.97	1.58	0.86
1.50	0.97	1.67	0.98	1.67	0.96	1.67	0.85
1.58	0.97	1.67	0.98	1.67	0.97	1.67	0.85
1.67	0.97	1.75	0.98	1.75	0.97	1.83	0.85
1.67	0.97	1.83	0.98	1.83	0.97	1.92	0.85
1.83	0.97	1.92	0.97	1.92	0.97	1.92	0.84
1.92	0.97	1.92	0.97	2.00	0.96	2.08	0.84
2.00	0.97	2.00	0.98	2.08	0.96	2.17	0.84
2.00	0.97	2.08	0.98	2.08	0.96	2.25	0.84
2.17	0.97	2.17	0.97	2.25	0.96	2.33	0.83
2.17	0.97	2.25	0.98	2.25	0.96	2.42	0.83
2.25	0.97	2.33	0.97	2.33	0.96	2.50	0.83
2.33	0.97	2.42	0.98	2.50	0.96	2.58	0.83

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
2.42	0.97	2.50	0.97	2.58	0.96	2.67	0.83
2.50	0.96	2.58	0.97	2.67	0.96	2.67	0.82
2.58	0.96	2.67	0.97	2.75	0.96	2.75	0.82
2.67	0.96	2.75	0.97	2.75	0.96	2.83	0.82
2.67	0.96	2.83	0.97	2.83	0.96	2.92	0.82
2.75	0.96	2.92	0.97	2.92	0.95	3.00	0.82
2.83	0.97	3.00	0.97	3.00	0.96	3.00	0.81
2.92	0.97	3.00	0.97	3.08	0.95	3.08	0.81
3.00	0.97	3.08	0.97	3.17	0.95	3.17	0.81
3.08	0.96	3.17	0.97	3.25	0.96	3.25	0.81
3.17	0.96	3.25	0.97	3.33	0.95	3.42	0.81
3.25	0.96	3.33	0.97	3.42	0.95	3.42	0.81
3.25	0.96	3.33	0.97	3.42	0.95	3.50	0.81
3.33	0.96	3.42	0.97	3.50	0.95	3.58	0.80
3.42	0.96	3.50	0.97	3.58	0.95	3.67	0.80
3.50	0.96	3.50	0.96	3.67	0.95	3.75	0.80
3.58	0.96	3.58	0.97	3.75	0.95	3.83	0.80
3.75	0.96	3.67	0.97	3.83	0.95	3.92	0.80
3.83	0.96	3.75	0.97	3.92	0.95	4.00	0.80
3.92	0.96	3.75	0.97	4.00	0.95	4.08	0.79
3.92	0.96	3.83	0.97	4.08	0.95	4.17	0.80
4.00	0.96	3.92	0.96	4.08	0.95	4.25	0.79
4.08	0.96	4.00	0.97	4.17	0.95	4.25	0.79
4.25	0.96	4.08	0.97	4.25	0.95	4.33	0.79
4.25	0.96	4.08	0.96	4.33	0.95	4.42	0.79
4.33	0.96	4.17	0.96	4.42	0.95	4.42	0.79
4.42	0.96	4.25	0.96	4.50	0.95	4.50	0.79
4.50	0.96	4.33	0.96	4.58	0.95	4.58	0.79
4.58	0.96	4.42	0.96	4.67	0.95	4.67	0.79
4.67	0.96	4.50	0.96	4.75	0.95	4.67	0.79
4.75	0.96	4.58	0.96	4.83	0.94	4.75	0.79
4.83	0.96	4.67	0.96	4.92	0.94	4.83	0.79
4.92	0.96	4.75	0.96	5.00	0.94	4.92	0.78
5.00	0.96	4.75	0.96	5.08	0.94	5.00	0.78
5.00	0.96	4.83	0.96	5.08	0.94	5.00	0.78
5.08	0.96	4.92	0.96	5.17	0.94	5.08	0.78
5.17	0.95	5.00	0.96	5.25	0.95	5.17	0.78
5.25	0.95	5.08	0.96	5.33	0.94	5.25	0.78
5.33	0.96	5.08	0.96	5.38	0.94	5.33	0.78
5.42	0.95	5.25	0.96	5.47	0.94	5.42	0.77
5.50	0.96	5.33	0.95	5.47	0.94	5.50	0.77

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
5.58	0.95	5.33	0.96	5.55	0.94	5.58	0.77
5.67	0.96	5.42	0.95	5.63	0.94	5.67	0.77
5.67	0.95	5.50	0.95	5.72	0.94	5.70	0.77
5.83	0.95	5.58	0.95	5.80	0.93	5.78	0.77
5.92	0.95	5.67	0.95	5.88	0.94	5.86	0.77
6.00	0.95	5.67	0.95	5.97	0.93	5.95	0.77
6.00	0.95	5.75	0.95	6.05	0.94	6.03	0.77
6.07	0.95	5.78	0.95	6.13	0.93	6.11	0.77
6.15	0.95	5.86	0.95	6.22	0.93	6.20	0.77
6.23	0.95	5.86	0.95	6.30	0.93	6.20	0.76
6.32	0.95	5.94	0.95	6.38	0.93	6.28	0.76
6.40	0.95	6.03	0.95	6.47	0.93	6.36	0.76
6.48	0.95	6.11	0.95	6.55	0.93	6.45	0.76
6.48	0.95	6.19	0.95	6.63	0.93	6.53	0.76
6.57	0.95	6.28	0.95	6.72	0.93	6.61	0.76
6.65	0.95	6.36	0.94	6.72	0.93	6.61	0.76
6.73	0.95	6.44	0.94	6.88	0.93	6.70	0.76
6.73	0.95	6.53	0.94	6.88	0.93	6.78	0.76
6.82	0.95	6.61	0.95	6.97	0.93	6.86	0.76
6.90	0.95	6.69	0.94	7.05	0.93	6.95	0.76
6.98	0.95	6.78	0.94	7.13	0.93	7.03	0.76
7.07	0.95	6.86	0.95	7.22	0.93	7.11	0.76
7.15	0.95	6.94	0.94	7.22	0.93	7.20	0.76
7.23	0.95	6.95	0.94	7.30	0.93	7.28	0.76
7.32	0.95	7.03	0.94	7.38	0.93	7.36	0.76
7.40	0.95	7.11	0.95	7.38	0.93	7.36	0.75
7.48	0.95	7.19	0.94	7.47	0.93	7.45	0.75
7.57	0.95	7.28	0.94	7.55	0.93	7.53	0.75
7.65	0.95	7.36	0.94	7.63	0.93	7.61	0.75
7.73	0.94	7.36	0.94	7.72	0.93	7.69	0.75
7.82	0.94	7.44	0.94	7.80	0.93	7.78	0.75
7.90	0.94	7.53	0.94	7.88	0.93	7.86	0.75
7.98	0.94	7.61	0.94	7.97	0.93	7.94	0.75
7.98	0.94	7.69	0.94	8.05	0.92	7.95	0.75
8.07	0.94	7.70	0.94	8.05	0.92	8.03	0.75
8.15	0.94	7.86	0.94	8.13	0.92	8.11	0.75
8.23	0.94	7.86	0.94	8.22	0.92	8.19	0.75
8.32	0.94	7.94	0.94	8.30	0.92	8.28	0.75
8.40	0.94	8.03	0.94	8.38	0.92	8.28	0.75
8.40	0.94	8.11	0.94	8.38	0.92	8.36	0.75
8.48	0.94	8.19	0.94	8.47	0.92	8.44	0.75

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
8.57	0.94	8.28	0.94	8.55	0.92	8.53	0.74
8.65	0.94	8.44	0.94	8.63	0.92	8.61	0.74
8.65	0.94	8.53	0.94	8.72	0.92	8.69	0.74
8.73	0.94	8.61	0.94	8.80	0.92	8.70	0.74
8.82	0.94	8.61	0.94	8.88	0.92	8.78	0.74
8.90	0.94	8.69	0.94	8.97	0.92	8.86	0.74
8.98	0.94	8.78	0.94	8.97	0.92	8.94	0.74
8.98	0.94	8.86	0.93	9.05	0.92	8.95	0.74
9.15	0.94	8.94	0.94	9.13	0.92	9.11	0.74
9.23	0.94	8.95	0.94	9.13	0.92	9.11	0.74
9.32	0.94	9.03	0.93	9.22	0.92	9.19	0.74
9.40	0.94	9.11	0.93	9.30	0.92	9.28	0.74
9.48	0.94	9.19	0.93	9.38	0.92	9.36	0.74
9.57	0.94	9.28	0.94	9.47	0.92	9.44	0.73
9.65	0.94	9.28	0.93	9.55	0.92	9.53	0.73
9.73	0.94	9.36	0.93	9.63	0.92	9.61	0.73
9.82	0.94	9.44	0.93	9.72	0.92	9.61	0.73
9.90	0.94	9.53	0.93	9.88	0.92	9.69	0.73
9.98	0.94	9.61	0.93	9.88	0.91	9.78	0.73
9.98	0.94	9.61	0.93	9.97	0.91	9.86	0.73
10.07	0.94	9.78	0.93	10.05	0.91	9.94	0.73
10.15	0.94	9.86	0.93	10.13	0.91	9.95	0.73
10.23	0.94	9.94	0.93	10.22	0.91	10.03	0.73
10.32	0.94	9.94	0.93	10.30	0.91	10.11	0.73
10.32	0.94	10.11	0.93	10.30	0.91	10.19	0.73
10.40	0.94	10.19	0.93	10.38	0.91	10.28	0.73
10.48	0.94	10.28	0.93	10.47	0.91	10.28	0.73
10.57	0.94	10.28	0.93	10.55	0.91	10.36	0.73
10.65	0.94	10.36	0.93	10.63	0.91	10.44	0.73
10.65	0.94	10.44	0.93	10.72	0.91	10.53	0.73
10.82	0.94	10.53	0.93	10.80	0.91	10.61	0.73
10.82	0.94	10.61	0.92	10.80	0.91	10.61	0.73
10.90	0.94	10.69	0.92	10.88	0.91	10.78	0.73
10.98	0.94	10.69	0.92	10.97	0.91	10.86	0.73
11.07	0.94	10.78	0.92	11.05	0.91	10.86	0.73
11.15	0.94	10.86	0.92	11.05	0.91	11.03	0.73
11.23	0.94	10.94	0.92	11.22	0.91	11.11	0.73
11.32	0.94	11.03	0.92	11.30	0.91	11.19	0.73
11.40	0.94	11.03	0.92	11.38	0.91	11.28	0.73
11.48	0.94	11.19	0.92	11.47	0.91	11.36	0.73
11.57	0.93	11.28	0.92	11.55	0.91	11.44	0.72

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
11.65	0.94	11.28	0.92	11.63	0.91	11.53	0.72
11.73	0.94	11.44	0.92	11.72	0.91	11.61	0.72
11.82	0.94	11.53	0.92	11.72	0.91	11.69	0.72
11.90	0.93	11.61	0.92	11.88	0.91	11.78	0.72
11.98	0.94	11.69	0.92	11.97	0.91	11.86	0.72
11.98	0.93	11.78	0.92	11.97	0.90	11.94	0.72
12.07	0.93	11.86	0.92	12.05	0.91	12.03	0.72
12.15	0.93	11.94	0.92	12.13	0.90	12.11	0.72
12.23	0.93	11.94	0.91	12.22	0.90	12.19	0.72
12.32	0.93	12.03	0.91	12.30	0.90	12.28	0.72
12.32	0.93	12.11	0.91	12.38	0.90	12.28	0.72
12.48	0.93	12.19	0.91	12.47	0.90	12.36	0.72
12.57	0.93	12.28	0.91	12.55	0.90	12.44	0.72
12.65	0.93	12.36	0.91	12.63	0.90	12.53	0.72
12.65	0.93	12.44	0.91	12.63	0.90	12.61	0.72
12.82	0.93	12.53	0.91	12.72	0.90	12.78	0.72
12.90	0.93	12.61	0.91	12.80	0.90	12.86	0.72
12.98	0.93	12.61	0.91	12.80	0.90	12.94	0.72
12.98	0.93	12.69	0.91	12.88	0.90	13.11	0.72
13.15	0.93	12.78	0.91	13.05	0.90	13.19	0.71
13.23	0.93	12.86	0.91	13.05	0.90	13.19	0.72
13.32	0.93	12.94	0.91	13.13	0.90	13.28	0.72
13.32	0.93	12.94	0.90	13.22	0.90	13.36	0.71
13.40	0.93	13.03	0.91	13.30	0.90	13.44	0.71
13.48	0.93	13.11	0.90	13.38	0.90	13.53	0.71
13.57	0.93	13.19	0.90	13.47	0.89	13.61	0.71
13.65	0.93	13.28	0.90	13.55	0.89	13.69	0.71
13.73	0.93	13.28	0.90	13.63	0.89	13.78	0.71
13.82	0.93	13.44	0.90	13.72	0.89	13.86	0.71
13.90	0.93	13.44	0.90	13.80	0.89	13.94	0.71
13.98	0.93	13.53	0.90	13.88	0.89	14.03	0.71
14.07	0.93	13.61	0.90	13.97	0.90	14.11	0.71
14.07	0.93	13.69	0.90	13.97	0.89	14.19	0.71
14.15	0.93	13.78	0.90	14.05	0.89	14.28	0.71
14.23	0.93	13.86	0.90	14.13	0.89	14.28	0.71
14.32	0.93	13.94	0.90	14.22	0.90	14.44	0.71
14.40	0.93	14.03	0.90	14.30	0.89	14.53	0.71
14.40	0.93	14.11	0.90	14.38	0.89	14.61	0.71
14.57	0.93	14.19	0.90	14.47	0.89	14.78	0.71
14.57	0.93	14.28	0.90	14.47	0.89	14.86	0.71
14.65	0.93	14.36	0.90	14.55	0.89	14.94	0.71

25 mg/L BSA + 25 mg/L SRNOM		25 mg/L OA + 25 mg/L SRNOM		25 mg/L BSA + 25 mg/L OA		25 mg/L SA + 25 mg/L OA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
14.73	0.93	14.44	0.90	14.63	0.89	15.03	0.71
14.82	0.93	14.53	0.89	14.72	0.89	15.11	0.71
14.90	0.93	14.61	0.89	14.80	0.89	15.19	0.71
14.98	0.93	14.61	0.90	14.80	0.89	15.28	0.70
15.07	0.93	14.69	0.90	14.88	0.89	15.36	0.70
15.15	0.93	14.78	0.89	15.05	0.89	15.44	0.70
15.23	0.93	14.86	0.89	15.05	0.89	15.53	0.70
15.23	0.92	14.94	0.89	15.22	0.89	15.61	0.70
15.32	0.93	14.94	0.89	15.30	0.89	15.69	0.70
15.40	0.92	15.11	0.89	15.30	0.89	15.78	0.70
15.40	0.93	15.19	0.89	15.47	0.89	15.86	0.70
15.48	0.93	15.19	0.89	15.55	0.89	15.94	0.70
15.57	0.92	15.28	0.89	15.63	0.89	16.03	0.70
15.65	0.93	15.36	0.89	15.71	0.89	16.11	0.70
15.73	0.92	15.44	0.89	15.80	0.89	16.19	0.70
15.82	0.92	15.53	0.89	15.80	0.89	16.36	0.70
15.90	0.92	15.61	0.89	15.88	0.89	16.44	0.70
15.98	0.92	15.69	0.89	15.97	0.89	16.53	0.70
16.07	0.93	15.78	0.89	16.05	0.89	16.61	0.70
16.07	0.92	15.86	0.89	16.13	0.89	16.69	0.70
16.15	0.92	15.94	0.89	16.21	0.88	16.78	0.70
16.23	0.92	15.94	0.89	16.30	0.89	16.86	0.70
16.32	0.92	16.03	0.89	16.30	0.89	16.94	0.70
16.40	0.92	16.11	0.89	16.38	0.89	17.03	0.70
16.48	0.92	16.19	0.89	16.46	0.88		
16.57	0.92	16.28	0.89	16.55	0.89		
16.65	0.92	16.36	0.89	16.55	0.88		
16.73	0.92	16.44	0.89	16.63	0.88		
16.82	0.92	16.44	0.89	16.71	0.88		
16.90	0.92	16.53	0.88	16.80	0.88		
16.98	0.92	16.61	0.88	16.88	0.88		
17.07	0.92	16.69	0.88	16.96	0.88		
		16.78	0.88	16.97	0.88		
		16.86	0.88				
		16.94	0.88				
		17.03	0.88				

25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
0.00	1.00	0.00	1.00	0.00	1.00
0.08	0.99	0.08	0.99	0.00	1.00
0.17	0.98	0.17	0.97	0.08	1.00
0.17	0.97	0.25	0.95	0.17	0.96
0.33	0.97	0.33	0.94	0.25	0.94
0.42	0.93	0.42	0.93	0.33	0.92
0.50	0.91	0.50	0.92	0.33	0.91
0.50	0.90	0.50	0.91	0.50	0.90
0.58	0.90	0.58	0.91	0.50	0.87
0.67	0.89	0.67	0.90	0.58	0.87
0.75	0.87	0.75	0.89	0.67	0.87
0.83	0.87	0.83	0.88	0.83	0.85
0.92	0.86	0.83	0.87	0.83	0.84
0.92	0.85	1.00	0.87	0.92	0.84
1.00	0.85	1.00	0.85	1.08	0.83
1.08	0.84	1.08	0.85	1.17	0.82
1.17	0.84	1.17	0.84	1.25	0.81
1.17	0.83	1.25	0.84	1.25	0.81
1.25	0.84	1.42	0.83	1.33	0.81
1.33	0.83	1.42	0.83	1.42	0.81
1.42	0.83	1.50	0.83	1.50	0.80
1.50	0.82	1.67	0.82	1.58	0.80
1.50	0.81	1.75	0.82	1.67	0.79
1.67	0.82	1.83	0.81	1.75	0.79
1.75	0.81	1.83	0.81	1.83	0.79
1.83	0.80	1.92	0.81	1.92	0.78
1.92	0.80	2.00	0.80	2.00	0.78
2.00	0.80	2.00	0.80	2.00	0.78
2.08	0.80	2.08	0.80	2.17	0.78
2.17	0.80	2.17	0.80	2.17	0.77
2.25	0.79	2.25	0.80	2.25	0.77
2.33	0.79	2.33	0.79	2.33	0.77
2.42	0.79	2.42	0.79	2.50	0.77
2.50	0.79	2.50	0.78	2.58	0.76
2.50	0.78	2.58	0.78	2.67	0.76
2.58	0.78	2.58	0.78	2.75	0.76
2.67	0.79	2.67	0.78	2.83	0.75
2.75	0.78	2.75	0.78	2.92	0.75
2.83	0.77	2.83	0.77	3.00	0.75
2.83	0.78	2.92	0.77	3.08	0.75
2.92	0.77	2.92	0.77	3.17	0.75

25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
3.00	0.77	3.08	0.77	3.25	0.75
3.08	0.77	3.17	0.77	3.33	0.74
3.17	0.77	3.25	0.77	3.42	0.74
3.17	0.77	3.33	0.76	3.50	0.74
3.25	0.77	3.42	0.76	3.58	0.74
3.33	0.77	3.50	0.76	3.58	0.74
3.42	0.76	3.58	0.76	3.67	0.74
3.50	0.77	3.67	0.76	3.75	0.73
3.50	0.76	3.75	0.76	3.83	0.73
3.67	0.76	3.83	0.76	3.92	0.73
3.75	0.76	3.92	0.75	4.00	0.73
3.83	0.76	3.92	0.75	4.08	0.73
3.83	0.76	4.00	0.75	4.17	0.73
3.92	0.76	4.08	0.75	4.25	0.73
4.00	0.75	4.17	0.75	4.25	0.73
4.08	0.75	4.25	0.75	4.42	0.73
4.17	0.76	4.25	0.74	4.50	0.72
4.25	0.75	4.33	0.74	4.58	0.72
4.25	0.75	4.42	0.74	4.75	0.72
4.42	0.75	4.50	0.74	4.83	0.72
4.50	0.75	4.58	0.74	4.92	0.72
4.50	0.75	4.58	0.74	5.00	0.72
4.58	0.75	4.75	0.74	5.08	0.71
4.67	0.74	4.75	0.73	5.17	0.71
4.67	0.74	4.83	0.74	5.25	0.71
4.75	0.74	5.00	0.74	5.33	0.71
4.83	0.74	5.08	0.73	5.42	0.71
4.92	0.74	5.17	0.73	5.50	0.71
5.00	0.74	5.25	0.73	5.58	0.71
5.08	0.74	5.33	0.73	5.67	0.71
5.17	0.74	5.42	0.73	5.75	0.71
5.17	0.74	5.50	0.73	5.83	0.71
5.33	0.74	5.58	0.73	5.92	0.70
5.42	0.74	5.67	0.73	6.00	0.71
5.50	0.73	5.75	0.73	6.00	0.70
5.58	0.73	5.83	0.73	6.08	0.70
5.70	0.73	5.92	0.72	6.17	0.70
5.78	0.73	5.92	0.72	6.25	0.70
5.86	0.73	6.08	0.72	6.42	0.70
5.95	0.73	6.17	0.72	6.50	0.70
6.03	0.73	6.25	0.72	6.58	0.70



25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
6.11	0.72	6.25	0.72	6.67	0.70
6.20	0.73	6.33	0.72	6.75	0.70
6.20	0.72	6.42	0.72	6.83	0.70
6.36	0.72	6.50	0.72	6.83	0.70
6.45	0.73	6.58	0.72	6.92	0.70
6.45	0.72	6.67	0.72	6.92	0.70
6.53	0.72	6.75	0.72	7.01	0.70
6.61	0.72	6.83	0.72	7.09	0.69
6.70	0.72	7.00	0.72	7.17	0.69
6.78	0.72	7.08	0.72	7.26	0.69
6.86	0.72	7.17	0.71	7.34	0.69
6.95	0.72	7.25	0.71	7.42	0.69
7.03	0.72	7.25	0.71	7.51	0.69
7.11	0.72	7.30	0.71	7.59	0.69
7.20	0.72	7.38	0.71	7.67	0.69
7.36	0.71	7.47	0.71	7.76	0.69
7.45	0.72	7.55	0.71	7.84	0.69
7.53	0.71	7.63	0.71	8.01	0.69
7.61	0.71	7.72	0.71	8.09	0.69
7.70	0.71	7.80	0.71	8.09	0.69
7.78	0.71	7.88	0.71	8.17	0.69
7.86	0.71	7.97	0.71	8.34	0.68
7.95	0.71	8.05	0.70	8.42	0.69
8.03	0.71	8.13	0.70	8.51	0.68
8.11	0.71	8.22	0.70	8.51	0.68
8.20	0.71	8.30	0.70	8.59	0.68
8.28	0.71	8.38	0.70	8.67	0.68
8.36	0.71	8.47	0.70	8.76	0.68
8.45	0.71	8.63	0.70	8.84	0.68
8.53	0.70	8.72	0.70	8.92	0.68
8.61	0.70	8.80	0.70	9.01	0.68
8.70	0.70	8.88	0.70	9.09	0.68
8.78	0.70	8.97	0.70	9.17	0.68
8.86	0.70	9.05	0.70	9.26	0.68
8.95	0.70	9.13	0.70	9.26	0.68
9.03	0.70	9.22	0.70	9.34	0.68
9.11	0.70	9.38	0.70	9.42	0.68
9.20	0.70	9.38	0.69	9.51	0.68
9.36	0.70	9.47	0.70	9.59	0.68
9.36	0.70	9.55	0.70	9.67	0.68
9.45	0.70	9.63	0.70	9.76	0.68

25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
9.61	0.70	9.72	0.69	9.84	0.68
9.70	0.70	9.80	0.69	9.92	0.68
9.78	0.70	9.88	0.69	10.01	0.68
9.86	0.70	9.97	0.69	10.09	0.68
9.95	0.70	10.05	0.69	10.17	0.67
10.03	0.70	10.13	0.69	10.26	0.67
10.11	0.70	10.30	0.69	10.34	0.68
10.20	0.70	10.38	0.69	10.42	0.67
10.28	0.70	10.47	0.69	10.51	0.67
10.36	0.69	10.47	0.69	10.59	0.67
10.45	0.69	10.63	0.69	10.67	0.67
10.53	0.69	10.72	0.69	10.76	0.67
10.61	0.69	10.72	0.69	10.84	0.67
10.70	0.69	10.88	0.68	10.92	0.67
10.78	0.69	10.97	0.69	11.01	0.67
10.95	0.69	11.05	0.69	11.09	0.67
11.03	0.69	11.13	0.69	11.17	0.67
11.11	0.69	11.22	0.69	11.26	0.67
11.28	0.69	11.30	0.68	11.34	0.67
11.36	0.69	11.38	0.68	11.42	0.67
11.45	0.69	11.47	0.68	11.51	0.67
11.45	0.69	11.55	0.68	11.59	0.67
11.61	0.68	11.55	0.68	11.76	0.67
11.70	0.69	11.63	0.68	11.84	0.67
11.78	0.68	11.72	0.68	11.84	0.67
11.78	0.68	11.80	0.68	11.92	0.67
11.86	0.68	11.88	0.68	12.01	0.67
11.95	0.68	11.97	0.68	12.17	0.67
12.03	0.68	12.05	0.68	12.17	0.67
12.11	0.68	12.22	0.68	12.26	0.67
12.20	0.68	12.30	0.68	12.34	0.67
12.28	0.68	12.38	0.68	12.51	0.67
12.36	0.68	12.47	0.68	12.51	0.67
12.45	0.68	12.55	0.68	12.59	0.67
12.53	0.68	12.63	0.68	12.67	0.66
12.53	0.68	12.72	0.68	12.76	0.67
12.70	0.68	12.80	0.68	12.84	0.66
12.78	0.68	12.88	0.68	12.92	0.66
12.86	0.68	13.05	0.68	13.01	0.66
12.95	0.68	13.05	0.68	13.09	0.66
13.03	0.68	13.13	0.68	13.26	0.66

25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
13.11	0.68	13.22	0.68	13.34	0.66
13.20	0.68	13.30	0.68	13.42	0.66
13.28	0.68	13.38	0.67	13.51	0.66
13.36	0.67	13.47	0.67	13.67	0.66
13.45	0.68	13.55	0.67	13.76	0.66
13.53	0.68	13.63	0.67	13.84	0.66
13.61	0.68	13.71	0.67	13.92	0.66
13.70	0.67	13.88	0.67	14.01	0.66
13.78	0.67	13.96	0.67	14.09	0.66
13.86	0.68	14.05	0.67	14.17	0.66
13.95	0.67	14.13	0.67	14.26	0.66
14.03	0.67	14.21	0.67	14.26	0.66
14.11	0.68	14.30	0.67	14.42	0.66
14.20	0.68	14.38	0.67	14.51	0.65
14.20	0.67	14.46	0.67	14.51	0.65
14.28	0.67	14.55	0.67	14.59	0.66
14.36	0.67	14.63	0.67	14.67	0.65
14.45	0.67	14.71	0.67	14.76	0.65
14.61	0.67	14.80	0.67	14.84	0.65
14.61	0.67	14.88	0.67	14.92	0.65
14.70	0.67	14.96	0.67	14.92	0.65
14.78	0.67	15.05	0.67	15.09	0.65
14.86	0.67	15.13	0.67	15.17	0.65
15.03	0.67	15.21	0.67	15.26	0.65
15.03	0.67	15.22	0.67	15.34	0.65
15.11	0.67	15.30	0.67	15.42	0.65
15.20	0.67	15.38	0.67	15.51	0.65
15.28	0.67	15.46	0.67	15.59	0.65
15.36	0.67	15.55	0.67	15.67	0.65
15.45	0.67	15.63	0.66	15.76	0.65
15.53	0.67	15.71	0.67	15.84	0.65
15.61	0.67	15.80	0.67	15.92	0.65
15.70	0.67	15.88	0.66	16.01	0.65
15.78	0.67	15.96	0.66	16.01	0.65
15.86	0.67	16.05	0.66	16.17	0.65
15.86	0.67	16.13	0.67	16.17	0.65
15.95	0.67	16.21	0.66	16.26	0.65
16.03	0.67	16.30	0.66	16.34	0.65
16.11	0.66	16.38	0.66	16.51	0.65
16.20	0.66	16.46	0.66	16.59	0.65
16.28	0.66	16.55	0.66	16.59	0.65

25 mg/L SA + 25 mg/L SA		25 mg/L SA + 25 mg/L SRNOM		25 mg/L SA + 25 mg/L BSA	
Time (h)	Normalized Flux	Time (h)	Normalized Flux	Time (h)	Normalized Flux
16.36	0.66	16.71	0.66	16.76	0.65
16.45	0.66	16.72	0.66	16.84	0.65
16.53	0.66	16.80	0.66	17.01	0.65
16.70	0.66	16.88	0.66	17.09	0.65
16.78	0.66	16.96	0.66		
16.86	0.66	17.05	0.66		

**Figure 5.20**

Foulant Solution	Effective Diameter (nm)	Std Dev
SA	50.56	1.67
BSA	Below detection limit	
SRNOM	Below detection limit	
OA	Below detection limit	

**Figure 5.21**

Foulant Solution	Effective Diameter (nm)	Std Dev
SA+SA	84.04	5.04
SA+BSA	47.86	2.35
SA+SRNOM	63.07	2.51
SA+OA	73.19	3.52

**Figure 5.22a**

Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-SA	0.502	0.366
BSA-SA	0.423	0.172
SRNOM-SA	0.344	0.184
OA-SA	0.414	0.170

**Figure 5.22b**

Foulant-foulant interaction	F/R (mN/m)	Std Dev
SA-SA	0.160	0.085
BSA-SA	0.239	0.104
SRNOM-SA	0.245	0.134
OA-SA	0.280	0.154

**Figure 5.23**

Foulant Solution	Effective Diameter (nm)	Std Dev
SA+SA	159.56	18.75
SA+BSA	47.65	8.55
SA+SRNOM	117.47	16.81
SA+OA	123.54	13.72

**Figure 5.24**

Foulant Solution	Effective Diameter (nm)	Std Dev
400 mg/L SA + 0.5 mM CaCl <sub>2</sub> + 8.5 mM NaCl	84.04	5.04
400 mg/L SA + 10 mM NaCl	220.80	27.30

**Figure 5.25**

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3998.22658	3.70E-04	3998.22658	-4.00E-05	3999.19094	-3.40E-04
3997.26223	5.00E-04	3997.26223	-4.00E-05	3998.70876	-3.40E-04
3996.29787	4.60E-04	3996.29787	-4.00E-05	3998.22658	-3.40E-04
3995.33351	2.40E-04	3995.33351	-4.00E-05	3997.74441	-3.40E-04
3994.36915	4.00E-05	3994.36915	-4.00E-05	3997.26223	-3.40E-04
3993.4048	1.60E-04	3993.4048	0	3996.78005	-3.80E-04
3992.44044	4.90E-04	3992.44044	4.00E-05	3996.29787	-3.90E-04
3991.47608	6.70E-04	3991.47608	5.00E-05	3995.81569	-3.90E-04
3990.51172	6.10E-04	3990.51172	3.00E-05	3995.33351	-3.60E-04
3989.54737	4.50E-04	3989.54737	1.00E-05	3994.85133	-3.20E-04
3988.58301	3.00E-04	3988.58301	-1.00E-05	3994.36915	-2.90E-04
3987.61865	1.70E-04	3987.61865	-1.00E-05	3993.88697	-2.70E-04
3986.65429	1.60E-04	3986.65429	0	3993.4048	-2.70E-04
3985.68994	3.10E-04	3985.68994	2.00E-05	3992.92262	-2.80E-04
3984.72558	4.10E-04	3984.72558	2.00E-05	3992.44044	-3.00E-04
3983.76122	3.60E-04	3983.76122	2.00E-05	3991.95826	-3.20E-04
3982.79686	3.00E-04	3982.79686	2.00E-05	3991.47608	-3.50E-04
3981.8325	2.90E-04	3981.8325	2.00E-05	3990.9939	-3.80E-04
3980.86815	2.00E-04	3980.86815	3.00E-05	3990.51172	-4.00E-04
3979.90379	1.30E-04	3979.90379	4.00E-05	3990.02954	-3.90E-04
3978.93943	1.10E-04	3978.93943	5.00E-05	3989.54737	-3.70E-04
3977.97507	9.00E-05	3977.97507	5.00E-05	3989.06519	-3.40E-04
3977.01072	1.30E-04	3977.01072	6.00E-05	3988.58301	-3.00E-04
3976.04636	2.30E-04	3976.04636	6.00E-05	3988.10083	-2.60E-04
3975.082	2.80E-04	3975.082	7.00E-05	3987.61865	-2.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3974.11764	2.90E-04	3974.11764	9.00E-05	3987.13647	-2.10E-04
3973.15329	2.40E-04	3973.15329	1.00E-04	3986.65429	-2.00E-04
3972.18893	2.40E-04	3972.18893	1.20E-04	3986.17211	-2.00E-04
3971.22457	3.90E-04	3971.22457	1.40E-04	3985.68994	-2.10E-04
3970.26021	4.20E-04	3970.26021	1.70E-04	3985.20776	-2.30E-04
3969.29586	2.30E-04	3969.29586	1.80E-04	3984.72558	-2.50E-04
3968.3315	1.20E-04	3968.3315	1.80E-04	3984.2434	-2.50E-04
3967.36714	1.60E-04	3967.36714	1.60E-04	3983.76122	-2.50E-04
3966.40278	1.90E-04	3966.40278	1.40E-04	3983.27904	-2.40E-04
3965.43843	2.00E-04	3965.43843	1.10E-04	3982.79686	-2.40E-04
3964.47407	2.10E-04	3964.47407	7.00E-05	3982.31468	-2.20E-04
3963.50971	1.40E-04	3963.50971	4.00E-05	3981.8325	-2.00E-04
3962.54535	1.00E-05	3962.54535	3.00E-05	3981.35033	-1.90E-04
3961.581	2.00E-05	3961.581	4.00E-05	3980.86815	-1.90E-04
3960.61664	1.50E-04	3960.61664	5.00E-05	3980.38597	-1.80E-04
3959.65228	2.70E-04	3959.65228	7.00E-05	3979.90379	-1.50E-04
3958.68792	2.60E-04	3958.68792	9.00E-05	3979.42161	-1.30E-04
3957.72357	1.40E-04	3957.72357	1.00E-04	3978.93943	-9.00E-05
3956.75921	7.00E-05	3956.75921	1.00E-04	3978.45725	-6.00E-05
3955.79485	1.10E-04	3955.79485	1.00E-04	3977.97507	-5.00E-05
3954.83049	1.60E-04	3954.83049	9.00E-05	3977.4929	-7.00E-05
3953.86613	1.70E-04	3953.86613	9.00E-05	3977.01072	-1.20E-04
3952.90178	2.60E-04	3952.90178	9.00E-05	3976.52854	-1.60E-04
3951.93742	3.90E-04	3951.93742	1.00E-04	3976.04636	-1.70E-04
3950.97306	4.10E-04	3950.97306	1.20E-04	3975.56418	-1.50E-04
3950.0087	4.00E-04	3950.0087	1.40E-04	3975.082	-1.10E-04
3949.04435	4.70E-04	3949.04435	1.60E-04	3974.59982	-6.00E-05
3948.07999	4.90E-04	3948.07999	1.70E-04	3974.11764	-3.00E-05
3947.11563	3.80E-04	3947.11563	1.60E-04	3973.63547	-4.00E-05
3946.15127	1.70E-04	3946.15127	1.40E-04	3973.15329	-6.00E-05
3945.18692	0	3945.18692	1.20E-04	3972.67111	-7.00E-05
3944.22256	1.00E-04	3944.22256	1.20E-04	3972.18893	-8.00E-05
3943.2582	2.60E-04	3943.2582	1.40E-04	3971.70675	-7.00E-05
3942.29384	2.70E-04	3942.29384	1.50E-04	3971.22457	-5.00E-05
3941.32949	3.80E-04	3941.32949	1.50E-04	3970.74239	-3.00E-05
3940.36513	5.80E-04	3940.36513	1.40E-04	3970.26021	-2.00E-05
3939.40077	5.70E-04	3939.40077	1.30E-04	3969.77803	-2.00E-05
3938.43641	4.00E-04	3938.43641	1.10E-04	3969.29586	-4.00E-05
3937.47206	2.50E-04	3937.47206	1.10E-04	3968.81368	-5.00E-05
3936.5077	1.80E-04	3936.5077	1.30E-04	3968.3315	-5.00E-05
3935.54334	1.40E-04	3935.54334	1.40E-04	3967.84932	-4.00E-05

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3934.57898	2.40E-04	3934.57898	1.40E-04	3967.36714	-3.00E-05
3933.61463	4.30E-04	3933.61463	1.40E-04	3966.88496	-2.00E-05
3932.65027	5.40E-04	3932.65027	1.40E-04	3966.40278	-1.00E-05
3931.68591	6.30E-04	3931.68591	1.60E-04	3965.9206	-2.00E-05
3930.72155	6.50E-04	3930.72155	1.90E-04	3965.43843	-5.00E-05
3929.75719	4.40E-04	3929.75719	2.30E-04	3964.95625	-6.00E-05
3928.79284	1.80E-04	3928.79284	2.40E-04	3964.47407	-4.00E-05
3927.82848	1.50E-04	3927.82848	2.10E-04	3963.99189	0
3926.86412	2.90E-04	3926.86412	1.70E-04	3963.50971	4.00E-05
3925.89976	3.50E-04	3925.89976	1.60E-04	3963.02753	7.00E-05
3924.93541	2.10E-04	3924.93541	1.70E-04	3962.54535	8.00E-05
3923.97105	1.10E-04	3923.97105	1.90E-04	3962.06317	8.00E-05
3923.00669	2.40E-04	3923.00669	2.00E-04	3961.581	7.00E-05
3922.04233	3.60E-04	3922.04233	2.20E-04	3961.09882	8.00E-05
3921.07798	2.80E-04	3921.07798	2.30E-04	3960.61664	1.00E-04
3920.11362	1.80E-04	3920.11362	2.10E-04	3960.13446	1.30E-04
3919.14926	4.00E-04	3919.14926	1.90E-04	3959.65228	1.50E-04
3918.1849	6.60E-04	3918.1849	2.10E-04	3959.1701	1.50E-04
3917.22055	4.50E-04	3917.22055	2.40E-04	3958.68792	1.10E-04
3916.25619	1.40E-04	3916.25619	2.60E-04	3958.20574	8.00E-05
3915.29183	1.70E-04	3915.29183	2.80E-04	3957.72357	6.00E-05
3914.32747	3.30E-04	3914.32747	2.90E-04	3957.24139	7.00E-05
3913.36312	4.40E-04	3913.36312	3.00E-04	3956.75921	8.00E-05
3912.39876	5.30E-04	3912.39876	3.00E-04	3956.27703	1.00E-04
3911.4344	6.00E-04	3911.4344	2.80E-04	3955.79485	1.40E-04
3910.47004	5.70E-04	3910.47004	2.70E-04	3955.31267	1.70E-04
3909.50569	3.80E-04	3909.50569	2.40E-04	3954.83049	1.90E-04
3908.54133	2.00E-04	3908.54133	2.10E-04	3954.34831	2.10E-04
3907.57697	2.90E-04	3907.57697	1.80E-04	3953.86613	2.30E-04
3906.61261	5.30E-04	3906.61261	1.70E-04	3953.38396	2.40E-04
3905.64825	7.10E-04	3905.64825	2.00E-04	3952.90178	2.60E-04
3904.6839	6.50E-04	3904.6839	2.30E-04	3952.4196	2.80E-04
3903.71954	6.00E-04	3903.71954	2.40E-04	3951.93742	3.00E-04
3902.75518	6.70E-04	3902.75518	2.40E-04	3951.45524	2.90E-04
3901.79082	5.80E-04	3901.79082	2.20E-04	3950.97306	2.40E-04
3900.82647	5.80E-04	3900.82647	2.30E-04	3950.49088	1.60E-04
3899.86211	6.60E-04	3899.86211	2.70E-04	3950.0087	9.00E-05
3898.89775	4.30E-04	3898.89775	3.20E-04	3949.52653	7.00E-05
3897.93339	2.10E-04	3897.93339	3.80E-04	3949.04435	1.00E-04
3896.96904	1.50E-04	3896.96904	4.10E-04	3948.56217	1.60E-04
3896.00468	1.70E-04	3896.00468	4.20E-04	3948.07999	2.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3895.04032	2.50E-04	3895.04032	3.90E-04	3947.59781	2.70E-04
3894.07596	3.80E-04	3894.07596	3.40E-04	3947.11563	3.20E-04
3893.11161	6.40E-04	3893.11161	3.00E-04	3946.63345	3.50E-04
3892.14725	8.10E-04	3892.14725	3.10E-04	3946.15127	3.70E-04
3891.18289	6.30E-04	3891.18289	3.20E-04	3945.6691	3.50E-04
3890.21853	4.40E-04	3890.21853	3.30E-04	3945.18692	3.30E-04
3889.25418	4.20E-04	3889.25418	3.20E-04	3944.70474	3.20E-04
3888.28982	4.70E-04	3888.28982	2.90E-04	3944.22256	3.00E-04
3887.32546	6.10E-04	3887.32546	2.80E-04	3943.74038	2.80E-04
3886.3611	6.60E-04	3886.3611	3.00E-04	3943.2582	2.70E-04
3885.39675	6.90E-04	3885.39675	3.50E-04	3942.77602	2.70E-04
3884.43239	9.90E-04	3884.43239	4.10E-04	3942.29384	2.40E-04
3883.46803	0.0012	3883.46803	4.30E-04	3941.81166	2.10E-04
3882.50367	0.00122	3882.50367	4.30E-04	3941.32949	2.20E-04
3881.53932	0.00108	3881.53932	4.20E-04	3940.84731	2.80E-04
3880.57496	5.60E-04	3880.57496	4.00E-04	3940.36513	3.30E-04
3879.6106	1.90E-04	3879.6106	4.10E-04	3939.88295	3.50E-04
3878.64624	3.70E-04	3878.64624	4.40E-04	3939.40077	3.50E-04
3877.68188	5.60E-04	3877.68188	4.20E-04	3938.91859	3.40E-04
3876.71753	5.80E-04	3876.71753	3.70E-04	3938.43641	3.20E-04
3875.75317	5.70E-04	3875.75317	3.30E-04	3937.95423	3.20E-04
3874.78881	3.40E-04	3874.78881	3.30E-04	3937.47206	3.40E-04
3873.82445	7.00E-05	3873.82445	3.40E-04	3936.98988	3.60E-04
3872.8601	2.80E-04	3872.8601	3.20E-04	3936.5077	3.60E-04
3871.89574	6.80E-04	3871.89574	2.90E-04	3936.02552	3.60E-04
3870.93138	7.50E-04	3870.93138	2.80E-04	3935.54334	3.40E-04
3869.96702	3.50E-04	3869.96702	2.80E-04	3935.06116	3.10E-04
3869.00267	1.80E-04	3869.00267	2.90E-04	3934.57898	3.10E-04
3868.03831	5.10E-04	3868.03831	3.30E-04	3934.0968	3.30E-04
3867.07395	8.60E-04	3867.07395	3.80E-04	3933.61463	3.40E-04
3866.10959	8.40E-04	3866.10959	4.10E-04	3933.13245	3.30E-04
3865.14524	3.70E-04	3865.14524	3.90E-04	3932.65027	3.30E-04
3864.18088	1.90E-04	3864.18088	3.80E-04	3932.16809	3.40E-04
3863.21652	4.40E-04	3863.21652	4.20E-04	3931.68591	3.40E-04
3862.25216	4.10E-04	3862.25216	4.90E-04	3931.20373	3.40E-04
3861.28781	2.20E-04	3861.28781	5.30E-04	3930.72155	3.70E-04
3860.32345	3.30E-04	3860.32345	5.30E-04	3930.23937	4.20E-04
3859.35909	4.70E-04	3859.35909	5.40E-04	3929.75719	4.50E-04
3858.39473	4.50E-04	3858.39473	5.40E-04	3929.27502	4.60E-04
3857.43038	4.00E-04	3857.43038	4.50E-04	3928.79284	4.70E-04
3856.46602	5.50E-04	3856.46602	3.10E-04	3928.31066	4.80E-04



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3855.50166	7.70E-04	3855.50166	2.30E-04	3927.82848	4.70E-04
3854.5373	5.20E-04	3854.5373	2.20E-04	3927.3463	4.80E-04
3853.57294	2.50E-04	3853.57294	2.70E-04	3926.86412	5.00E-04
3852.60859	6.00E-04	3852.60859	3.70E-04	3926.38194	5.00E-04
3851.64423	8.30E-04	3851.64423	5.20E-04	3925.89976	4.70E-04
3850.67987	9.20E-04	3850.67987	6.30E-04	3925.41759	4.30E-04
3849.71551	7.20E-04	3849.71551	6.30E-04	3924.93541	3.90E-04
3848.75116	3.00E-04	3848.75116	5.80E-04	3924.45323	3.50E-04
3847.7868	1.50E-04	3847.7868	5.40E-04	3923.97105	3.40E-04
3846.82244	2.50E-04	3846.82244	4.90E-04	3923.48887	3.80E-04
3845.85808	3.00E-04	3845.85808	4.60E-04	3923.00669	4.70E-04
3844.89373	2.70E-04	3844.89373	4.30E-04	3922.52451	5.60E-04
3843.92937	2.40E-04	3843.92937	4.00E-04	3922.04233	6.30E-04
3842.96501	4.30E-04	3842.96501	3.70E-04	3921.56016	6.50E-04
3842.00065	7.80E-04	3842.00065	3.40E-04	3921.07798	5.80E-04
3841.0363	9.00E-04	3841.0363	3.10E-04	3920.5958	4.70E-04
3840.07194	8.10E-04	3840.07194	3.00E-04	3920.11362	3.80E-04
3839.10758	7.80E-04	3839.10758	3.20E-04	3919.63144	3.40E-04
3838.14322	5.40E-04	3838.14322	3.40E-04	3919.14926	3.70E-04
3837.17887	4.60E-04	3837.17887	3.60E-04	3918.66708	4.40E-04
3836.21451	7.60E-04	3836.21451	3.80E-04	3918.1849	5.00E-04
3835.25015	6.80E-04	3835.25015	4.00E-04	3917.70272	4.80E-04
3834.28579	4.00E-04	3834.28579	4.00E-04	3917.22055	4.10E-04
3833.32144	5.40E-04	3833.32144	4.00E-04	3916.73837	3.60E-04
3832.35708	7.50E-04	3832.35708	4.40E-04	3916.25619	3.50E-04
3831.39272	7.10E-04	3831.39272	5.10E-04	3915.77401	3.80E-04
3830.42836	7.10E-04	3830.42836	5.30E-04	3915.29183	4.40E-04
3829.46401	7.60E-04	3829.46401	5.20E-04	3914.80965	5.10E-04
3828.49965	7.00E-04	3828.49965	5.20E-04	3914.32747	5.60E-04
3827.53529	6.30E-04	3827.53529	5.20E-04	3913.84529	5.90E-04
3826.57093	6.20E-04	3826.57093	5.10E-04	3913.36312	6.10E-04
3825.60657	5.90E-04	3825.60657	5.00E-04	3912.88094	6.30E-04
3824.64222	4.50E-04	3824.64222	4.50E-04	3912.39876	6.40E-04
3823.67786	3.80E-04	3823.67786	3.60E-04	3911.91658	6.30E-04
3822.7135	5.50E-04	3822.7135	2.80E-04	3911.4344	6.10E-04
3821.74914	6.80E-04	3821.74914	2.70E-04	3910.95222	6.20E-04
3820.78479	5.50E-04	3820.78479	3.20E-04	3910.47004	6.50E-04
3819.82043	5.70E-04	3819.82043	3.60E-04	3909.98786	6.90E-04
3818.85607	7.20E-04	3818.85607	3.80E-04	3909.50569	7.20E-04
3817.89171	8.40E-04	3817.89171	4.10E-04	3909.02351	7.40E-04
3816.92736	7.80E-04	3816.92736	4.30E-04	3908.54133	7.60E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3815.963	5.10E-04	3815.963	4.40E-04	3908.05915	7.70E-04
3814.99864	4.90E-04	3814.99864	4.80E-04	3907.57697	7.50E-04
3814.03428	6.20E-04	3814.03428	5.50E-04	3907.09479	7.00E-04
3813.06993	6.60E-04	3813.06993	6.00E-04	3906.61261	6.50E-04
3812.10557	7.40E-04	3812.10557	5.90E-04	3906.13043	6.40E-04
3811.14121	7.30E-04	3811.14121	5.20E-04	3905.64825	5.90E-04
3810.17685	6.40E-04	3810.17685	4.30E-04	3905.16608	4.80E-04
3809.2125	7.10E-04	3809.2125	3.60E-04	3904.6839	4.00E-04
3808.24814	8.70E-04	3808.24814	3.30E-04	3904.20172	4.30E-04
3807.28378	7.70E-04	3807.28378	3.30E-04	3903.71954	5.60E-04
3806.31942	6.30E-04	3806.31942	3.50E-04	3903.23736	6.50E-04
3805.35507	7.90E-04	3805.35507	3.60E-04	3902.75518	6.80E-04
3804.39071	9.30E-04	3804.39071	3.40E-04	3902.273	7.00E-04
3803.42635	9.50E-04	3803.42635	3.10E-04	3901.79082	7.10E-04
3802.46199	9.50E-04	3802.46199	3.00E-04	3901.30865	7.10E-04
3801.49763	7.50E-04	3801.49763	3.30E-04	3900.82647	7.30E-04
3800.53328	6.20E-04	3800.53328	4.10E-04	3900.34429	7.50E-04
3799.56892	7.00E-04	3799.56892	4.90E-04	3899.86211	7.70E-04
3798.60456	7.10E-04	3798.60456	5.50E-04	3899.37993	7.10E-04
3797.6402	6.50E-04	3797.6402	5.70E-04	3898.89775	6.00E-04
3796.67585	6.40E-04	3796.67585	5.30E-04	3898.41557	5.10E-04
3795.71149	6.60E-04	3795.71149	5.00E-04	3897.93339	5.30E-04
3794.74713	7.10E-04	3794.74713	5.00E-04	3897.45122	6.50E-04
3793.78277	7.20E-04	3793.78277	5.20E-04	3896.96904	7.60E-04
3792.81842	7.10E-04	3792.81842	5.20E-04	3896.48686	7.90E-04
3791.85406	5.70E-04	3791.85406	5.10E-04	3896.00468	8.10E-04
3790.8897	3.20E-04	3790.8897	5.00E-04	3895.5225	8.10E-04
3789.92534	2.10E-04	3789.92534	5.00E-04	3895.04032	8.00E-04
3788.96099	2.60E-04	3788.96099	5.10E-04	3894.55814	7.70E-04
3787.99663	3.50E-04	3787.99663	5.00E-04	3894.07596	7.40E-04
3787.03227	4.60E-04	3787.03227	5.00E-04	3893.59379	7.50E-04
3786.06791	4.80E-04	3786.06791	5.10E-04	3893.11161	7.90E-04
3785.10356	4.20E-04	3785.10356	5.30E-04	3892.62943	7.90E-04
3784.1392	4.60E-04	3784.1392	5.50E-04	3892.14725	7.30E-04
3783.17484	5.40E-04	3783.17484	5.30E-04	3891.66507	6.90E-04
3782.21048	5.30E-04	3782.21048	4.90E-04	3891.18289	6.70E-04
3781.24613	4.80E-04	3781.24613	4.70E-04	3890.70071	6.80E-04
3780.28177	4.10E-04	3780.28177	4.70E-04	3890.21853	7.20E-04
3779.31741	3.00E-04	3779.31741	4.90E-04	3889.73635	8.10E-04
3778.35305	3.20E-04	3778.35305	5.30E-04	3889.25418	9.10E-04
3777.38869	3.80E-04	3777.38869	5.70E-04	3888.772	9.40E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3776.42434	4.30E-04	3776.42434	5.80E-04	3888.28982	9.40E-04
3775.45998	5.00E-04	3775.45998	5.50E-04	3887.80764	1.00E-03
3774.49562	4.80E-04	3774.49562	5.00E-04	3887.32546	0.00104
3773.53126	4.10E-04	3773.53126	4.40E-04	3886.84328	9.50E-04
3772.56691	4.50E-04	3772.56691	3.90E-04	3886.3611	7.90E-04
3771.60255	5.40E-04	3771.60255	3.60E-04	3885.87892	6.50E-04
3770.63819	4.90E-04	3770.63819	3.60E-04	3885.39675	5.90E-04
3769.67383	3.80E-04	3769.67383	3.70E-04	3884.91457	5.90E-04
3768.70948	5.20E-04	3768.70948	3.70E-04	3884.43239	6.60E-04
3767.74512	7.50E-04	3767.74512	3.90E-04	3883.95021	8.10E-04
3766.78076	8.10E-04	3766.78076	4.30E-04	3883.46803	9.40E-04
3765.8164	6.60E-04	3765.8164	4.60E-04	3882.98585	9.90E-04
3764.85205	6.70E-04	3764.85205	4.80E-04	3882.50367	0.00104
3763.88769	8.20E-04	3763.88769	5.00E-04	3882.02149	0.00109
3762.92333	7.60E-04	3762.92333	4.90E-04	3881.53932	0.00106
3761.95897	6.80E-04	3761.95897	4.50E-04	3881.05714	9.50E-04
3760.99462	7.30E-04	3760.99462	4.10E-04	3880.57496	8.30E-04
3760.03026	7.20E-04	3760.03026	3.90E-04	3880.09278	7.60E-04
3759.0659	7.60E-04	3759.0659	4.00E-04	3879.6106	7.60E-04
3758.10154	8.50E-04	3758.10154	4.40E-04	3879.12842	8.30E-04
3757.13719	7.60E-04	3757.13719	5.00E-04	3878.64624	9.30E-04
3756.17283	6.60E-04	3756.17283	5.10E-04	3878.16406	1.00E-03
3755.20847	6.80E-04	3755.20847	4.30E-04	3877.68188	9.80E-04
3754.24411	6.70E-04	3754.24411	3.40E-04	3877.19971	9.30E-04
3753.27976	6.20E-04	3753.27976	2.90E-04	3876.71753	9.20E-04
3752.3154	5.70E-04	3752.3154	2.50E-04	3876.23535	9.80E-04
3751.35104	8.20E-04	3751.35104	2.50E-04	3875.75317	0.00103
3750.38668	9.70E-04	3750.38668	3.40E-04	3875.27099	0.00101
3749.42232	4.60E-04	3749.42232	4.70E-04	3874.78881	9.60E-04
3748.45797	2.90E-04	3748.45797	5.00E-04	3874.30663	9.10E-04
3747.49361	7.70E-04	3747.49361	3.70E-04	3873.82445	8.90E-04
3746.52925	0.00113	3746.52925	2.80E-04	3873.34228	9.10E-04
3745.56489	9.10E-04	3745.56489	2.80E-04	3872.8601	9.90E-04
3744.60054	0	3744.60054	3.20E-04	3872.37792	0.00113
3743.63618	5.00E-05	3743.63618	3.80E-04	3871.89574	0.00129
3742.67182	7.60E-04	3742.67182	4.90E-04	3871.41356	0.00136
3741.70746	9.80E-04	3741.70746	5.80E-04	3870.93138	0.00128
3740.74311	8.80E-04	3740.74311	5.50E-04	3870.4492	0.0011
3739.77875	8.50E-04	3739.77875	4.10E-04	3869.96702	9.40E-04
3738.81439	9.00E-04	3738.81439	3.00E-04	3869.48485	8.40E-04
3737.85003	9.80E-04	3737.85003	2.60E-04	3869.00267	8.40E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3736.88568	9.90E-04	3736.88568	2.70E-04	3868.52049	9.50E-04
3735.92132	8.10E-04	3735.92132	2.90E-04	3868.03831	0.00114
3734.95696	6.00E-04	3734.95696	3.30E-04	3867.55613	0.0013
3733.9926	8.40E-04	3733.9926	4.00E-04	3867.07395	0.0014
3733.02825	0.00106	3733.02825	4.90E-04	3866.59177	0.0014
3732.06389	7.50E-04	3732.06389	5.70E-04	3866.10959	0.00129
3731.09953	6.10E-04	3731.09953	6.10E-04	3865.62741	0.00114
3730.13517	7.90E-04	3730.13517	6.10E-04	3865.14524	0.00102
3729.17082	8.80E-04	3729.17082	5.80E-04	3864.66306	9.30E-04
3728.20646	8.90E-04	3728.20646	5.10E-04	3864.18088	9.10E-04
3727.2421	8.20E-04	3727.2421	4.40E-04	3863.6987	9.80E-04
3726.27774	6.70E-04	3726.27774	4.00E-04	3863.21652	0.0011
3725.31338	7.20E-04	3725.31338	4.10E-04	3862.73434	0.00116
3724.34903	9.20E-04	3724.34903	4.50E-04	3862.25216	0.00113
3723.38467	9.50E-04	3723.38467	5.00E-04	3861.76998	0.00109
3722.42031	7.40E-04	3722.42031	5.40E-04	3861.28781	0.00109
3721.45595	6.40E-04	3721.45595	5.40E-04	3860.80563	0.00113
3720.4916	7.30E-04	3720.4916	5.40E-04	3860.32345	0.00119
3719.52724	6.80E-04	3719.52724	5.50E-04	3859.84127	0.00125
3718.56288	4.80E-04	3718.56288	5.40E-04	3859.35909	0.0013
3717.59852	3.40E-04	3717.59852	5.20E-04	3858.87691	0.00131
3716.63417	2.80E-04	3716.63417	4.90E-04	3858.39473	0.00128
3715.66981	2.80E-04	3715.66981	4.30E-04	3857.91255	0.00124
3714.70545	4.10E-04	3714.70545	3.50E-04	3857.43038	0.0012
3713.74109	6.10E-04	3713.74109	3.00E-04	3856.9482	0.00118
3712.77674	6.00E-04	3712.77674	3.00E-04	3856.46602	0.00124
3711.81238	4.40E-04	3711.81238	3.50E-04	3855.98384	0.00137
3710.84802	5.80E-04	3710.84802	4.40E-04	3855.50166	0.00131
3709.88366	6.10E-04	3709.88366	5.60E-04	3855.01948	0.00105
3708.91931	4.40E-04	3708.91931	6.40E-04	3854.5373	7.80E-04
3707.95495	5.60E-04	3707.95495	6.70E-04	3854.05512	6.90E-04
3706.99059	8.10E-04	3706.99059	6.40E-04	3853.57294	7.10E-04
3706.02623	8.90E-04	3706.02623	5.90E-04	3853.09077	7.50E-04
3705.06188	8.60E-04	3705.06188	5.10E-04	3852.60859	9.10E-04
3704.09752	8.80E-04	3704.09752	4.40E-04	3852.12641	0.00114
3703.13316	9.50E-04	3703.13316	4.10E-04	3851.64423	0.00118
3702.1688	8.40E-04	3702.1688	4.20E-04	3851.16205	0.00111
3701.20445	6.40E-04	3701.20445	4.60E-04	3850.67987	0.00112
3700.24009	6.60E-04	3700.24009	5.00E-04	3850.19769	0.00124
3699.27573	6.70E-04	3699.27573	5.30E-04	3849.71551	0.00132
3698.31137	5.50E-04	3698.31137	5.40E-04	3849.23334	0.0013

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3697.34701	5.30E-04	3697.34701	5.40E-04	3848.75116	0.00128
3696.38266	6.60E-04	3696.38266	5.50E-04	3848.26898	0.00129
3695.4183	6.90E-04	3695.4183	5.70E-04	3847.7868	0.00132
3694.45394	6.10E-04	3694.45394	5.60E-04	3847.30462	0.00134
3693.48958	5.60E-04	3693.48958	5.40E-04	3846.82244	0.00132
3692.52523	6.20E-04	3692.52523	5.20E-04	3846.34026	0.00129
3691.56087	7.10E-04	3691.56087	4.60E-04	3845.85808	0.00127
3690.59651	8.10E-04	3690.59651	3.90E-04	3845.37591	0.00124
3689.63215	8.40E-04	3689.63215	3.90E-04	3844.89373	0.0012
3688.6678	5.00E-04	3688.6678	4.40E-04	3844.41155	0.00115
3687.70344	2.50E-04	3687.70344	4.90E-04	3843.92937	0.00112
3686.73908	4.60E-04	3686.73908	5.20E-04	3843.44719	0.00114
3685.77472	6.20E-04	3685.77472	5.50E-04	3842.96501	0.00121
3684.81037	7.30E-04	3684.81037	5.70E-04	3842.48283	0.0013
3683.84601	9.40E-04	3683.84601	5.50E-04	3842.00065	0.00136
3682.88165	0.00104	3682.88165	5.20E-04	3841.51847	0.00135
3681.91729	9.90E-04	3681.91729	5.20E-04	3841.0363	0.00124
3680.95294	9.90E-04	3680.95294	5.50E-04	3840.55412	0.00111
3679.98858	0.00102	3679.98858	5.50E-04	3840.07194	0.00111
3679.02422	9.70E-04	3679.02422	4.50E-04	3839.58976	0.00125
3678.05986	9.60E-04	3678.05986	3.20E-04	3839.10758	0.00133
3677.09551	8.90E-04	3677.09551	2.50E-04	3838.6254	0.00131
3676.13115	6.20E-04	3676.13115	2.80E-04	3838.14322	0.00122
3675.16679	5.00E-04	3675.16679	3.70E-04	3837.66104	0.00113
3674.20243	7.20E-04	3674.20243	4.50E-04	3837.17887	0.00109
3673.23807	9.50E-04	3673.23807	5.20E-04	3836.69669	0.00112
3672.27372	0.00106	3672.27372	5.60E-04	3836.21451	0.00122
3671.30936	9.00E-04	3671.30936	5.30E-04	3835.73233	0.00133
3670.345	8.40E-04	3670.345	5.00E-04	3835.25015	0.00133
3669.38064	0.00114	3669.38064	5.30E-04	3834.76797	0.00126
3668.41629	0.00114	3668.41629	6.10E-04	3834.28579	0.00121
3667.45193	8.80E-04	3667.45193	6.70E-04	3833.80361	0.00123
3666.48757	8.10E-04	3666.48757	6.70E-04	3833.32144	0.00131
3665.52321	9.40E-04	3665.52321	6.30E-04	3832.83926	0.00134
3664.55886	0.00107	3664.55886	5.90E-04	3832.35708	0.00127
3663.5945	0.00102	3663.5945	5.60E-04	3831.8749	0.0012
3662.63014	8.80E-04	3662.63014	5.40E-04	3831.39272	0.00119
3661.66578	8.60E-04	3661.66578	5.40E-04	3830.91054	0.00122
3660.70143	9.60E-04	3660.70143	5.40E-04	3830.42836	0.00125
3659.73707	0.00108	3659.73707	5.20E-04	3829.94618	0.00132
3658.77271	0.00115	3658.77271	4.80E-04	3829.46401	0.00138

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3657.80835	0.00124	3657.80835	4.70E-04	3828.98183	0.0014
3656.844	0.00113	3656.844	4.90E-04	3828.49965	0.0014
3655.87964	9.20E-04	3655.87964	5.30E-04	3828.01747	0.00138
3654.91528	0.00101	3654.91528	5.50E-04	3827.53529	0.00134
3653.95092	0.00119	3653.95092	5.50E-04	3827.05311	0.00128
3652.98657	0.00129	3652.98657	5.10E-04	3826.57093	0.00122
3652.02221	0.00145	3652.02221	4.50E-04	3826.08875	0.00118
3651.05785	0.00174	3651.05785	4.00E-04	3825.60657	0.00119
3650.09349	0.00198	3650.09349	3.80E-04	3825.1244	0.00124
3649.12913	0.00201	3649.12913	4.40E-04	3824.64222	0.0013
3648.16478	0.00194	3648.16478	5.40E-04	3824.16004	0.00136
3647.20042	0.00168	3647.20042	6.60E-04	3823.67786	0.00141
3646.23606	0.00143	3646.23606	7.30E-04	3823.19568	0.00144
3645.2717	0.00144	3645.2717	7.70E-04	3822.7135	0.00142
3644.30735	0.0015	3644.30735	7.60E-04	3822.23132	0.00133
3643.34299	0.00148	3643.34299	7.10E-04	3821.74914	0.00118
3642.37863	0.00144	3642.37863	6.50E-04	3821.26697	0.00103
3641.41427	0.00142	3641.41427	6.20E-04	3820.78479	9.40E-04
3640.44992	0.00139	3640.44992	6.20E-04	3820.30261	9.40E-04
3639.48556	0.00138	3639.48556	6.50E-04	3819.82043	0.00102
3638.5212	0.0014	3638.5212	6.70E-04	3819.33825	0.00111
3637.55684	0.00141	3637.55684	6.80E-04	3818.85607	0.0012
3636.59249	0.00146	3636.59249	6.60E-04	3818.37389	0.00131
3635.62813	0.00157	3635.62813	6.40E-04	3817.89171	0.00143
3634.66377	0.00162	3634.66377	6.40E-04	3817.40954	0.00144
3633.69941	0.00151	3633.69941	6.50E-04	3816.92736	0.00134
3632.73506	0.00147	3632.73506	6.10E-04	3816.44518	0.0012
3631.7707	0.00163	3631.7707	5.20E-04	3815.963	0.00106
3630.80634	0.00175	3630.80634	4.50E-04	3815.48082	9.80E-04
3629.84198	0.00154	3629.84198	4.40E-04	3814.99864	1.00E-03
3628.87763	0.00122	3628.87763	4.80E-04	3814.51646	0.00114
3627.91327	0.00136	3627.91327	5.70E-04	3814.03428	0.00133
3626.94891	0.00154	3626.94891	6.90E-04	3813.5521	0.0014
3625.98455	0.00146	3625.98455	7.90E-04	3813.06993	0.00138
3625.0202	0.00144	3625.0202	8.00E-04	3812.58775	0.00135
3624.05584	0.00165	3624.05584	7.40E-04	3812.10557	0.00133
3623.09148	0.00187	3623.09148	6.60E-04	3811.62339	0.00134
3622.12712	0.00199	3622.12712	5.80E-04	3811.14121	0.00136
3621.16276	0.002	3621.16276	5.30E-04	3810.65903	0.00139
3620.19841	0.00185	3620.19841	5.20E-04	3810.17685	0.00142
3619.23405	0.00165	3619.23405	5.60E-04	3809.69467	0.00144

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3618.26969	0.00155	3618.26969	6.20E-04	3809.2125	0.00151
3617.30533	0.00153	3617.30533	6.70E-04	3808.73032	0.00157
3616.34098	0.0016	3616.34098	7.00E-04	3808.24814	0.00149
3615.37662	0.00174	3615.37662	6.90E-04	3807.76596	0.0013
3614.41226	0.00198	3614.41226	6.60E-04	3807.28378	0.00113
3613.4479	0.00214	3613.4479	6.50E-04	3806.8016	0.00103
3612.48355	0.00193	3612.48355	6.60E-04	3806.31942	0.00103
3611.51919	0.00186	3611.51919	6.70E-04	3805.83724	0.00113
3610.55483	0.00211	3610.55483	6.80E-04	3805.35507	0.00133
3609.59047	0.00208	3609.59047	6.60E-04	3804.87289	0.00153
3608.62612	0.00188	3608.62612	6.50E-04	3804.39071	0.00158
3607.66176	0.00196	3607.66176	6.60E-04	3803.90853	0.00152
3606.6974	0.00207	3606.6974	7.00E-04	3803.42635	0.0015
3605.73304	0.00203	3605.73304	7.50E-04	3802.94417	0.00147
3604.76869	0.00198	3604.76869	7.80E-04	3802.46199	0.00134
3603.80433	0.00201	3603.80433	8.10E-04	3801.97981	0.00117
3602.83997	0.00218	3602.83997	8.10E-04	3801.49763	0.00106
3601.87561	0.0024	3601.87561	8.10E-04	3801.01546	0.00104
3600.91126	0.00243	3600.91126	8.10E-04	3800.53328	0.00108
3599.9469	0.00231	3599.9469	8.10E-04	3800.0511	0.00118
3598.98254	0.00224	3598.98254	8.10E-04	3799.56892	0.00134
3598.01818	0.00233	3598.01818	7.90E-04	3799.08674	0.00143
3597.05382	0.00256	3597.05382	7.70E-04	3798.60456	0.00142
3596.08947	0.00261	3596.08947	7.70E-04	3798.12238	0.00137
3595.12511	0.00243	3595.12511	7.80E-04	3797.6402	0.00131
3594.16075	0.0023	3594.16075	8.00E-04	3797.15803	0.00124
3593.19639	0.00226	3593.19639	8.30E-04	3796.67585	0.00119
3592.23204	0.00233	3592.23204	8.20E-04	3796.19367	0.00118
3591.26768	0.00247	3591.26768	7.50E-04	3795.71149	0.00121
3590.30332	0.00252	3590.30332	6.70E-04	3795.22931	0.00127
3589.33896	0.00245	3589.33896	6.10E-04	3794.74713	0.00135
3588.37461	0.00244	3588.37461	6.30E-04	3794.26495	0.00145
3587.41025	0.00246	3587.41025	7.00E-04	3793.78277	0.00148
3586.44589	0.00218	3586.44589	8.10E-04	3793.3006	0.00146
3585.48153	0.00193	3585.48153	8.90E-04	3792.81842	0.00143
3584.51718	0.00203	3584.51718	9.40E-04	3792.33624	0.00142
3583.55282	0.00216	3583.55282	9.30E-04	3791.85406	0.00141
3582.58846	0.00204	3582.58846	8.90E-04	3791.37188	0.0014
3581.6241	0.00188	3581.6241	8.60E-04	3790.8897	0.0014
3580.65975	0.002	3580.65975	8.60E-04	3790.40752	0.0014
3579.69539	0.00231	3579.69539	8.80E-04	3789.92534	0.0014

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3578.73103	0.00257	3578.73103	8.80E-04	3789.44316	0.00142
3577.76667	0.00263	3577.76667	8.70E-04	3788.96099	0.00144
3576.80232	0.00252	3576.80232	8.60E-04	3788.47881	0.00146
3575.83796	0.00241	3575.83796	8.60E-04	3787.99663	0.00148
3574.8736	0.00238	3574.8736	8.70E-04	3787.51445	0.00148
3573.90924	0.00234	3573.90924	8.90E-04	3787.03227	0.00146
3572.94489	0.00228	3572.94489	9.00E-04	3786.55009	0.00142
3571.98053	0.00225	3571.98053	8.80E-04	3786.06791	0.00137
3571.01617	0.00231	3571.01617	8.20E-04	3785.58573	0.00134
3570.05181	0.00248	3570.05181	7.40E-04	3785.10356	0.00133
3569.08745	0.00272	3569.08745	7.00E-04	3784.62138	0.00135
3568.1231	0.00292	3568.1231	6.90E-04	3784.1392	0.00139
3567.15874	0.00303	3567.15874	7.20E-04	3783.65702	0.00143
3566.19438	0.00299	3566.19438	7.80E-04	3783.17484	0.00146
3565.23002	0.00292	3565.23002	8.50E-04	3782.69266	0.00148
3564.26567	0.00288	3564.26567	9.00E-04	3782.21048	0.00149
3563.30131	0.00274	3563.30131	9.20E-04	3781.7283	0.00152
3562.33695	0.00256	3562.33695	9.30E-04	3781.24613	0.00154
3561.37259	0.00255	3561.37259	9.40E-04	3780.76395	0.00151
3560.40824	0.00265	3560.40824	9.50E-04	3780.28177	0.00145
3559.44388	0.00269	3559.44388	9.70E-04	3779.79959	0.00139
3558.47952	0.00259	3558.47952	9.80E-04	3779.31741	0.00137
3557.51516	0.00242	3557.51516	9.80E-04	3778.83523	0.00136
3556.55081	0.00235	3556.55081	9.80E-04	3778.35305	0.00138
3555.58645	0.00243	3555.58645	9.60E-04	3777.87087	0.00142
3554.62209	0.0026	3554.62209	9.50E-04	3777.38869	0.00145
3553.65773	0.00283	3553.65773	9.50E-04	3776.90652	0.00145
3552.69338	0.00301	3552.69338	9.80E-04	3776.42434	0.00146
3551.72902	0.00303	3551.72902	0.00101	3775.94216	0.00149
3550.76466	0.00303	3550.76466	0.00104	3775.45998	0.00153
3549.8003	0.00308	3549.8003	0.00106	3774.9778	0.00155
3548.83595	0.00313	3548.83595	0.00107	3774.49562	0.00153
3547.87159	0.00327	3547.87159	0.00107	3774.01344	0.00148
3546.90723	0.0035	3546.90723	0.00109	3773.53126	0.0014
3545.94287	0.00359	3545.94287	0.00112	3773.04909	0.00135
3544.97851	0.00341	3544.97851	0.00115	3772.56691	0.00134
3544.01416	0.00311	3544.01416	0.00116	3772.08473	0.0014
3543.0498	0.00293	3543.0498	0.00117	3771.60255	0.0015
3542.08544	0.00296	3542.08544	0.00116	3771.12037	0.00154
3541.12108	0.00308	3541.12108	0.00116	3770.63819	0.0015
3540.15673	0.00309	3540.15673	0.00115	3770.15601	0.00142



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3539.19237	0.00305	3539.19237	0.00113	3769.67383	0.00132
3538.22801	0.00317	3538.22801	0.00111	3769.19166	0.00124
3537.26365	0.00345	3537.26365	0.00109	3768.70948	0.00121
3536.2993	0.00368	3536.2993	0.00108	3768.2273	0.00129
3535.33494	0.00366	3535.33494	0.00109	3767.74512	0.00142
3534.37058	0.00349	3534.37058	0.00112	3767.26294	0.0015
3533.40622	0.00344	3533.40622	0.00115	3766.78076	0.00148
3532.44187	0.00352	3532.44187	0.00117	3766.29858	0.00143
3531.47751	0.00354	3531.47751	0.00117	3765.8164	0.00137
3530.51315	0.00355	3530.51315	0.00118	3765.33423	0.00133
3529.54879	0.00357	3529.54879	0.00118	3764.85205	0.0013
3528.58444	0.0035	3528.58444	0.00119	3764.36987	0.00133
3527.62008	0.00339	3527.62008	0.00119	3763.88769	0.00139
3526.65572	0.0034	3526.65572	0.00119	3763.40551	0.00144
3525.69136	0.00358	3525.69136	0.00118	3762.92333	0.00144
3524.72701	0.00377	3524.72701	0.00117	3762.44115	0.00143
3523.76265	0.00382	3523.76265	0.00118	3761.95897	0.00146
3522.79829	0.00386	3522.79829	0.00121	3761.47679	0.00149
3521.83393	0.004	3521.83393	0.00123	3760.99462	0.00145
3520.86958	0.00404	3520.86958	0.00125	3760.51244	0.00136
3519.90522	0.00383	3519.90522	0.00125	3760.03026	0.00126
3518.94086	0.00366	3518.94086	0.00124	3759.54808	0.00119
3517.9765	0.00373	3517.9765	0.00121	3759.0659	0.00118
3517.01214	0.00391	3517.01214	0.00118	3758.58372	0.00125
3516.04779	0.00406	3516.04779	0.00116	3758.10154	0.00137
3515.08343	0.00414	3515.08343	0.00116	3757.61936	0.00145
3514.11907	0.00412	3514.11907	0.00116	3757.13719	0.00144
3513.15471	0.00399	3513.15471	0.00118	3756.65501	0.0014
3512.19036	0.00393	3512.19036	0.0012	3756.17283	0.00137
3511.226	0.00415	3511.226	0.00122	3755.69065	0.00135
3510.26164	0.00442	3510.26164	0.00124	3755.20847	0.00136
3509.29728	0.00439	3509.29728	0.00126	3754.72629	0.00142
3508.33293	0.00425	3508.33293	0.00127	3754.24411	0.00156
3507.36857	0.00423	3507.36857	0.00127	3753.76193	0.00163
3506.40421	0.00424	3506.40421	0.00127	3753.27976	0.00153
3505.43985	0.00427	3505.43985	0.00127	3752.79758	0.00135
3504.4755	0.00427	3504.4755	0.00128	3752.3154	0.00119
3503.51114	0.00415	3503.51114	0.0013	3751.83322	0.00113
3502.54678	0.00416	3502.54678	0.00132	3751.35104	0.00121
3501.58242	0.00435	3501.58242	0.00134	3750.86886	0.00133
3500.61807	0.00446	3500.61807	0.00135	3750.38668	0.00142

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3499.65371	0.00436	3499.65371	0.00135	3749.9045	0.00138
3498.68935	0.00416	3498.68935	0.00133	3749.42232	0.00121
3497.72499	0.00409	3497.72499	0.00132	3748.94015	0.00106
3496.76064	0.00418	3496.76064	0.00133	3748.45797	9.90E-04
3495.79628	0.00429	3495.79628	0.00135	3747.97579	0.00106
3494.83192	0.00435	3494.83192	0.00136	3747.49361	0.00126
3493.86756	0.00439	3493.86756	0.00136	3747.01143	0.00148
3492.9032	0.00434	3492.9032	0.00135	3746.52925	0.00169
3491.93885	0.00424	3491.93885	0.00134	3746.04707	0.00174
3490.97449	0.00431	3490.97449	0.00132	3745.56489	0.00153
3490.01013	0.00451	3490.01013	0.00132	3745.08272	0.00119
3489.04577	0.00458	3489.04577	0.00134	3744.60054	8.80E-04
3488.08142	0.00452	3488.08142	0.00139	3744.11836	6.90E-04
3487.11706	0.00445	3487.11706	0.00144	3743.63618	7.00E-04
3486.1527	0.00439	3486.1527	0.00147	3743.154	9.40E-04
3485.18834	0.00444	3485.18834	0.00147	3742.67182	0.00133
3484.22399	0.00462	3484.22399	0.00144	3742.18964	0.00156
3483.25963	0.00468	3483.25963	0.00141	3741.70746	0.00152
3482.29527	0.00466	3482.29527	0.0014	3741.22529	0.00141
3481.33091	0.00478	3481.33091	0.00142	3740.74311	0.00136
3480.36656	0.0049	3480.36656	0.00145	3740.26093	0.00138
3479.4022	0.0048	3479.4022	0.00148	3739.77875	0.00142
3478.43784	0.0047	3478.43784	0.00151	3739.29657	0.00145
3477.47348	0.00477	3477.47348	0.00153	3738.81439	0.00148
3476.50913	0.00481	3476.50913	0.00154	3738.33221	0.0015
3475.54477	0.00474	3475.54477	0.00155	3737.85003	0.00143
3474.58041	0.00476	3474.58041	0.00157	3737.36785	0.00135
3473.61605	0.00494	3473.61605	0.00157	3736.88568	0.00135
3472.6517	0.00511	3472.6517	0.00157	3736.4035	0.00134
3471.68734	0.00519	3471.68734	0.00155	3735.92132	0.00126
3470.72298	0.00522	3470.72298	0.00153	3735.43914	0.00115
3469.75862	0.00522	3469.75862	0.00151	3734.95696	0.00113
3468.79426	0.0052	3468.79426	0.0015	3734.47478	0.0012
3467.82991	0.0051	3467.82991	0.00149	3733.9926	0.0013
3466.86555	0.00506	3466.86555	0.0015	3733.51042	0.00139
3465.90119	0.00515	3465.90119	0.00151	3733.02825	0.00144
3464.93683	0.00517	3464.93683	0.00154	3732.54607	0.00141
3463.97248	0.00514	3463.97248	0.00157	3732.06389	0.00132
3463.00812	0.00524	3463.00812	0.00161	3731.58171	0.00124
3462.04376	0.0054	3462.04376	0.00162	3731.09953	0.00121
3461.0794	0.00542	3461.0794	0.00162	3730.61735	0.00126

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3460.11505	0.00531	3460.11505	0.00161	3730.13517	0.00136
3459.15069	0.0052	3459.15069	0.0016	3729.65299	0.00142
3458.18633	0.0051	3458.18633	0.0016	3729.17082	0.00143
3457.22197	0.00509	3457.22197	0.00161	3728.68864	0.00144
3456.25762	0.00521	3456.25762	0.00163	3728.20646	0.00144
3455.29326	0.0054	3455.29326	0.00165	3727.72428	0.00142
3454.3289	0.0056	3454.3289	0.00164	3727.2421	0.00139
3453.36454	0.00572	3453.36454	0.00162	3726.75992	0.00137
3452.40019	0.00564	3452.40019	0.0016	3726.27774	0.00135
3451.43583	0.00543	3451.43583	0.00159	3725.79556	0.00133
3450.47147	0.00537	3450.47147	0.00159	3725.31338	0.00133
3449.50711	0.00557	3449.50711	0.0016	3724.83121	0.00137
3448.54276	0.00584	3448.54276	0.00164	3724.34903	0.00141
3447.5784	0.00594	3447.5784	0.00167	3723.86685	0.00141
3446.61404	0.00592	3446.61404	0.00169	3723.38467	0.00138
3445.64968	0.00587	3445.64968	0.00172	3722.90249	0.00133
3444.68533	0.00578	3444.68533	0.00172	3722.42031	0.00127
3443.72097	0.00571	3443.72097	0.00171	3721.93813	0.00123
3442.75661	0.00569	3442.75661	0.0017	3721.45595	0.00124
3441.79225	0.00564	3441.79225	0.00169	3720.97378	0.00133
3440.82789	0.00572	3440.82789	0.00169	3720.4916	0.00142
3439.86354	0.00605	3439.86354	0.00169	3720.00942	0.00144
3438.89918	0.00627	3438.89918	0.0017	3719.52724	0.0014
3437.93482	0.00632	3437.93482	0.00172	3719.04506	0.00135
3436.97046	0.00636	3436.97046	0.00173	3718.56288	0.00132
3436.00611	0.00625	3436.00611	0.00174	3718.0807	0.00132
3435.04175	0.00605	3435.04175	0.00175	3717.59852	0.00135
3434.07739	0.00598	3434.07739	0.00177	3717.11635	0.00141
3433.11303	0.00599	3433.11303	0.00178	3716.63417	0.00146
3432.14868	0.00608	3432.14868	0.00179	3716.15199	0.00147
3431.18432	0.00626	3431.18432	0.00181	3715.66981	0.00144
3430.21996	0.00631	3430.21996	0.00182	3715.18763	0.00142
3429.2556	0.00617	3429.2556	0.00183	3714.70545	0.00142
3428.29125	0.0061	3428.29125	0.00182	3714.22327	0.00146
3427.32689	0.00617	3427.32689	0.00182	3713.74109	0.00147
3426.36253	0.00632	3426.36253	0.00183	3713.25891	0.00137
3425.39817	0.00648	3425.39817	0.00182	3712.77674	0.00121
3424.43382	0.00657	3424.43382	0.00182	3712.29456	0.00108
3423.46946	0.00653	3423.46946	0.00182	3711.81238	0.00104
3422.5051	0.00647	3422.5051	0.00184	3711.3302	0.0011
3421.54074	0.00643	3421.54074	0.00186	3710.84802	0.00122

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3420.57639	0.00638	3420.57639	0.00188	3710.36584	0.00135
3419.61203	0.00638	3419.61203	0.0019	3709.88366	0.0014
3418.64767	0.00641	3418.64767	0.00191	3709.40148	0.00135
3417.68331	0.0065	3417.68331	0.00191	3708.91931	0.00129
3416.71895	0.0067	3416.71895	0.00189	3708.43713	0.00127
3415.7546	0.00682	3415.7546	0.00187	3707.95495	0.0013
3414.79024	0.00673	3414.79024	0.00187	3707.47277	0.00136
3413.82588	0.00662	3413.82588	0.00188	3706.99059	0.00138
3412.86152	0.00665	3412.86152	0.0019	3706.50841	0.00137
3411.89717	0.00674	3411.89717	0.00192	3706.02623	0.00134
3410.93281	0.00676	3410.93281	0.00194	3705.54405	0.00136
3409.96845	0.00677	3409.96845	0.00195	3705.06188	0.00143
3409.00409	0.00691	3409.00409	0.00195	3704.5797	0.00149
3408.03974	0.00708	3408.03974	0.00195	3704.09752	0.00152
3407.07538	0.00708	3407.07538	0.00195	3703.61534	0.00154
3406.11102	0.00686	3406.11102	0.00194	3703.13316	0.00151
3405.14666	0.00673	3405.14666	0.00192	3702.65098	0.00141
3404.18231	0.00685	3404.18231	0.00192	3702.1688	0.0013
3403.21795	0.007	3403.21795	0.00192	3701.68662	0.00124
3402.25359	0.00704	3402.25359	0.00194	3701.20445	0.00123
3401.28923	0.00711	3401.28923	0.00197	3700.72227	0.00124
3400.32488	0.00722	3400.32488	0.002	3700.24009	0.0013
3399.36052	0.00719	3399.36052	0.00202	3699.75791	0.00137
3398.39616	0.00709	3398.39616	0.00203	3699.27573	0.00138
3397.4318	0.00709	3397.4318	0.00205	3698.79355	0.00134
3396.46745	0.00714	3396.46745	0.00205	3698.31137	0.00131
3395.50309	0.00715	3395.50309	0.00205	3697.82919	0.00133
3394.53873	0.00716	3394.53873	0.00206	3697.34701	0.00135
3393.57437	0.00719	3393.57437	0.00206	3696.86484	0.00135
3392.61002	0.00718	3392.61002	0.00206	3696.38266	0.00138
3391.64566	0.00715	3391.64566	0.00207	3695.90048	0.00141
3390.6813	0.00723	3390.6813	0.00209	3695.4183	0.00142
3389.71694	0.00733	3389.71694	0.00211	3694.93612	0.00143
3388.75258	0.00737	3388.75258	0.00212	3694.45394	0.00146
3387.78823	0.00745	3387.78823	0.00212	3693.97176	0.0015
3386.82387	0.00752	3386.82387	0.00213	3693.48958	0.00152
3385.85951	0.00749	3385.85951	0.00212	3693.00741	0.00153
3384.89515	0.00743	3384.89515	0.0021	3692.52523	0.00149
3383.9308	0.00744	3383.9308	0.00208	3692.04305	0.00139
3382.96644	0.00756	3382.96644	0.00207	3691.56087	0.00127
3382.00208	0.00773	3382.00208	0.00206	3691.07869	0.00121

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3381.03772	0.00783	3381.03772	0.00207	3690.59651	0.00128
3380.07337	0.00779	3380.07337	0.00209	3690.11433	0.0014
3379.10901	0.00767	3379.10901	0.00212	3689.63215	0.00143
3378.14465	0.00758	3378.14465	0.00214	3689.14998	0.00136
3377.18029	0.00749	3377.18029	0.00213	3688.6678	0.00124
3376.21594	0.00734	3376.21594	0.00211	3688.18562	0.00112
3375.25158	0.0073	3375.25158	0.0021	3687.70344	0.00106
3374.28722	0.00755	3374.28722	0.00212	3687.22126	0.00111
3373.32286	0.00779	3373.32286	0.00214	3686.73908	0.00128
3372.35851	0.00781	3372.35851	0.00217	3686.2569	0.00145
3371.39415	0.00775	3371.39415	0.00219	3685.77472	0.00148
3370.42979	0.00768	3370.42979	0.0022	3685.29254	0.00143
3369.46543	0.0076	3369.46543	0.00222	3684.81037	0.00139
3368.50108	0.00753	3368.50108	0.00224	3684.32819	0.00136
3367.53672	0.00757	3367.53672	0.00227	3683.84601	0.00134
3366.57236	0.0077	3366.57236	0.00229	3683.36383	0.00133
3365.608	0.0078	3365.608	0.00229	3682.88165	0.00133
3364.64364	0.00784	3364.64364	0.00228	3682.39947	0.00133
3363.67929	0.00789	3363.67929	0.00226	3681.91729	0.00134
3362.71493	0.00786	3362.71493	0.00226	3681.43511	0.00138
3361.75057	0.00777	3361.75057	0.00226	3680.95294	0.00144
3360.78621	0.00774	3360.78621	0.00226	3680.47076	0.00148
3359.82186	0.0078	3359.82186	0.00227	3679.98858	0.0015
3358.8575	0.0079	3358.8575	0.00228	3679.5064	0.00153
3357.89314	0.00804	3357.89314	0.00229	3679.02422	0.00154
3356.92878	0.00811	3356.92878	0.00229	3678.54204	0.00152
3355.96443	0.00803	3355.96443	0.0023	3678.05986	0.00148
3355.00007	0.00796	3355.00007	0.00229	3677.57768	0.00147
3354.03571	0.00798	3354.03571	0.00229	3677.09551	0.00144
3353.07135	0.008	3353.07135	0.00229	3676.61333	0.00135
3352.107	0.00788	3352.107	0.00231	3676.13115	0.00123
3351.14264	0.00778	3351.14264	0.00233	3675.64897	0.0011
3350.17828	0.00789	3350.17828	0.00235	3675.16679	0.00102
3349.21392	0.00806	3349.21392	0.00236	3674.68461	0.00101
3348.24957	0.00813	3348.24957	0.00236	3674.20243	0.0011
3347.28521	0.00814	3347.28521	0.00237	3673.72025	0.00123
3346.32085	0.00814	3346.32085	0.00238	3673.23807	0.00137
3345.35649	0.00815	3345.35649	0.0024	3672.7559	0.00152
3344.39214	0.00817	3344.39214	0.00241	3672.27372	0.00157
3343.42778	0.00814	3343.42778	0.00241	3671.79154	0.00147
3342.46342	0.00811	3342.46342	0.00241	3671.30936	0.00135

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3341.49906	0.00815	3341.49906	0.00241	3670.82718	0.0013
3340.5347	0.00823	3340.5347	0.00242	3670.345	0.00131
3339.57035	0.0082	3339.57035	0.00245	3669.86282	0.00129
3338.60599	0.00817	3338.60599	0.00248	3669.38064	0.00129
3337.64163	0.0082	3337.64163	0.00249	3668.89847	0.00135
3336.67727	0.0082	3336.67727	0.0025	3668.41629	0.00141
3335.71292	0.00813	3335.71292	0.00249	3667.93411	0.00141
3334.74856	0.00805	3334.74856	0.00249	3667.45193	0.00143
3333.7842	0.008	3333.7842	0.00249	3666.96975	0.00151
3332.81984	0.00807	3332.81984	0.00249	3666.48757	0.0016
3331.85549	0.00816	3331.85549	0.0025	3666.00539	0.00162
3330.89113	0.00819	3330.89113	0.00252	3665.52321	0.00159
3329.92677	0.00822	3329.92677	0.00253	3665.04104	0.00154
3328.96241	0.00829	3328.96241	0.00254	3664.55886	0.0015
3327.99806	0.00828	3327.99806	0.00254	3664.07668	0.00149
3327.0337	0.00823	3327.0337	0.00254	3663.5945	0.00149
3326.06934	0.00819	3326.06934	0.00253	3663.11232	0.00153
3325.10498	0.00809	3325.10498	0.00252	3662.63014	0.00159
3324.14063	0.00799	3324.14063	0.00251	3662.14796	0.00164
3323.17627	0.008	3323.17627	0.00252	3661.66578	0.00164
3322.21191	0.00803	3322.21191	0.00252	3661.1836	0.00159
3321.24755	0.008	3321.24755	0.00253	3660.70143	0.00153
3320.2832	0.00804	3320.2832	0.00253	3660.21925	0.00148
3319.31884	0.0082	3319.31884	0.00254	3659.73707	0.00145
3318.35448	0.00827	3318.35448	0.00256	3659.25489	0.00143
3317.39012	0.0082	3317.39012	0.00257	3658.77271	0.00145
3316.42577	0.00814	3316.42577	0.00258	3658.29053	0.00152
3315.46141	0.00819	3315.46141	0.00259	3657.80835	0.00155
3314.49705	0.00832	3314.49705	0.0026	3657.32617	0.00149
3313.53269	0.00836	3313.53269	0.0026	3656.844	0.00137
3312.56833	0.00827	3312.56833	0.0026	3656.36182	0.00127
3311.60398	0.00814	3311.60398	0.00261	3655.87964	0.00121
3310.63962	0.00814	3310.63962	0.00264	3655.39746	0.00119
3309.67526	0.00826	3309.67526	0.00266	3654.91528	0.00125
3308.7109	0.00831	3308.7109	0.00268	3654.4331	0.00138
3307.74655	0.0083	3307.74655	0.00269	3653.95092	0.00149
3306.78219	0.0083	3306.78219	0.0027	3653.46874	0.00156
3305.81783	0.00831	3305.81783	0.0027	3652.98657	0.00161
3304.85347	0.00823	3304.85347	0.00269	3652.50439	0.00162
3303.88912	0.0081	3303.88912	0.00267	3652.02221	0.00158
3302.92476	0.00806	3302.92476	0.00265	3651.54003	0.00152

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3301.9604	0.0081	3301.9604	0.00263	3651.05785	0.00148
3300.99604	0.00806	3300.99604	0.00261	3650.57567	0.00139
3300.03169	0.00794	3300.03169	0.00259	3650.09349	0.00126
3299.06733	0.00789	3299.06733	0.0026	3649.61131	0.00122
3298.10297	0.00789	3298.10297	0.00262	3649.12913	0.00129
3297.13861	0.00773	3297.13861	0.00265	3648.64696	0.00133
3296.17426	0.00755	3296.17426	0.00267	3648.16478	0.00129
3295.2099	0.00761	3295.2099	0.0027	3647.6826	0.00128
3294.24554	0.00783	3294.24554	0.00271	3647.20042	0.0013
3293.28118	0.008	3293.28118	0.00271	3646.71824	0.00128
3292.31683	0.00802	3292.31683	0.00271	3646.23606	0.00127
3291.35247	0.00791	3291.35247	0.0027	3645.75388	0.00132
3290.38811	0.00783	3290.38811	0.00269	3645.2717	0.00143
3289.42375	0.00785	3289.42375	0.00269	3644.78953	0.00151
3288.45939	0.00794	3288.45939	0.00268	3644.30735	0.00152
3287.49504	0.00803	3287.49504	0.00268	3643.82517	0.0015
3286.53068	0.00799	3286.53068	0.00269	3643.34299	0.00149
3285.56632	0.00778	3285.56632	0.00269	3642.86081	0.00149
3284.60196	0.00751	3284.60196	0.00267	3642.37863	0.0015
3283.63761	0.00745	3283.63761	0.00264	3641.89645	0.00151
3282.67325	0.00759	3282.67325	0.0026	3641.41427	0.00153
3281.70889	0.0077	3281.70889	0.00257	3640.9321	0.00154
3280.74453	0.00774	3280.74453	0.00255	3640.44992	0.00155
3279.78018	0.00777	3279.78018	0.00255	3639.96774	0.00155
3278.81582	0.00775	3278.81582	0.00257	3639.48556	0.00156
3277.85146	0.00765	3277.85146	0.00258	3639.00338	0.00154
3276.8871	0.00754	3276.8871	0.00259	3638.5212	0.00151
3275.92275	0.00757	3275.92275	0.00259	3638.03902	0.00149
3274.95839	0.00766	3274.95839	0.00258	3637.55684	0.00149
3273.99403	0.00767	3273.99403	0.00256	3637.07467	0.00149
3273.02967	0.00768	3273.02967	0.00255	3636.59249	0.00151
3272.06532	0.00773	3272.06532	0.00254	3636.11031	0.00156
3271.10096	0.00764	3271.10096	0.00252	3635.62813	0.00161
3270.1366	0.00741	3270.1366	0.0025	3635.14595	0.0016
3269.17224	0.00727	3269.17224	0.00248	3634.66377	0.00154
3268.20789	0.00726	3268.20789	0.00247	3634.18159	0.00147
3267.24353	0.00729	3267.24353	0.00247	3633.69941	0.00143
3266.27917	0.00735	3266.27917	0.00247	3633.21723	0.00141
3265.31481	0.00734	3265.31481	0.00247	3632.73506	0.00142
3264.35046	0.00721	3264.35046	0.00246	3632.25288	0.00148
3263.3861	0.0071	3263.3861	0.00244	3631.7707	0.0016

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3262.42174	0.0071	3262.42174	0.00243	3631.28852	0.0017
3261.45738	0.00713	3261.45738	0.00242	3630.80634	0.0017
3260.49302	0.00716	3260.49302	0.00243	3630.32416	0.00159
3259.52867	0.00716	3259.52867	0.00245	3629.84198	0.00142
3258.56431	0.00714	3258.56431	0.00246	3629.3598	0.00122
3257.59995	0.00713	3257.59995	0.00244	3628.87763	0.00106
3256.63559	0.0071	3256.63559	0.00241	3628.39545	0.00103
3255.67124	0.00707	3255.67124	0.00238	3627.91327	0.00114
3254.70688	0.00705	3254.70688	0.00237	3627.43109	0.00131
3253.74252	0.00703	3253.74252	0.00235	3626.94891	0.00145
3252.77816	0.00697	3252.77816	0.00234	3626.46673	0.00152
3251.81381	0.00686	3251.81381	0.00233	3625.98455	0.00153
3250.84945	0.00678	3250.84945	0.00232	3625.50237	0.0015
3249.88509	0.00684	3249.88509	0.00231	3625.0202	0.00146
3248.92073	0.0069	3248.92073	0.00229	3624.53802	0.00146
3247.95638	0.00685	3247.95638	0.00228	3624.05584	0.00147
3246.99202	0.00677	3246.99202	0.00227	3623.57366	0.0015
3246.02766	0.00669	3246.02766	0.00225	3623.09148	0.00154
3245.0633	0.0066	3245.0633	0.00223	3622.6093	0.00156
3244.09895	0.00659	3244.09895	0.00223	3622.12712	0.00157
3243.13459	0.00661	3243.13459	0.00224	3621.64494	0.00161
3242.17023	0.00652	3242.17023	0.00223	3621.16276	0.0016
3241.20587	0.00634	3241.20587	0.00222	3620.68059	0.00151
3240.24152	0.00623	3240.24152	0.00219	3620.19841	0.0014
3239.27716	0.00633	3239.27716	0.00216	3619.71623	0.00135
3238.3128	0.00652	3238.3128	0.00214	3619.23405	0.00134
3237.34844	0.00652	3237.34844	0.00214	3618.75187	0.00134
3236.38408	0.00645	3236.38408	0.00215	3618.26969	0.00137
3235.41973	0.00645	3235.41973	0.00217	3617.78751	0.00146
3234.45537	0.00633	3234.45537	0.00218	3617.30533	0.00154
3233.49101	0.0061	3233.49101	0.00218	3616.82316	0.00158
3232.52665	0.00601	3232.52665	0.00216	3616.34098	0.00162
3231.5623	0.00611	3231.5623	0.00213	3615.8588	0.00165
3230.59794	0.00621	3230.59794	0.00212	3615.37662	0.00164
3229.63358	0.00622	3229.63358	0.00211	3614.89444	0.00161
3228.66922	0.00614	3228.66922	0.00212	3614.41226	0.00157
3227.70487	0.00603	3227.70487	0.00212	3613.93008	0.00151
3226.74051	0.00594	3226.74051	0.00212	3613.4479	0.00142
3225.77615	0.00589	3225.77615	0.00211	3612.96573	0.00137
3224.81179	0.00585	3224.81179	0.00209	3612.48355	0.00136
3223.84744	0.00585	3223.84744	0.00207	3612.00137	0.00138



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3222.88308	0.00587	3222.88308	0.00206	3611.51919	0.00146
3221.91872	0.00589	3221.91872	0.00206	3611.03701	0.00159
3220.95436	0.00586	3220.95436	0.00205	3610.55483	0.00164
3219.99001	0.0058	3219.99001	0.00204	3610.07265	0.00155
3219.02565	0.00579	3219.02565	0.00203	3609.59047	0.00142
3218.06129	0.00585	3218.06129	0.002	3609.10829	0.00136
3217.09693	0.00584	3217.09693	0.00198	3608.62612	0.00135
3216.13258	0.00578	3216.13258	0.00196	3608.14394	0.00136
3215.16822	0.00575	3215.16822	0.00196	3607.66176	0.00141
3214.20386	0.00571	3214.20386	0.00197	3607.17958	0.00147
3213.2395	0.00566	3213.2395	0.00199	3606.6974	0.0015
3212.27514	0.00563	3212.27514	0.00201	3606.21522	0.00151
3211.31079	0.0056	3211.31079	0.00202	3605.73304	0.00154
3210.34643	0.00558	3210.34643	0.00202	3605.25086	0.00161
3209.38207	0.00556	3209.38207	0.002	3604.76869	0.00166
3208.41771	0.00551	3208.41771	0.00198	3604.28651	0.00164
3207.45336	0.00543	3207.45336	0.00195	3603.80433	0.00159
3206.489	0.00537	3206.489	0.00193	3603.32215	0.00157
3205.52464	0.00533	3205.52464	0.00192	3602.83997	0.00159
3204.56028	0.00532	3204.56028	0.00193	3602.35779	0.00162
3203.59593	0.00536	3203.59593	0.00194	3601.87561	0.00163
3202.63157	0.00537	3202.63157	0.00195	3601.39343	0.00163
3201.66721	0.0053	3201.66721	0.00196	3600.91126	0.00164
3200.70285	0.00521	3200.70285	0.00194	3600.42908	0.00163
3199.7385	0.00519	3199.7385	0.00194	3599.9469	0.00162
3198.77414	0.00522	3198.77414	0.00194	3599.46472	0.00163
3197.80978	0.00521	3197.80978	0.00194	3598.98254	0.00162
3196.84542	0.00521	3196.84542	0.00194	3598.50036	0.00159
3195.88107	0.00522	3195.88107	0.00194	3598.01818	0.00157
3194.91671	0.00517	3194.91671	0.00193	3597.536	0.00156
3193.95235	0.00515	3193.95235	0.0019	3597.05382	0.00156
3192.98799	0.00517	3192.98799	0.00188	3596.57165	0.00157
3192.02364	0.00515	3192.02364	0.00186	3596.08947	0.00158
3191.05928	0.0051	3191.05928	0.00185	3595.60729	0.00158
3190.09492	0.00505	3190.09492	0.00184	3595.12511	0.00158
3189.13056	0.00497	3189.13056	0.00183	3594.64293	0.00158
3188.16621	0.00485	3188.16621	0.00182	3594.16075	0.00159
3187.20185	0.00479	3187.20185	0.00182	3593.67857	0.00159
3186.23749	0.00485	3186.23749	0.00182	3593.19639	0.00161
3185.27313	0.00483	3185.27313	0.00184	3592.71422	0.00165
3184.30877	0.00466	3184.30877	0.00186	3592.23204	0.00168

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3183.34442	0.00454	3183.34442	0.00188	3591.74986	0.00169
3182.38006	0.00451	3182.38006	0.00189	3591.26768	0.00169
3181.4157	0.00451	3181.4157	0.00187	3590.7855	0.0017
3180.45134	0.0045	3180.45134	0.00183	3590.30332	0.00167
3179.48699	0.00446	3179.48699	0.00179	3589.82114	0.00159
3178.52263	0.00437	3178.52263	0.00175	3589.33896	0.0015
3177.55827	0.00427	3177.55827	0.00171	3588.85679	0.00147
3176.59391	0.00423	3176.59391	0.0017	3588.37461	0.00148
3175.62956	0.00424	3175.62956	0.00171	3587.89243	0.00144
3174.6652	0.00424	3174.6652	0.00172	3587.41025	0.0014
3173.70084	0.00426	3173.70084	0.00174	3586.92807	0.00142
3172.73648	0.00427	3172.73648	0.00176	3586.44589	0.00146
3171.77213	0.0042	3171.77213	0.00177	3585.96371	0.00147
3170.80777	0.00411	3170.80777	0.00177	3585.48153	0.00152
3169.84341	0.00406	3169.84341	0.00174	3584.99935	0.00162
3168.87905	0.00402	3168.87905	0.00172	3584.51718	0.00171
3167.9147	0.00399	3167.9147	0.00171	3584.035	0.00172
3166.95034	0.00404	3166.95034	0.00171	3583.55282	0.0017
3165.98598	0.00409	3165.98598	0.00173	3583.07064	0.00167
3165.02162	0.00408	3165.02162	0.00173	3582.58846	0.00161
3164.05727	0.00404	3164.05727	0.00172	3582.10628	0.00156
3163.09291	0.00395	3163.09291	0.00169	3581.6241	0.00153
3162.12855	0.00388	3162.12855	0.00168	3581.14192	0.00154
3161.16419	0.00389	3161.16419	0.00168	3580.65975	0.00155
3160.19983	0.00399	3160.19983	0.00168	3580.17757	0.00158
3159.23548	0.00418	3159.23548	0.00169	3579.69539	0.00164
3158.27112	0.00438	3158.27112	0.00169	3579.21321	0.0017
3157.30676	0.00445	3157.30676	0.00169	3578.73103	0.00176
3156.3424	0.00432	3156.3424	0.0017	3578.24885	0.00179
3155.37805	0.00414	3155.37805	0.0017	3577.76667	0.0018
3154.41369	0.00411	3154.41369	0.00171	3577.28449	0.00179
3153.44933	0.00422	3153.44933	0.00171	3576.80232	0.00175
3152.48497	0.00425	3152.48497	0.00169	3576.32014	0.00169
3151.52062	0.00412	3151.52062	0.00166	3575.83796	0.00167
3150.55626	0.00398	3150.55626	0.00163	3575.35578	0.00168
3149.5919	0.00386	3149.5919	0.00162	3574.8736	0.0017
3148.62754	0.00378	3148.62754	0.00162	3574.39142	0.00171
3147.66319	0.00381	3147.66319	0.00163	3573.90924	0.00171
3146.69883	0.00385	3146.69883	0.00165	3573.42706	0.00172
3145.73447	0.00381	3145.73447	0.00167	3572.94489	0.00173
3144.77011	0.00381	3144.77011	0.00168	3572.46271	0.00176

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3143.80576	0.00387	3143.80576	0.00168	3571.98053	0.0018
3142.8414	0.00386	3142.8414	0.00166	3571.49835	0.00181
3141.87704	0.00379	3141.87704	0.00163	3571.01617	0.00179
3140.91268	0.00371	3140.91268	0.00161	3570.53399	0.00177
3139.94833	0.00368	3139.94833	0.00158	3570.05181	0.00175
3138.98397	0.00372	3138.98397	0.00156	3569.56963	0.00172
3138.01961	0.00377	3138.01961	0.00154	3569.08745	0.00167
3137.05525	0.00381	3137.05525	0.00152	3568.60528	0.00163
3136.0909	0.00377	3136.0909	0.0015	3568.1231	0.0016
3135.12654	0.00362	3135.12654	0.00148	3567.64092	0.00153
3134.16218	0.00352	3134.16218	0.00148	3567.15874	0.00143
3133.19782	0.00352	3133.19782	0.0015	3566.67656	0.00134
3132.23346	0.00356	3132.23346	0.00151	3566.19438	0.00132
3131.26911	0.00361	3131.26911	0.00152	3565.7122	0.00136
3130.30475	0.00359	3130.30475	0.00152	3565.23002	0.00144
3129.34039	0.00349	3129.34039	0.00151	3564.74785	0.00157
3128.37603	0.00343	3128.37603	0.00151	3564.26567	0.00171
3127.41168	0.00345	3127.41168	0.0015	3563.78349	0.0018
3126.44732	0.00342	3126.44732	0.0015	3563.30131	0.00184
3125.48296	0.00326	3125.48296	0.0015	3562.81913	0.00185
3124.5186	0.00311	3124.5186	0.0015	3562.33695	0.00186
3123.55425	0.00312	3123.55425	0.0015	3561.85477	0.00187
3122.58989	0.00325	3122.58989	0.0015	3561.37259	0.00185
3121.62553	0.00337	3121.62553	0.00151	3560.89042	0.0018
3120.66117	0.00347	3120.66117	0.00152	3560.40824	0.00175
3119.69682	0.00354	3119.69682	0.00153	3559.92606	0.00171
3118.73246	0.0035	3118.73246	0.00154	3559.44388	0.0017
3117.7681	0.00345	3117.7681	0.00155	3558.9617	0.00172
3116.80374	0.00346	3116.80374	0.00155	3558.47952	0.00174
3115.83939	0.00343	3115.83939	0.00154	3557.99734	0.00176
3114.87503	0.00338	3114.87503	0.00152	3557.51516	0.00178
3113.91067	0.00342	3113.91067	0.00149	3557.03298	0.0018
3112.94631	0.00349	3112.94631	0.00147	3556.55081	0.00181
3111.98196	0.00346	3111.98196	0.00146	3556.06863	0.00182
3111.0176	0.00336	3111.0176	0.00146	3555.58645	0.00181
3110.05324	0.00329	3110.05324	0.00148	3555.10427	0.00181
3109.08888	0.00323	3109.08888	0.00149	3554.62209	0.0018
3108.12452	0.00314	3108.12452	0.00149	3554.13991	0.00181
3107.16017	0.00301	3107.16017	0.00149	3553.65773	0.00182
3106.19581	0.00297	3106.19581	0.00149	3553.17555	0.00181
3105.23145	0.00309	3105.23145	0.00149	3552.69338	0.00177

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3104.26709	0.00323	3104.26709	0.00149	3552.2112	0.00174
3103.30274	0.00322	3103.30274	0.00149	3551.72902	0.00171
3102.33838	0.00316	3102.33838	0.00149	3551.24684	0.0017
3101.37402	0.00317	3101.37402	0.00149	3550.76466	0.00173
3100.40966	0.00322	3100.40966	0.00149	3550.28248	0.00178
3099.44531	0.00328	3099.44531	0.00148	3549.8003	0.00183
3098.48095	0.00333	3098.48095	0.00149	3549.31812	0.00187
3097.51659	0.00334	3097.51659	0.0015	3548.83595	0.00188
3096.55223	0.00335	3096.55223	0.0015	3548.35377	0.00186
3095.58788	0.00339	3095.58788	0.00151	3547.87159	0.0018
3094.62352	0.00334	3094.62352	0.00152	3547.38941	0.00176
3093.65916	0.00324	3093.65916	0.00151	3546.90723	0.00175
3092.6948	0.0032	3092.6948	0.00149	3546.42505	0.00175
3091.73045	0.0032	3091.73045	0.00147	3545.94287	0.00175
3090.76609	0.0032	3090.76609	0.00145	3545.46069	0.00177
3089.80173	0.00325	3089.80173	0.00146	3544.97851	0.00178
3088.83737	0.00332	3088.83737	0.00147	3544.49634	0.00177
3087.87302	0.00327	3087.87302	0.0015	3544.01416	0.00175
3086.90866	0.00319	3086.90866	0.00152	3543.53198	0.00177
3085.9443	0.00324	3085.9443	0.00153	3543.0498	0.00179
3084.97994	0.0033	3084.97994	0.00153	3542.56762	0.00179
3084.01559	0.00331	3084.01559	0.00152	3542.08544	0.00177
3083.05123	0.00332	3083.05123	0.00151	3541.60326	0.00175
3082.08687	0.00335	3082.08687	0.00151	3541.12108	0.00173
3081.12251	0.00333	3081.12251	0.00151	3540.63891	0.00173
3080.15815	0.00327	3080.15815	0.00151	3540.15673	0.00175
3079.1938	0.00322	3079.1938	0.00151	3539.67455	0.00176
3078.22944	0.00319	3078.22944	0.00152	3539.19237	0.00176
3077.26508	0.0032	3077.26508	0.00152	3538.71019	0.00176
3076.30072	0.00321	3076.30072	0.00153	3538.22801	0.00176
3075.33637	0.00317	3075.33637	0.00154	3537.74583	0.00177
3074.37201	0.00316	3074.37201	0.00156	3537.26365	0.00178
3073.40765	0.0032	3073.40765	0.00158	3536.78148	0.00178
3072.44329	0.00323	3072.44329	0.00159	3536.2993	0.00177
3071.47894	0.00321	3071.47894	0.0016	3535.81712	0.00177
3070.51458	0.00315	3070.51458	0.00159	3535.33494	0.00177
3069.55022	0.00306	3069.55022	0.00158	3534.85276	0.00178
3068.58586	0.00302	3068.58586	0.00157	3534.37058	0.00181
3067.62151	0.00305	3067.62151	0.00155	3533.8884	0.00187
3066.65715	0.00316	3066.65715	0.00154	3533.40622	0.00193
3065.69279	0.00328	3065.69279	0.00155	3532.92404	0.00197

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3064.72843	0.00327	3064.72843	0.00155	3532.44187	0.00198
3063.76408	0.00315	3063.76408	0.00156	3531.95969	0.00196
3062.79972	0.00298	3062.79972	0.00155	3531.47751	0.00193
3061.83536	0.00285	3061.83536	0.00154	3530.99533	0.00192
3060.871	0.0028	3060.871	0.00152	3530.51315	0.00192
3059.90665	0.00278	3059.90665	0.0015	3530.03097	0.00193
3058.94229	0.00274	3058.94229	0.00149	3529.54879	0.00193
3057.97793	0.00266	3057.97793	0.00149	3529.06661	0.00191
3057.01357	0.00264	3057.01357	0.00149	3528.58444	0.00186
3056.04921	0.00276	3056.04921	0.0015	3528.10226	0.0018
3055.08486	0.00285	3055.08486	0.0015	3527.62008	0.00178
3054.1205	0.00281	3054.1205	0.0015	3527.1379	0.0018
3053.15614	0.00272	3053.15614	0.00151	3526.65572	0.00184
3052.19178	0.00266	3052.19178	0.00151	3526.17354	0.00189
3051.22743	0.00265	3051.22743	0.00151	3525.69136	0.00194
3050.26307	0.00269	3050.26307	0.0015	3525.20918	0.00197
3049.29871	0.00269	3049.29871	0.00149	3524.72701	0.00197
3048.33435	0.00265	3048.33435	0.00147	3524.24483	0.00196
3047.37	0.00263	3047.37	0.00146	3523.76265	0.00194
3046.40564	0.00264	3046.40564	0.00146	3523.28047	0.00194
3045.44128	0.00263	3045.44128	0.00147	3522.79829	0.00193
3044.47692	0.00262	3044.47692	0.00148	3522.31611	0.00193
3043.51257	0.00263	3043.51257	0.00148	3521.83393	0.00193
3042.54821	0.00263	3042.54821	0.00147	3521.35175	0.00193
3041.58385	0.0026	3041.58385	0.00145	3520.86958	0.00193
3040.61949	0.00257	3040.61949	0.00142	3520.3874	0.00192
3039.65514	0.00257	3039.65514	0.00139	3519.90522	0.00191
3038.69078	0.0026	3038.69078	0.00137	3519.42304	0.00191
3037.72642	0.0026	3037.72642	0.00137	3518.94086	0.0019
3036.76206	0.00261	3036.76206	0.00138	3518.45868	0.0019
3035.79771	0.00265	3035.79771	0.0014	3517.9765	0.00192
3034.83335	0.00258	3034.83335	0.00143	3517.49432	0.00195
3033.86899	0.00246	3033.86899	0.00145	3517.01214	0.00197
3032.90463	0.00247	3032.90463	0.00146	3516.52997	0.002
3031.94027	0.00253	3031.94027	0.00147	3516.04779	0.00202
3030.97592	0.0025	3030.97592	0.00147	3515.56561	0.00202
3030.01156	0.00245	3030.01156	0.00145	3515.08343	0.00201
3029.0472	0.00249	3029.0472	0.00142	3514.60125	0.00202
3028.08284	0.00256	3028.08284	0.0014	3514.11907	0.00204
3027.11849	0.00254	3027.11849	0.00138	3513.63689	0.00206
3026.15413	0.00239	3026.15413	0.00138	3513.15471	0.00208

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3025.18977	0.00225	3025.18977	0.00139	3512.67254	0.00209
3024.22541	0.00222	3024.22541	0.0014	3512.19036	0.00208
3023.26106	0.00225	3023.26106	0.0014	3511.70818	0.00206
3022.2967	0.00225	3022.2967	0.00139	3511.226	0.00203
3021.33234	0.00224	3021.33234	0.00137	3510.74382	0.002
3020.36798	0.00226	3020.36798	0.00135	3510.26164	0.00197
3019.40363	0.00225	3019.40363	0.00134	3509.77946	0.00197
3018.43927	0.00217	3018.43927	0.00133	3509.29728	0.00199
3017.47491	0.00211	3017.47491	0.00133	3508.81511	0.00201
3016.51055	0.00216	3016.51055	0.00131	3508.33293	0.00202
3015.5462	0.00218	3015.5462	0.00131	3507.85075	0.00201
3014.58184	0.0021	3014.58184	0.00131	3507.36857	0.00198
3013.61748	0.00201	3013.61748	0.00131	3506.88639	0.00195
3012.65312	0.00197	3012.65312	0.0013	3506.40421	0.00193
3011.68877	0.00201	3011.68877	0.00131	3505.92203	0.00193
3010.72441	0.00206	3010.72441	0.00132	3505.43985	0.00195
3009.76005	0.00208	3009.76005	0.00133	3504.95767	0.00197
3008.79569	0.00208	3008.79569	0.00133	3504.4755	0.002
3007.83134	0.00208	3007.83134	0.00134	3503.99332	0.00202
3006.86698	0.0021	3006.86698	0.00135	3503.51114	0.00205
3005.90262	0.00209	3005.90262	0.00135	3503.02896	0.00208
3004.93826	0.00204	3004.93826	0.00135	3502.54678	0.00208
3003.9739	0.00202	3003.9739	0.00134	3502.0646	0.00205
3003.00955	0.00203	3003.00955	0.00134	3501.58242	0.00201
3002.04519	0.00205	3002.04519	0.00134	3501.10024	0.00197
3001.08083	0.00205	3001.08083	0.00133	3500.61807	0.00195
3000.11647	0.00203	3000.11647	0.00133	3500.13589	0.00197
2999.15212	0.00196	2999.15212	0.00133	3499.65371	0.00201
2998.18776	0.00191	2998.18776	0.00133	3499.17153	0.00204
2997.2234	0.00197	2997.2234	0.00135	3498.68935	0.00205
2996.25904	0.0021	2996.25904	0.00135	3498.20717	0.00205
2995.29469	0.00219	2995.29469	0.00135	3497.72499	0.00205
2994.33033	0.00222	2994.33033	0.00136	3497.24281	0.00205
2993.36597	0.00222	2993.36597	0.00137	3496.76064	0.00205
2992.40161	0.00222	2992.40161	0.00138	3496.27846	0.00204
2991.43726	0.0022	2991.43726	0.00139	3495.79628	0.00202
2990.4729	0.00216	2990.4729	0.00141	3495.3141	0.00199
2989.50854	0.00212	2989.50854	0.00142	3494.83192	0.00197
2988.54418	0.00212	2988.54418	0.00144	3494.34974	0.00197
2987.57983	0.00214	2987.57983	0.00144	3493.86756	0.00199
2986.61547	0.00219	2986.61547	0.00143	3493.38538	0.00201

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2985.65111	0.00226	2985.65111	0.00142	3492.9032	0.00202
2984.68675	0.00228	2984.68675	0.00141	3492.42103	0.00204
2983.7224	0.00227	2983.7224	0.00141	3491.93885	0.00207
2982.75804	0.00232	2982.75804	0.00142	3491.45667	0.00211
2981.79368	0.0024	2981.79368	0.00144	3490.97449	0.00215
2980.82932	0.00247	2980.82932	0.00147	3490.49231	0.0022
2979.86496	0.00254	2979.86496	0.0015	3490.01013	0.00224
2978.90061	0.00259	2978.90061	0.00154	3489.52795	0.00225
2977.93625	0.00263	2977.93625	0.00157	3489.04577	0.00223
2976.97189	0.00272	2976.97189	0.0016	3488.5636	0.00219
2976.00753	0.00285	2976.00753	0.00162	3488.08142	0.00214
2975.04318	0.00295	2975.04318	0.00161	3487.59924	0.0021
2974.07882	0.00299	2974.07882	0.0016	3487.11706	0.00207
2973.11446	0.00306	2973.11446	0.00159	3486.63488	0.00206
2972.1501	0.0032	2972.1501	0.0016	3486.1527	0.00208
2971.18575	0.00333	2971.18575	0.00163	3485.67052	0.00211
2970.22139	0.00338	2970.22139	0.00168	3485.18834	0.00213
2969.25703	0.00343	2969.25703	0.00172	3484.70617	0.00215
2968.29267	0.00348	2968.29267	0.00175	3484.22399	0.00215
2967.32832	0.00353	2967.32832	0.00178	3483.74181	0.00215
2966.36396	0.00363	2966.36396	0.00179	3483.25963	0.00214
2965.3996	0.00379	2965.3996	0.0018	3482.77745	0.00214
2964.43524	0.00397	2964.43524	0.00181	3482.29527	0.00215
2963.47089	0.0041	2963.47089	0.00182	3481.81309	0.00217
2962.50653	0.00419	2962.50653	0.00185	3481.33091	0.00219
2961.54217	0.00425	2961.54217	0.00187	3480.84873	0.00218
2960.57781	0.00429	2960.57781	0.00188	3480.36656	0.00217
2959.61346	0.00435	2959.61346	0.00187	3479.88438	0.00216
2958.6491	0.00446	2958.6491	0.00184	3479.4022	0.00218
2957.68474	0.00462	2957.68474	0.00182	3478.92002	0.0022
2956.72038	0.00474	2956.72038	0.00182	3478.43784	0.00222
2955.75603	0.0048	2955.75603	0.00183	3477.95566	0.00222
2954.79167	0.00491	2954.79167	0.00184	3477.47348	0.0022
2953.82731	0.00507	2953.82731	0.00185	3476.9913	0.00216
2952.86295	0.00517	2952.86295	0.00186	3476.50913	0.00213
2951.89859	0.0052	2951.89859	0.00187	3476.02695	0.00213
2950.93424	0.00523	2950.93424	0.00189	3475.54477	0.00216
2949.96988	0.00528	2949.96988	0.00192	3475.06259	0.00219
2949.00552	0.00527	2949.00552	0.00195	3474.58041	0.0022
2948.04116	0.00524	2948.04116	0.00197	3474.09823	0.0022
2947.07681	0.00525	2947.07681	0.00198	3473.61605	0.0022

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2946.11245	0.00531	2946.11245	0.00198	3473.13387	0.00221
2945.14809	0.00542	2945.14809	0.00198	3472.6517	0.00222
2944.18373	0.00552	2944.18373	0.00199	3472.16952	0.00224
2943.21938	0.00556	2943.21938	0.00199	3471.68734	0.00226
2942.25502	0.00553	2942.25502	0.00199	3471.20516	0.00228
2941.29066	0.00545	2941.29066	0.00198	3470.72298	0.00228
2940.3263	0.00541	2940.3263	0.00198	3470.2408	0.00226
2939.36195	0.00549	2939.36195	0.00199	3469.75862	0.00223
2938.39759	0.00563	2938.39759	0.00201	3469.27644	0.0022
2937.43323	0.00574	2937.43323	0.00203	3468.79426	0.00219
2936.46887	0.00581	2936.46887	0.00204	3468.31209	0.00221
2935.50452	0.00585	2935.50452	0.00205	3467.82991	0.00224
2934.54016	0.00594	2934.54016	0.00204	3467.34773	0.00228
2933.5758	0.0061	2933.5758	0.00204	3466.86555	0.00229
2932.61144	0.0063	2932.61144	0.00204	3466.38337	0.0023
2931.64709	0.00645	2931.64709	0.00205	3465.90119	0.00229
2930.68273	0.00654	2930.68273	0.00206	3465.41901	0.00229
2929.71837	0.00663	2929.71837	0.00206	3464.93683	0.00229
2928.75401	0.00675	2928.75401	0.00206	3464.45466	0.00229
2927.78965	0.00682	2927.78965	0.00205	3463.97248	0.00228
2926.8253	0.00682	2926.8253	0.00204	3463.4903	0.00225
2925.86094	0.00686	2925.86094	0.00203	3463.00812	0.00222
2924.89658	0.00693	2924.89658	0.00202	3462.52594	0.0022
2923.93222	0.00692	2923.93222	0.00203	3462.04376	0.00221
2922.96787	0.00689	2922.96787	0.00204	3461.56158	0.00223
2922.00351	0.00685	2922.00351	0.00205	3461.0794	0.00226
2921.03915	0.00672	2921.03915	0.00204	3460.59723	0.00228
2920.07479	0.00658	2920.07479	0.00202	3460.11505	0.0023
2919.11044	0.00653	2919.11044	0.00198	3459.63287	0.00231
2918.14608	0.00645	2918.14608	0.00195	3459.15069	0.00232
2917.18172	0.00631	2917.18172	0.00192	3458.66851	0.00234
2916.21736	0.00619	2916.21736	0.00191	3458.18633	0.00235
2915.25301	0.0061	2915.25301	0.0019	3457.70415	0.00237
2914.28865	0.00595	2914.28865	0.00188	3457.22197	0.00238
2913.32429	0.00579	2913.32429	0.00186	3456.7398	0.00237
2912.35993	0.00566	2912.35993	0.00185	3456.25762	0.00236
2911.39558	0.00555	2911.39558	0.00185	3455.77544	0.00235
2910.43122	0.00544	2910.43122	0.00185	3455.29326	0.00233
2909.46686	0.0054	2909.46686	0.00185	3454.81108	0.00231
2908.5025	0.0054	2908.5025	0.00185	3454.3289	0.0023
2907.53815	0.00532	2907.53815	0.00183	3453.84672	0.0023



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2906.57379	0.00519	2906.57379	0.00181	3453.36454	0.00228
2905.60943	0.0051	2905.60943	0.0018	3452.88236	0.00228
2904.64507	0.00505	2904.64507	0.00178	3452.40019	0.00231
2903.68071	0.00492	2903.68071	0.00178	3451.91801	0.00235
2902.71636	0.00473	2902.71636	0.00177	3451.43583	0.00238
2901.752	0.00459	2901.752	0.00177	3450.95365	0.0024
2900.78764	0.00453	2900.78764	0.00175	3450.47147	0.00239
2899.82328	0.0045	2899.82328	0.00172	3449.98929	0.00237
2898.85893	0.00441	2898.85893	0.00169	3449.50711	0.00234
2897.89457	0.00427	2897.89457	0.00166	3449.02493	0.00233
2896.93021	0.00422	2896.93021	0.00163	3448.54276	0.00234
2895.96585	0.00425	2895.96585	0.00162	3448.06058	0.00233
2895.0015	0.00421	2895.0015	0.00162	3447.5784	0.00232
2894.03714	0.00407	2894.03714	0.00162	3447.09622	0.00231
2893.07278	0.00391	2893.07278	0.00161	3446.61404	0.0023
2892.10842	0.00381	2892.10842	0.0016	3446.13186	0.0023
2891.14407	0.00375	2891.14407	0.00159	3445.64968	0.00233
2890.17971	0.00367	2890.17971	0.00158	3445.1675	0.00236
2889.21535	0.00359	2889.21535	0.00156	3444.68533	0.00239
2888.25099	0.00355	2888.25099	0.00154	3444.20315	0.00239
2887.28664	0.00352	2887.28664	0.00153	3443.72097	0.00238
2886.32228	0.00348	2886.32228	0.00151	3443.23879	0.00235
2885.35792	0.00345	2885.35792	0.00152	3442.75661	0.00233
2884.39356	0.00334	2884.39356	0.00153	3442.27443	0.00232
2883.42921	0.0032	2883.42921	0.00154	3441.79225	0.00235
2882.46485	0.00314	2882.46485	0.00156	3441.31007	0.00241
2881.50049	0.00317	2881.50049	0.00156	3440.82789	0.00249
2880.53613	0.00322	2880.53613	0.00155	3440.34572	0.00257
2879.57178	0.00329	2879.57178	0.00154	3439.86354	0.0026
2878.60742	0.00336	2878.60742	0.00152	3439.38136	0.00258
2877.64306	0.00339	2877.64306	0.00151	3438.89918	0.00251
2876.6787	0.00341	2876.6787	0.00153	3438.417	0.00244
2875.71434	0.00342	2875.71434	0.00155	3437.93482	0.00241
2874.74999	0.0034	2874.74999	0.00158	3437.45264	0.00242
2873.78563	0.0033	2873.78563	0.00159	3436.97046	0.00244
2872.82127	0.00321	2872.82127	0.0016	3436.48829	0.00246
2871.85691	0.00323	2871.85691	0.0016	3436.00611	0.00246
2870.89256	0.00333	2870.89256	0.00158	3435.52393	0.00245
2869.9282	0.00338	2869.9282	0.00156	3435.04175	0.00244
2868.96384	0.00339	2868.96384	0.00155	3434.55957	0.00244
2867.99948	0.00346	2867.99948	0.00154	3434.07739	0.00244

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2867.03513	0.0035	2867.03513	0.00153	3433.59521	0.00244
2866.07077	0.00343	2866.07077	0.00151	3433.11303	0.00242
2865.10641	0.00334	2865.10641	0.0015	3432.63086	0.00241
2864.14205	0.00335	2864.14205	0.00149	3432.14868	0.00242
2863.1777	0.00345	2863.1777	0.00148	3431.6665	0.00246
2862.21334	0.00353	2862.21334	0.00148	3431.18432	0.00251
2861.24898	0.00356	2861.24898	0.00149	3430.70214	0.00254
2860.28462	0.00357	2860.28462	0.00151	3430.21996	0.00255
2859.32027	0.00357	2859.32027	0.00151	3429.73778	0.00255
2858.35591	0.00359	2858.35591	0.00151	3429.2556	0.00254
2857.39155	0.00364	2857.39155	0.00149	3428.77342	0.00251
2856.42719	0.00371	2856.42719	0.00147	3428.29125	0.00248
2855.46284	0.0038	2855.46284	0.00145	3427.80907	0.00243
2854.49848	0.00384	2854.49848	0.00143	3427.32689	0.00239
2853.53412	0.00376	2853.53412	0.00142	3426.84471	0.00235
2852.56976	0.00364	2852.56976	0.00142	3426.36253	0.00234
2851.6054	0.0036	2851.6054	0.00142	3425.88035	0.00235
2850.64105	0.00359	2850.64105	0.00141	3425.39817	0.00238
2849.67669	0.00355	2849.67669	0.0014	3424.91599	0.00242
2848.71233	0.00349	2848.71233	0.00138	3424.43382	0.00246
2847.74797	0.00343	2847.74797	0.00135	3423.95164	0.00249
2846.78362	0.00331	2846.78362	0.00132	3423.46946	0.00251
2845.81926	0.00315	2845.81926	0.0013	3422.98728	0.00252
2844.8549	0.00302	2844.8549	0.0013	3422.5051	0.00253
2843.89054	0.00295	2843.89054	0.00132	3422.02292	0.00255
2842.92619	0.00289	2842.92619	0.00133	3421.54074	0.00256
2841.96183	0.00282	2841.96183	0.00133	3421.05856	0.00258
2840.99747	0.00274	2840.99747	0.0013	3420.57639	0.00261
2840.03311	0.00261	2840.03311	0.00127	3420.09421	0.00263
2839.06876	0.00241	2839.06876	0.00124	3419.61203	0.00261
2838.1044	0.00225	2838.1044	0.00122	3419.12985	0.00259
2837.14004	0.00216	2837.14004	0.00121	3418.64767	0.00256
2836.17568	0.00214	2836.17568	0.00121	3418.16549	0.00254
2835.21133	0.00215	2835.21133	0.00123	3417.68331	0.00253
2834.24697	0.00214	2834.24697	0.00123	3417.20113	0.00254
2833.28261	0.00205	2833.28261	0.00123	3416.71895	0.00257
2832.31825	0.00191	2832.31825	0.00122	3416.23678	0.00259
2831.3539	0.0018	2831.3539	0.00122	3415.7546	0.00259
2830.38954	0.00178	2830.38954	0.00121	3415.27242	0.00256
2829.42518	0.00181	2829.42518	0.0012	3414.79024	0.00253
2828.46082	0.00181	2828.46082	0.00119	3414.30806	0.0025

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2827.49647	0.00176	2827.49647	0.00118	3413.82588	0.00249
2826.53211	0.00171	2826.53211	0.00117	3413.3437	0.0025
2825.56775	0.00168	2825.56775	0.00116	3412.86152	0.00253
2824.60339	0.00167	2824.60339	0.00115	3412.37935	0.00258
2823.63903	0.00171	2823.63903	0.00116	3411.89717	0.00264
2822.67468	0.00174	2822.67468	0.00117	3411.41499	0.00268
2821.71032	0.00174	2821.71032	0.00117	3410.93281	0.00269
2820.74596	0.00174	2820.74596	0.00116	3410.45063	0.00269
2819.7816	0.00175	2819.7816	0.00115	3409.96845	0.00266
2818.81725	0.00174	2818.81725	0.00114	3409.48627	0.00261
2817.85289	0.00167	2817.85289	0.00113	3409.00409	0.00257
2816.88853	0.0016	2816.88853	0.00111	3408.52192	0.00255
2815.92417	0.0016	2815.92417	0.00111	3408.03974	0.00256
2814.95982	0.00164	2814.95982	0.0011	3407.55756	0.00259
2813.99546	0.00163	2813.99546	0.0011	3407.07538	0.00263
2813.0311	0.00153	2813.0311	0.0011	3406.5932	0.00266
2812.06674	0.00144	2812.06674	0.0011	3406.11102	0.00268
2811.10239	0.00144	2811.10239	0.0011	3405.62884	0.00268
2810.13803	0.00154	2810.13803	0.00109	3405.14666	0.00268
2809.17367	0.00159	2809.17367	0.00109	3404.66448	0.00268
2808.20931	0.00154	2808.20931	0.00108	3404.18231	0.00269
2807.24496	0.00148	2807.24496	0.00107	3403.70013	0.00272
2806.2806	0.00146	2806.2806	0.00107	3403.21795	0.00275
2805.31624	0.00144	2805.31624	0.00106	3402.73577	0.00276
2804.35188	0.00141	2804.35188	0.00106	3402.25359	0.00273
2803.38753	0.00143	2803.38753	0.00105	3401.77141	0.00268
2802.42317	0.00147	2802.42317	0.00104	3401.28923	0.00263
2801.45881	0.00148	2801.45881	0.00103	3400.80705	0.00261
2800.49445	0.00146	2800.49445	0.00102	3400.32488	0.00261
2799.53009	0.00144	2799.53009	0.00101	3399.8427	0.00262
2798.56574	0.00145	2798.56574	1.00E-03	3399.36052	0.00265
2797.60138	0.00149	2797.60138	0.00101	3398.87834	0.00269
2796.63702	0.00148	2796.63702	0.00101	3398.39616	0.00272
2795.67266	0.00142	2795.67266	0.00102	3397.91398	0.00275
2794.70831	0.00138	2794.70831	0.00101	3397.4318	0.00276
2793.74395	0.00138	2793.74395	1.00E-03	3396.94962	0.00276
2792.77959	0.00135	2792.77959	9.90E-04	3396.46745	0.00274
2791.81523	0.00132	2791.81523	9.80E-04	3395.98527	0.0027
2790.85088	0.0013	2790.85088	9.70E-04	3395.50309	0.00265
2789.88652	0.00127	2789.88652	9.80E-04	3395.02091	0.00262
2788.92216	0.00121	2788.92216	9.80E-04	3394.53873	0.00263

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2787.9578	0.00116	2787.9578	9.80E-04	3394.05655	0.00266
2786.99345	0.00118	2786.99345	9.60E-04	3393.57437	0.00269
2786.02909	0.00122	2786.02909	9.40E-04	3393.09219	0.00272
2785.06473	0.00125	2785.06473	9.30E-04	3392.61002	0.00272
2784.10037	0.00128	2784.10037	9.30E-04	3392.12784	0.00271
2783.13602	0.00126	2783.13602	9.40E-04	3391.64566	0.00268
2782.17166	0.00117	2782.17166	9.60E-04	3391.16348	0.00266
2781.2073	0.00107	2781.2073	9.60E-04	3390.6813	0.00266
2780.24294	0.00105	2780.24294	9.60E-04	3390.19912	0.00267
2779.27859	0.0011	2779.27859	9.50E-04	3389.71694	0.00268
2778.31423	0.00113	2778.31423	9.30E-04	3389.23476	0.00271
2777.34987	0.00109	2777.34987	9.30E-04	3388.75258	0.00273
2776.38551	0.00109	2776.38551	9.30E-04	3388.27041	0.00277
2775.42115	0.00114	2775.42115	9.40E-04	3387.78823	0.0028
2774.4568	0.00122	2774.4568	9.50E-04	3387.30605	0.00282
2773.49244	0.00125	2773.49244	9.60E-04	3386.82387	0.00282
2772.52808	0.0012	2772.52808	9.60E-04	3386.34169	0.00283
2771.56372	0.00115	2771.56372	9.50E-04	3385.85951	0.00283
2770.59937	0.00113	2770.59937	9.50E-04	3385.37733	0.00283
2769.63501	0.00112	2769.63501	9.30E-04	3384.89515	0.00286
2768.67065	0.00108	2768.67065	9.20E-04	3384.41298	0.00288
2767.70629	0.00106	2767.70629	9.10E-04	3383.9308	0.00289
2766.74194	0.00108	2766.74194	9.00E-04	3383.44862	0.00287
2765.77758	0.00112	2765.77758	8.90E-04	3382.96644	0.00285
2764.81322	0.00114	2764.81322	8.80E-04	3382.48426	0.00282
2763.84886	0.00111	2763.84886	8.90E-04	3382.00208	0.0028
2762.88451	0.00104	2762.88451	9.00E-04	3381.5199	0.00279
2761.92015	1.00E-03	2761.92015	9.00E-04	3381.03772	0.00281
2760.95579	0.00102	2760.95579	9.10E-04	3380.55555	0.00283
2759.99143	0.00105	2759.99143	9.10E-04	3380.07337	0.00285
2759.02708	0.00105	2759.02708	9.00E-04	3379.59119	0.00287
2758.06272	0.00103	2758.06272	8.90E-04	3379.10901	0.00287
2757.09836	0.00103	2757.09836	8.80E-04	3378.62683	0.00284
2756.134	0.00105	2756.134	8.70E-04	3378.14465	0.00281
2755.16965	0.00103	2755.16965	8.70E-04	3377.66247	0.0028
2754.20529	0.00104	2754.20529	8.70E-04	3377.18029	0.00279
2753.24093	0.0011	2753.24093	8.70E-04	3376.69811	0.00278
2752.27657	0.00113	2752.27657	8.60E-04	3376.21594	0.00278
2751.31222	0.00111	2751.31222	8.50E-04	3375.73376	0.00279
2750.34786	0.00112	2750.34786	8.30E-04	3375.25158	0.00282
2749.3835	0.00113	2749.3835	8.20E-04	3374.7694	0.00286

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2748.41914	0.00111	2748.41914	8.20E-04	3374.28722	0.00289
2747.45478	0.00113	2747.45478	8.30E-04	3373.80504	0.0029
2746.49043	0.00118	2746.49043	8.50E-04	3373.32286	0.00287
2745.52607	0.0012	2745.52607	8.50E-04	3372.84068	0.00284
2744.56171	0.00115	2744.56171	8.40E-04	3372.35851	0.0028
2743.59735	0.00107	2743.59735	8.20E-04	3371.87633	0.0028
2742.633	0.00104	2742.633	8.00E-04	3371.39415	0.00283
2741.66864	0.00103	2741.66864	8.10E-04	3370.91197	0.00289
2740.70428	0.00103	2740.70428	8.20E-04	3370.42979	0.00293
2739.73992	0.00104	2739.73992	8.40E-04	3369.94761	0.00294
2738.77557	0.00101	2738.77557	8.50E-04	3369.46543	0.0029
2737.81121	9.90E-04	2737.81121	8.40E-04	3368.98325	0.00286
2736.84685	0.00101	2736.84685	8.30E-04	3368.50108	0.00283
2735.88249	0.00106	2735.88249	8.20E-04	3368.0189	0.00283
2734.91814	0.0011	2734.91814	8.10E-04	3367.53672	0.00287
2733.95378	0.0011	2733.95378	8.10E-04	3367.05454	0.00292
2732.98942	0.00109	2732.98942	8.20E-04	3366.57236	0.00296
2732.02506	0.00112	2732.02506	8.30E-04	3366.09018	0.003
2731.06071	0.0011	2731.06071	8.30E-04	3365.608	0.00303
2730.09635	0.00103	2730.09635	8.30E-04	3365.12582	0.00302
2729.13199	0.00101	2729.13199	8.30E-04	3364.64364	0.00299
2728.16763	0.00103	2728.16763	8.20E-04	3364.16147	0.00297
2727.20328	0.00101	2727.20328	8.00E-04	3363.67929	0.00293
2726.23892	9.80E-04	2726.23892	7.80E-04	3363.19711	0.00289
2725.27456	1.00E-03	2725.27456	7.80E-04	3362.71493	0.00287
2724.3102	0.00103	2724.3102	7.80E-04	3362.23275	0.00287
2723.34584	0.00104	2723.34584	7.90E-04	3361.75057	0.00288
2722.38149	0.00103	2722.38149	7.90E-04	3361.26839	0.00287
2721.41713	0.00101	2721.41713	7.90E-04	3360.78621	0.00287
2720.45277	9.80E-04	2720.45277	7.90E-04	3360.30404	0.00289
2719.48841	9.20E-04	2719.48841	7.80E-04	3359.82186	0.00291
2718.52406	8.50E-04	2718.52406	7.90E-04	3359.33968	0.00296
2717.5597	8.10E-04	2717.5597	8.00E-04	3358.8575	0.003
2716.59534	8.20E-04	2716.59534	8.20E-04	3358.37532	0.00303
2715.63098	8.70E-04	2715.63098	8.30E-04	3357.89314	0.00301
2714.66663	9.10E-04	2714.66663	8.30E-04	3357.41096	0.00299
2713.70227	8.90E-04	2713.70227	8.10E-04	3356.92878	0.00296
2712.73791	8.50E-04	2712.73791	7.90E-04	3356.44661	0.00293
2711.77355	8.20E-04	2711.77355	7.70E-04	3355.96443	0.0029
2710.8092	7.80E-04	2710.8092	7.60E-04	3355.48225	0.00289
2709.84484	7.40E-04	2709.84484	7.60E-04	3355.00007	0.00289

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2708.88048	7.40E-04	2708.88048	7.70E-04	3354.51789	0.0029
2707.91612	8.10E-04	2707.91612	7.70E-04	3354.03571	0.00291
2706.95177	8.80E-04	2706.95177	7.70E-04	3353.55353	0.00294
2705.98741	9.10E-04	2705.98741	7.80E-04	3353.07135	0.00296
2705.02305	9.10E-04	2705.02305	7.70E-04	3352.58917	0.00296
2704.05869	9.00E-04	2704.05869	7.70E-04	3352.107	0.00295
2703.09434	8.90E-04	2703.09434	7.60E-04	3351.62482	0.00293
2702.12998	8.60E-04	2702.12998	7.50E-04	3351.14264	0.00292
2701.16562	8.40E-04	2701.16562	7.40E-04	3350.66046	0.00292
2700.20126	8.40E-04	2700.20126	7.30E-04	3350.17828	0.00292
2699.23691	8.40E-04	2699.23691	7.30E-04	3349.6961	0.00294
2698.27255	8.20E-04	2698.27255	7.30E-04	3349.21392	0.00296
2697.30819	7.90E-04	2697.30819	7.30E-04	3348.73174	0.00299
2696.34383	7.50E-04	2696.34383	7.20E-04	3348.24957	0.00302
2695.37947	7.20E-04	2695.37947	7.20E-04	3347.76739	0.00305
2694.41512	7.70E-04	2694.41512	7.20E-04	3347.28521	0.00306
2693.45076	8.30E-04	2693.45076	7.30E-04	3346.80303	0.00305
2692.4864	8.50E-04	2692.4864	7.40E-04	3346.32085	0.00302
2691.52204	8.70E-04	2691.52204	7.50E-04	3345.83867	0.00301
2690.55769	8.80E-04	2690.55769	7.50E-04	3345.35649	0.00302
2689.59333	8.40E-04	2689.59333	7.50E-04	3344.87431	0.00307
2688.62897	8.00E-04	2688.62897	7.40E-04	3344.39214	0.00314
2687.66461	8.10E-04	2687.66461	7.40E-04	3343.90996	0.0032
2686.70026	8.30E-04	2686.70026	7.40E-04	3343.42778	0.00323
2685.7359	8.40E-04	2685.7359	7.40E-04	3342.9456	0.00321
2684.77154	8.60E-04	2684.77154	7.30E-04	3342.46342	0.00317
2683.80718	8.90E-04	2683.80718	7.30E-04	3341.98124	0.0031
2682.84283	8.90E-04	2682.84283	7.40E-04	3341.49906	0.00304
2681.87847	8.90E-04	2681.87847	7.40E-04	3341.01688	0.003
2680.91411	9.00E-04	2680.91411	7.50E-04	3340.5347	0.003
2679.94975	9.20E-04	2679.94975	7.50E-04	3340.05253	0.00304
2678.9854	9.10E-04	2678.9854	7.50E-04	3339.57035	0.0031
2678.02104	8.60E-04	2678.02104	7.50E-04	3339.08817	0.00313
2677.05668	8.40E-04	2677.05668	7.60E-04	3338.60599	0.00313
2676.09232	8.10E-04	2676.09232	7.60E-04	3338.12381	0.0031
2675.12797	8.00E-04	2675.12797	7.60E-04	3337.64163	0.00306
2674.16361	8.40E-04	2674.16361	7.60E-04	3337.15945	0.00302
2673.19925	8.80E-04	2673.19925	7.50E-04	3336.67727	0.00302
2672.23489	8.70E-04	2672.23489	7.40E-04	3336.1951	0.00303
2671.27053	8.10E-04	2671.27053	7.30E-04	3335.71292	0.00302
2670.30618	7.80E-04	2670.30618	7.20E-04	3335.23074	0.00301

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2669.34182	8.00E-04	2669.34182	7.20E-04	3334.74856	0.00301
2668.37746	8.30E-04	2668.37746	7.30E-04	3334.26638	0.00304
2667.4131	8.30E-04	2667.4131	7.30E-04	3333.7842	0.00307
2666.44875	8.30E-04	2666.44875	7.40E-04	3333.30202	0.0031
2665.48439	8.20E-04	2665.48439	7.40E-04	3332.81984	0.00313
2664.52003	8.20E-04	2664.52003	7.30E-04	3332.33767	0.00315
2663.55567	8.30E-04	2663.55567	7.20E-04	3331.85549	0.00316
2662.59132	8.30E-04	2662.59132	7.10E-04	3331.37331	0.00316
2661.62696	8.10E-04	2661.62696	7.00E-04	3330.89113	0.00317
2660.6626	7.90E-04	2660.6626	7.00E-04	3330.40895	0.00316
2659.69824	7.80E-04	2659.69824	7.00E-04	3329.92677	0.00314
2658.73389	7.70E-04	2658.73389	7.10E-04	3329.44459	0.00311
2657.76953	7.70E-04	2657.76953	7.00E-04	3328.96241	0.00308
2656.80517	7.80E-04	2656.80517	7.00E-04	3328.48024	0.00308
2655.84081	7.80E-04	2655.84081	7.00E-04	3327.99806	0.00308
2654.87646	8.00E-04	2654.87646	7.10E-04	3327.51588	0.00309
2653.9121	8.10E-04	2653.9121	7.10E-04	3327.0337	0.00311
2652.94774	7.70E-04	2652.94774	7.10E-04	3326.55152	0.00312
2651.98338	7.10E-04	2651.98338	7.00E-04	3326.06934	0.00314
2651.01903	6.60E-04	2651.01903	6.80E-04	3325.58716	0.00315
2650.05467	6.40E-04	2650.05467	6.60E-04	3325.10498	0.00317
2649.09031	6.70E-04	2649.09031	6.50E-04	3324.6228	0.00318
2648.12595	7.50E-04	2648.12595	6.50E-04	3324.14063	0.00319
2647.1616	8.40E-04	2647.1616	6.60E-04	3323.65845	0.00318
2646.19724	8.60E-04	2646.19724	6.70E-04	3323.17627	0.00317
2645.23288	7.70E-04	2645.23288	6.80E-04	3322.69409	0.00316
2644.26852	7.00E-04	2644.26852	6.80E-04	3322.21191	0.00315
2643.30416	6.90E-04	2643.30416	6.70E-04	3321.72973	0.00316
2642.33981	6.80E-04	2642.33981	6.60E-04	3321.24755	0.00318
2641.37545	6.80E-04	2641.37545	6.60E-04	3320.76537	0.00319
2640.41109	7.00E-04	2640.41109	6.60E-04	3320.2832	0.0032
2639.44673	7.50E-04	2639.44673	6.70E-04	3319.80102	0.00321
2638.48238	7.70E-04	2638.48238	6.80E-04	3319.31884	0.00322
2637.51802	7.60E-04	2637.51802	6.90E-04	3318.83666	0.00322
2636.55366	7.70E-04	2636.55366	6.90E-04	3318.35448	0.00321
2635.5893	7.90E-04	2635.5893	6.90E-04	3317.8723	0.00319
2634.62495	8.10E-04	2634.62495	6.90E-04	3317.39012	0.00317
2633.66059	8.30E-04	2633.66059	6.90E-04	3316.90794	0.00314
2632.69623	8.10E-04	2632.69623	6.90E-04	3316.42577	0.00311
2631.73187	7.40E-04	2631.73187	6.90E-04	3315.94359	0.00311
2630.76752	6.90E-04	2630.76752	6.90E-04	3315.46141	0.00312

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2629.80316	7.00E-04	2629.80316	6.80E-04	3314.97923	0.00313
2628.8388	6.90E-04	2628.8388	6.70E-04	3314.49705	0.00312
2627.87444	6.80E-04	2627.87444	6.60E-04	3314.01487	0.00311
2626.91009	7.20E-04	2626.91009	6.50E-04	3313.53269	0.00309
2625.94573	8.10E-04	2625.94573	6.40E-04	3313.05051	0.00307
2624.98137	8.50E-04	2624.98137	6.40E-04	3312.56833	0.00307
2624.01701	8.30E-04	2624.01701	6.50E-04	3312.08616	0.0031
2623.05266	8.00E-04	2623.05266	6.60E-04	3311.60398	0.00314
2622.0883	8.00E-04	2622.0883	6.70E-04	3311.1218	0.00319
2621.12394	8.00E-04	2621.12394	6.80E-04	3310.63962	0.00323
2620.15958	7.90E-04	2620.15958	6.80E-04	3310.15744	0.00327
2619.19522	7.70E-04	2619.19522	6.70E-04	3309.67526	0.00328
2618.23087	7.90E-04	2618.23087	6.60E-04	3309.19308	0.00326
2617.26651	7.80E-04	2617.26651	6.60E-04	3308.7109	0.00323
2616.30215	7.50E-04	2616.30215	6.50E-04	3308.22873	0.00322
2615.33779	7.70E-04	2615.33779	6.40E-04	3307.74655	0.0032
2614.37344	8.00E-04	2614.37344	6.40E-04	3307.26437	0.0032
2613.40908	8.40E-04	2613.40908	6.40E-04	3306.78219	0.00322
2612.44472	8.60E-04	2612.44472	6.50E-04	3306.30001	0.00324
2611.48036	8.40E-04	2611.48036	6.50E-04	3305.81783	0.00324
2610.51601	7.50E-04	2610.51601	6.60E-04	3305.33565	0.00321
2609.55165	6.70E-04	2609.55165	6.60E-04	3304.85347	0.00317
2608.58729	6.30E-04	2608.58729	6.60E-04	3304.3713	0.00315
2607.62293	6.40E-04	2607.62293	6.60E-04	3303.88912	0.00316
2606.65858	6.90E-04	2606.65858	6.60E-04	3303.40694	0.00318
2605.69422	7.40E-04	2605.69422	6.60E-04	3302.92476	0.00319
2604.72986	7.70E-04	2604.72986	6.60E-04	3302.44258	0.00321
2603.7655	7.60E-04	2603.7655	6.50E-04	3301.9604	0.00322
2602.80115	7.20E-04	2602.80115	6.30E-04	3301.47822	0.0032
2601.83679	6.90E-04	2601.83679	6.20E-04	3300.99604	0.00319
2600.87243	6.90E-04	2600.87243	6.20E-04	3300.51386	0.00321
2599.90807	7.20E-04	2599.90807	6.20E-04	3300.03169	0.00323
2598.94372	7.40E-04	2598.94372	6.30E-04	3299.54951	0.00324
2597.97936	7.20E-04	2597.97936	6.40E-04	3299.06733	0.00325
2597.015	7.10E-04	2597.015	6.40E-04	3298.58515	0.00327
2596.05064	7.50E-04	2596.05064	6.40E-04	3298.10297	0.00328
2595.08628	7.60E-04	2595.08628	6.30E-04	3297.62079	0.00329
2594.12193	7.50E-04	2594.12193	6.20E-04	3297.13861	0.00329
2593.15757	7.50E-04	2593.15757	6.20E-04	3296.65643	0.00328
2592.19321	7.20E-04	2592.19321	6.20E-04	3296.17426	0.00326
2591.22885	6.70E-04	2591.22885	6.20E-04	3295.69208	0.00323



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2590.2645	6.60E-04	2590.2645	6.20E-04	3295.2099	0.00321
2589.30014	6.80E-04	2589.30014	6.10E-04	3294.72772	0.0032
2588.33578	6.80E-04	2588.33578	6.10E-04	3294.24554	0.00321
2587.37142	6.50E-04	2587.37142	6.00E-04	3293.76336	0.00322
2586.40707	6.30E-04	2586.40707	5.90E-04	3293.28118	0.00322
2585.44271	6.70E-04	2585.44271	5.90E-04	3292.799	0.00323
2584.47835	7.20E-04	2584.47835	5.90E-04	3292.31683	0.00324
2583.51399	7.00E-04	2583.51399	5.90E-04	3291.83465	0.00323
2582.54964	6.40E-04	2582.54964	6.00E-04	3291.35247	0.00322
2581.58528	5.80E-04	2581.58528	6.00E-04	3290.87029	0.00321
2580.62092	5.80E-04	2580.62092	5.90E-04	3290.38811	0.0032
2579.65656	6.00E-04	2579.65656	5.80E-04	3289.90593	0.00319
2578.69221	6.10E-04	2578.69221	5.80E-04	3289.42375	0.00319
2577.72785	6.00E-04	2577.72785	5.70E-04	3288.94157	0.00319
2576.76349	6.20E-04	2576.76349	5.70E-04	3288.45939	0.00319
2575.79913	6.80E-04	2575.79913	5.70E-04	3287.97722	0.0032
2574.83478	7.20E-04	2574.83478	5.80E-04	3287.49504	0.00322
2573.87042	6.80E-04	2573.87042	5.80E-04	3287.01286	0.00324
2572.90606	6.20E-04	2572.90606	5.80E-04	3286.53068	0.00325
2571.9417	6.00E-04	2571.9417	5.90E-04	3286.0485	0.00326
2570.97735	6.20E-04	2570.97735	5.90E-04	3285.56632	0.00325
2570.01299	6.20E-04	2570.01299	6.00E-04	3285.08414	0.00323
2569.04863	5.90E-04	2569.04863	6.00E-04	3284.60196	0.00322
2568.08427	5.50E-04	2568.08427	5.90E-04	3284.11979	0.00323
2567.11991	5.50E-04	2567.11991	5.80E-04	3283.63761	0.00323
2566.15556	5.90E-04	2566.15556	5.60E-04	3283.15543	0.00322
2565.1912	6.20E-04	2565.1912	5.40E-04	3282.67325	0.00321
2564.22684	6.50E-04	2564.22684	5.40E-04	3282.19107	0.0032
2563.26248	6.80E-04	2563.26248	5.40E-04	3281.70889	0.0032
2562.29813	7.00E-04	2562.29813	5.30E-04	3281.22671	0.00319
2561.33377	7.20E-04	2561.33377	5.30E-04	3280.74453	0.00319
2560.36941	7.30E-04	2560.36941	5.30E-04	3280.26236	0.00319
2559.40505	7.00E-04	2559.40505	5.40E-04	3279.78018	0.00319
2558.4407	6.10E-04	2558.4407	5.50E-04	3279.298	0.00319
2557.47634	5.00E-04	2557.47634	5.70E-04	3278.81582	0.0032
2556.51198	4.70E-04	2556.51198	5.80E-04	3278.33364	0.00322
2555.54762	5.50E-04	2555.54762	5.90E-04	3277.85146	0.00323
2554.58327	6.70E-04	2554.58327	5.90E-04	3277.36928	0.00324
2553.61891	7.40E-04	2553.61891	5.80E-04	3276.8871	0.00325
2552.65455	7.30E-04	2552.65455	5.80E-04	3276.40492	0.00325
2551.69019	7.00E-04	2551.69019	5.70E-04	3275.92275	0.00324

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2550.72584	6.70E-04	2550.72584	5.70E-04	3275.44057	0.00321
2549.76148	6.70E-04	2549.76148	5.60E-04	3274.95839	0.00316
2548.79712	6.50E-04	2548.79712	5.40E-04	3274.47621	0.00311
2547.83276	6.10E-04	2547.83276	5.20E-04	3273.99403	0.00306
2546.86841	5.70E-04	2546.86841	5.20E-04	3273.51185	0.00304
2545.90405	5.50E-04	2545.90405	5.20E-04	3273.02967	0.00304
2544.93969	4.90E-04	2544.93969	5.40E-04	3272.54749	0.00306
2543.97533	4.70E-04	2543.97533	5.50E-04	3272.06532	0.0031
2543.01097	5.40E-04	2543.01097	5.60E-04	3271.58314	0.00315
2542.04662	5.90E-04	2542.04662	5.60E-04	3271.10096	0.0032
2541.08226	6.00E-04	2541.08226	5.50E-04	3270.61878	0.00322
2540.1179	5.70E-04	2540.1179	5.50E-04	3270.1366	0.00321
2539.15354	5.50E-04	2539.15354	5.40E-04	3269.65442	0.00319
2538.18919	5.70E-04	2538.18919	5.40E-04	3269.17224	0.00316
2537.22483	5.80E-04	2537.22483	5.50E-04	3268.69006	0.00314
2536.26047	5.30E-04	2536.26047	5.60E-04	3268.20789	0.00313
2535.29611	4.80E-04	2535.29611	5.70E-04	3267.72571	0.00314
2534.33176	4.80E-04	2534.33176	5.80E-04	3267.24353	0.00313
2533.3674	4.70E-04	2533.3674	5.80E-04	3266.76135	0.00312
2532.40304	4.40E-04	2532.40304	5.80E-04	3266.27917	0.00308
2531.43868	4.30E-04	2531.43868	5.80E-04	3265.79699	0.00304
2530.47433	4.40E-04	2530.47433	5.70E-04	3265.31481	0.00302
2529.50997	4.40E-04	2529.50997	5.70E-04	3264.83263	0.00301
2528.54561	4.40E-04	2528.54561	5.60E-04	3264.35046	0.003
2527.58125	4.30E-04	2527.58125	5.60E-04	3263.86828	0.00298
2526.6169	4.30E-04	2526.6169	5.70E-04	3263.3861	0.00296
2525.65254	4.40E-04	2525.65254	5.70E-04	3262.90392	0.00296
2524.68818	4.40E-04	2524.68818	5.70E-04	3262.42174	0.00298
2523.72382	4.20E-04	2523.72382	5.70E-04	3261.93956	0.00303
2522.75947	4.30E-04	2522.75947	5.50E-04	3261.45738	0.00309
2521.79511	4.70E-04	2521.79511	5.40E-04	3260.9752	0.00314
2520.83075	4.90E-04	2520.83075	5.20E-04	3260.49302	0.00316
2519.86639	4.90E-04	2519.86639	5.20E-04	3260.01085	0.00313
2518.90204	4.80E-04	2518.90204	5.20E-04	3259.52867	0.00309
2517.93768	4.40E-04	2517.93768	5.20E-04	3259.04649	0.00306
2516.97332	4.20E-04	2516.97332	5.30E-04	3258.56431	0.00305
2516.00896	4.40E-04	2516.00896	5.30E-04	3258.08213	0.00305
2515.0446	4.50E-04	2515.0446	5.20E-04	3257.59995	0.00304
2514.08025	4.40E-04	2514.08025	5.10E-04	3257.11777	0.00302
2513.11589	4.20E-04	2513.11589	5.00E-04	3256.63559	0.00299
2512.15153	3.70E-04	2512.15153	4.90E-04	3256.15342	0.00296

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2511.18717	3.20E-04	2511.18717	4.80E-04	3255.67124	0.00295
2510.22282	3.50E-04	2510.22282	4.70E-04	3255.18906	0.00295
2509.25846	4.10E-04	2509.25846	4.80E-04	3254.70688	0.00295
2508.2941	4.00E-04	2508.2941	4.80E-04	3254.2247	0.00296
2507.32974	3.50E-04	2507.32974	4.90E-04	3253.74252	0.00296
2506.36539	3.70E-04	2506.36539	4.90E-04	3253.26034	0.00296
2505.40103	4.10E-04	2505.40103	4.90E-04	3252.77816	0.00294
2504.43667	4.30E-04	2504.43667	5.00E-04	3252.29599	0.00293
2503.47231	4.60E-04	2503.47231	5.00E-04	3251.81381	0.00292
2502.50796	5.10E-04	2502.50796	4.90E-04	3251.33163	0.0029
2501.5436	5.30E-04	2501.5436	4.90E-04	3250.84945	0.00289
2500.57924	5.00E-04	2500.57924	4.80E-04	3250.36727	0.0029
2499.61488	4.60E-04	2499.61488	4.80E-04	3249.88509	0.00291
2498.65053	4.30E-04	2498.65053	4.80E-04	3249.40291	0.00293
2497.68617	4.10E-04	2497.68617	4.80E-04	3248.92073	0.00293
2496.72181	4.20E-04	2496.72181	4.90E-04	3248.43855	0.00293
2495.75745	4.40E-04	2495.75745	5.00E-04	3247.95638	0.00292
2494.7931	4.40E-04	2494.7931	5.00E-04	3247.4742	0.0029
2493.82874	4.10E-04	2493.82874	5.00E-04	3246.99202	0.00288
2492.86438	3.50E-04	2492.86438	5.00E-04	3246.50984	0.00286
2491.90002	3.50E-04	2491.90002	5.00E-04	3246.02766	0.00285
2490.93566	4.10E-04	2490.93566	5.10E-04	3245.54548	0.00285
2489.97131	4.40E-04	2489.97131	5.20E-04	3245.0633	0.00285
2489.00695	4.10E-04	2489.00695	5.20E-04	3244.58112	0.00284
2488.04259	3.80E-04	2488.04259	5.20E-04	3244.09895	0.00282
2487.07823	4.10E-04	2487.07823	5.10E-04	3243.61677	0.00281
2486.11388	4.70E-04	2486.11388	4.90E-04	3243.13459	0.0028
2485.14952	5.00E-04	2485.14952	4.80E-04	3242.65241	0.00281
2484.18516	4.70E-04	2484.18516	4.80E-04	3242.17023	0.00281
2483.2208	4.30E-04	2483.2208	4.80E-04	3241.68805	0.0028
2482.25645	4.00E-04	2482.25645	4.80E-04	3241.20587	0.00279
2481.29209	3.60E-04	2481.29209	4.80E-04	3240.72369	0.00278
2480.32773	3.50E-04	2480.32773	4.90E-04	3240.24152	0.00278
2479.36337	3.90E-04	2479.36337	4.90E-04	3239.75934	0.00281
2478.39902	4.30E-04	2478.39902	4.80E-04	3239.27716	0.00285
2477.43466	4.20E-04	2477.43466	4.70E-04	3238.79498	0.00289
2476.4703	4.20E-04	2476.4703	4.70E-04	3238.3128	0.00289
2475.50594	4.10E-04	2475.50594	4.60E-04	3237.83062	0.00289
2474.54159	3.90E-04	2474.54159	4.60E-04	3237.34844	0.00288
2473.57723	4.20E-04	2473.57723	4.50E-04	3236.86626	0.00288
2472.61287	5.00E-04	2472.61287	4.50E-04	3236.38408	0.00287

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2471.64851	5.50E-04	2471.64851	4.40E-04	3235.90191	0.00286
2470.68416	5.20E-04	2470.68416	4.50E-04	3235.41973	0.00287
2469.7198	4.50E-04	2469.7198	4.60E-04	3234.93755	0.00287
2468.75544	4.10E-04	2468.75544	4.70E-04	3234.45537	0.00286
2467.79108	3.70E-04	2467.79108	4.90E-04	3233.97319	0.00285
2466.82672	3.50E-04	2466.82672	5.00E-04	3233.49101	0.00284
2465.86237	3.80E-04	2465.86237	4.90E-04	3233.00883	0.0028
2464.89801	4.20E-04	2464.89801	4.80E-04	3232.52665	0.00275
2463.93365	4.50E-04	2463.93365	4.70E-04	3232.04448	0.0027
2462.96929	4.70E-04	2462.96929	4.60E-04	3231.5623	0.00268
2462.00494	4.60E-04	2462.00494	4.70E-04	3231.08012	0.00267
2461.04058	4.60E-04	2461.04058	4.70E-04	3230.59794	0.00268
2460.07622	4.60E-04	2460.07622	4.80E-04	3230.11576	0.0027
2459.11186	4.30E-04	2459.11186	4.80E-04	3229.63358	0.00273
2458.14751	3.90E-04	2458.14751	4.70E-04	3229.1514	0.00274
2457.18315	3.90E-04	2457.18315	4.60E-04	3228.66922	0.00273
2456.21879	4.40E-04	2456.21879	4.60E-04	3228.18705	0.0027
2455.25443	4.80E-04	2455.25443	4.60E-04	3227.70487	0.00267
2454.29008	4.80E-04	2454.29008	4.70E-04	3227.22269	0.00266
2453.32572	4.30E-04	2453.32572	4.80E-04	3226.74051	0.00265
2452.36136	4.20E-04	2452.36136	4.70E-04	3226.25833	0.00264
2451.397	4.30E-04	2451.397	4.50E-04	3225.77615	0.00264
2450.43265	4.20E-04	2450.43265	4.40E-04	3225.29397	0.00263
2449.46829	4.10E-04	2449.46829	4.30E-04	3224.81179	0.00262
2448.50393	4.30E-04	2448.50393	4.40E-04	3224.32961	0.00262
2447.53957	4.80E-04	2447.53957	4.40E-04	3223.84744	0.00263
2446.57522	5.20E-04	2446.57522	4.40E-04	3223.36526	0.00265
2445.61086	5.00E-04	2445.61086	4.40E-04	3222.88308	0.00267
2444.6465	4.40E-04	2444.6465	4.30E-04	3222.4009	0.00269
2443.68214	4.00E-04	2443.68214	4.30E-04	3221.91872	0.00271
2442.71779	4.10E-04	2442.71779	4.30E-04	3221.43654	0.00273
2441.75343	4.10E-04	2441.75343	4.40E-04	3220.95436	0.00274
2440.78907	4.10E-04	2440.78907	4.50E-04	3220.47218	0.00275
2439.82471	4.50E-04	2439.82471	4.50E-04	3219.99001	0.00273
2438.86035	4.50E-04	2438.86035	4.60E-04	3219.50783	0.0027
2437.896	3.90E-04	2437.896	4.60E-04	3219.02565	0.00267
2436.93164	3.50E-04	2436.93164	4.60E-04	3218.54347	0.00265
2435.96728	3.70E-04	2435.96728	4.60E-04	3218.06129	0.00264
2435.00292	4.20E-04	2435.00292	4.60E-04	3217.57911	0.00264
2434.03857	4.40E-04	2434.03857	4.60E-04	3217.09693	0.00264
2433.07421	4.30E-04	2433.07421	4.60E-04	3216.61475	0.00264

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2432.10985	4.10E-04	2432.10985	4.60E-04	3216.13258	0.00266
2431.14549	3.90E-04	2431.14549	4.60E-04	3215.6504	0.00267
2430.18114	3.90E-04	2430.18114	4.60E-04	3215.16822	0.00267
2429.21678	4.10E-04	2429.21678	4.50E-04	3214.68604	0.00266
2428.25242	4.30E-04	2428.25242	4.40E-04	3214.20386	0.00265
2427.28806	4.40E-04	2427.28806	4.30E-04	3213.72168	0.00262
2426.32371	4.20E-04	2426.32371	4.30E-04	3213.2395	0.00257
2425.35935	4.00E-04	2425.35935	4.40E-04	3212.75732	0.00253
2424.39499	3.90E-04	2424.39499	4.40E-04	3212.27514	0.00252
2423.43063	4.00E-04	2423.43063	4.40E-04	3211.79297	0.00255
2422.46628	4.50E-04	2422.46628	4.20E-04	3211.31079	0.00259
2421.50192	4.90E-04	2421.50192	4.10E-04	3210.82861	0.00265
2420.53756	4.90E-04	2420.53756	4.00E-04	3210.34643	0.0027
2419.5732	4.40E-04	2419.5732	4.10E-04	3209.86425	0.00272
2418.60885	4.10E-04	2418.60885	4.20E-04	3209.38207	0.0027
2417.64449	3.90E-04	2417.64449	4.30E-04	3208.89989	0.00266
2416.68013	3.70E-04	2416.68013	4.30E-04	3208.41771	0.00263
2415.71577	3.80E-04	2415.71577	4.20E-04	3207.93554	0.00261
2414.75141	4.00E-04	2414.75141	4.10E-04	3207.45336	0.00261
2413.78706	3.80E-04	2413.78706	4.10E-04	3206.97118	0.00262
2412.8227	3.60E-04	2412.8227	4.10E-04	3206.489	0.00262
2411.85834	3.40E-04	2411.85834	4.10E-04	3206.00682	0.00262
2410.89398	3.00E-04	2410.89398	4.20E-04	3205.52464	0.00261
2409.92963	2.60E-04	2409.92963	4.40E-04	3205.04246	0.0026
2408.96527	2.80E-04	2408.96527	4.50E-04	3204.56028	0.0026
2408.00091	3.20E-04	2408.00091	4.50E-04	3204.07811	0.00262
2407.03655	3.60E-04	2407.03655	4.40E-04	3203.59593	0.00263
2406.0722	3.80E-04	2406.0722	4.30E-04	3203.11375	0.00262
2405.10784	3.60E-04	2405.10784	4.20E-04	3202.63157	0.00259
2404.14348	3.10E-04	2404.14348	4.10E-04	3202.14939	0.00256
2403.17912	3.10E-04	2403.17912	4.10E-04	3201.66721	0.00253
2402.21477	3.30E-04	2402.21477	4.20E-04	3201.18503	0.00249
2401.25041	3.30E-04	2401.25041	4.20E-04	3200.70285	0.00247
2400.28605	3.10E-04	2400.28605	4.20E-04	3200.22068	0.00248
2399.32169	3.10E-04	2399.32169	4.10E-04	3199.7385	0.00249
2398.35734	3.20E-04	2398.35734	4.10E-04	3199.25632	0.00248
2397.39298	3.40E-04	2397.39298	4.00E-04	3198.77414	0.00246
2396.42862	3.70E-04	2396.42862	4.00E-04	3198.29196	0.00245
2395.46426	3.90E-04	2395.46426	4.00E-04	3197.80978	0.00244
2394.49991	4.00E-04	2394.49991	4.10E-04	3197.3276	0.00245
2393.53555	4.20E-04	2393.53555	4.10E-04	3196.84542	0.00248

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2392.57119	4.10E-04	2392.57119	4.10E-04	3196.36324	0.00251
2391.60683	3.70E-04	2391.60683	4.00E-04	3195.88107	0.00253
2390.64248	3.20E-04	2390.64248	4.00E-04	3195.39889	0.00253
2389.67812	2.80E-04	2389.67812	3.90E-04	3194.91671	0.00249
2388.71376	2.90E-04	2388.71376	3.90E-04	3194.43453	0.00245
2387.7494	3.30E-04	2387.7494	3.90E-04	3193.95235	0.00243
2386.78504	3.70E-04	2386.78504	3.90E-04	3193.47017	0.00243
2385.82069	3.90E-04	2385.82069	4.00E-04	3192.98799	0.00245
2384.85633	3.80E-04	2384.85633	4.00E-04	3192.50581	0.00247
2383.89197	4.10E-04	2383.89197	4.30E-04	3192.02364	0.00249
2382.92761	4.90E-04	2382.92761	4.60E-04	3191.54146	0.0025
2381.96326	5.40E-04	2381.96326	4.90E-04	3191.05928	0.0025
2380.9989	5.80E-04	2380.9989	5.00E-04	3190.5771	0.00249
2380.03454	6.90E-04	2380.03454	5.10E-04	3190.09492	0.00249
2379.07018	8.10E-04	2379.07018	5.10E-04	3189.61274	0.00249
2378.10583	8.40E-04	2378.10583	5.30E-04	3189.13056	0.00249
2377.14147	8.00E-04	2377.14147	5.60E-04	3188.64838	0.00247
2376.17711	9.20E-04	2376.17711	6.00E-04	3188.16621	0.00245
2375.21275	0.00125	2375.21275	6.40E-04	3187.68403	0.00243
2374.2484	0.00148	2374.2484	6.90E-04	3187.20185	0.00243
2373.28404	0.00142	2373.28404	7.20E-04	3186.71967	0.00245
2372.31968	0.00138	2372.31968	7.40E-04	3186.23749	0.00248
2371.35532	0.00154	2371.35532	7.60E-04	3185.75531	0.00251
2370.39097	0.00175	2370.39097	7.80E-04	3185.27313	0.00251
2369.42661	0.00202	2369.42661	7.80E-04	3184.79095	0.00249
2368.46225	0.00227	2368.46225	8.10E-04	3184.30877	0.00247
2367.49789	0.00226	2367.49789	8.90E-04	3183.8266	0.00245
2366.53354	0.00216	2366.53354	1.00E-03	3183.34442	0.00244
2365.56918	0.00227	2365.56918	0.00108	3182.86224	0.00243
2364.60482	0.00245	2364.60482	0.00112	3182.38006	0.00242
2363.64046	0.00249	2363.64046	0.00115	3181.89788	0.00241
2362.6761	0.00243	2362.6761	0.00116	3181.4157	0.00239
2361.71175	0.00231	2361.71175	0.00114	3180.93352	0.00237
2360.74739	0.00208	2360.74739	0.00112	3180.45134	0.00237
2359.78303	0.00199	2359.78303	0.00111	3179.96917	0.00238
2358.81867	0.00219	2358.81867	0.00108	3179.48699	0.00238
2357.85432	0.00243	2357.85432	0.00103	3179.00481	0.00237
2356.88996	0.00241	2356.88996	9.90E-04	3178.52263	0.00234
2355.9256	0.00216	2355.9256	9.90E-04	3178.04045	0.00232
2354.96124	0.00192	2354.96124	0.00103	3177.55827	0.00231
2353.99689	0.00187	2353.99689	0.00108	3177.07609	0.00233

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2353.03253	0.00189	2353.03253	0.0011	3176.59391	0.00238
2352.06817	0.0017	2352.06817	0.00108	3176.11174	0.00243
2351.10381	0.00137	2351.10381	0.00101	3175.62956	0.00246
2350.13946	0.00114	2350.13946	9.00E-04	3175.14738	0.00246
2349.1751	0.00112	2349.1751	8.10E-04	3174.6652	0.00245
2348.21074	0.00123	2348.21074	7.60E-04	3174.18302	0.00242
2347.24638	0.00141	2347.24638	7.60E-04	3173.70084	0.00238
2346.28203	0.00158	2346.28203	8.10E-04	3173.21866	0.00234
2345.31767	0.00174	2345.31767	8.80E-04	3172.73648	0.00231
2344.35331	0.00187	2344.35331	9.60E-04	3172.2543	0.0023
2343.38895	0.0019	2343.38895	0.00104	3171.77213	0.00229
2342.4246	0.00182	2342.4246	0.00109	3171.28995	0.00229
2341.46024	0.00175	2341.46024	0.00112	3170.80777	0.00231
2340.49588	0.00175	2340.49588	0.00113	3170.32559	0.00232
2339.53152	0.00171	2339.53152	0.0011	3169.84341	0.00233
2338.56716	0.00158	2338.56716	0.00106	3169.36123	0.00235
2337.60281	0.00159	2337.60281	0.00102	3168.87905	0.00236
2336.63845	0.00174	2336.63845	9.80E-04	3168.39687	0.00237
2335.67409	0.00184	2335.67409	9.60E-04	3167.9147	0.00237
2334.70973	0.00187	2334.70973	9.40E-04	3167.43252	0.00236
2333.74538	0.00187	2333.74538	9.20E-04	3166.95034	0.00233
2332.78102	0.00179	2332.78102	9.10E-04	3166.46816	0.00231
2331.81666	0.00166	2331.81666	9.00E-04	3165.98598	0.00229
2330.8523	0.00151	2330.8523	8.90E-04	3165.5038	0.00228
2329.88795	0.00143	2329.88795	8.90E-04	3165.02162	0.00227
2328.92359	0.00149	2328.92359	9.10E-04	3164.53944	0.00225
2327.95923	0.00158	2327.95923	9.30E-04	3164.05727	0.00226
2326.99487	0.00157	2326.99487	9.20E-04	3163.57509	0.00227
2326.03052	0.00154	2326.03052	9.00E-04	3163.09291	0.00229
2325.06616	0.00151	2325.06616	8.70E-04	3162.61073	0.00231
2324.1018	0.00141	2324.1018	8.30E-04	3162.12855	0.00233
2323.13744	0.00134	2323.13744	8.00E-04	3161.64637	0.00233
2322.17309	0.00128	2322.17309	7.80E-04	3161.16419	0.00231
2321.20873	0.00109	2321.20873	7.80E-04	3160.68201	0.00229
2320.24437	8.90E-04	2320.24437	7.60E-04	3160.19983	0.00228
2319.28001	8.60E-04	2319.28001	7.30E-04	3159.71766	0.00225
2318.31566	9.10E-04	2318.31566	6.90E-04	3159.23548	0.00223
2317.3513	8.70E-04	2317.3513	6.50E-04	3158.7533	0.00223
2316.38694	8.10E-04	2316.38694	6.40E-04	3158.27112	0.00225
2315.42258	8.20E-04	2315.42258	6.30E-04	3157.78894	0.00226
2314.45823	8.80E-04	2314.45823	6.30E-04	3157.30676	0.00227

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2313.49387	8.90E-04	2313.49387	6.30E-04	3156.82458	0.00228
2312.52951	7.80E-04	2312.52951	6.20E-04	3156.3424	0.00229
2311.56515	6.80E-04	2311.56515	6.10E-04	3155.86023	0.00229
2310.60079	6.50E-04	2310.60079	5.90E-04	3155.37805	0.00228
2309.63644	6.50E-04	2309.63644	5.80E-04	3154.89587	0.00228
2308.67208	6.20E-04	2308.67208	5.60E-04	3154.41369	0.00228
2307.70772	5.70E-04	2307.70772	5.40E-04	3153.93151	0.00228
2306.74336	5.10E-04	2306.74336	5.20E-04	3153.44933	0.00228
2305.77901	4.40E-04	2305.77901	5.10E-04	3152.96715	0.00228
2304.81465	4.30E-04	2304.81465	5.00E-04	3152.48497	0.00227
2303.85029	4.90E-04	2303.85029	4.90E-04	3152.0028	0.00225
2302.88593	5.40E-04	2302.88593	4.70E-04	3151.52062	0.00223
2301.92158	5.50E-04	2301.92158	4.50E-04	3151.03844	0.00221
2300.95722	5.40E-04	2300.95722	4.30E-04	3150.55626	0.0022
2299.99286	4.80E-04	2299.99286	4.10E-04	3150.07408	0.0022
2299.0285	4.10E-04	2299.0285	4.10E-04	3149.5919	0.00219
2298.06415	4.00E-04	2298.06415	4.10E-04	3149.10972	0.00217
2297.09979	4.20E-04	2297.09979	4.20E-04	3148.62754	0.00215
2296.13543	4.30E-04	2296.13543	4.20E-04	3148.14536	0.00214
2295.17107	4.30E-04	2295.17107	4.10E-04	3147.66319	0.00214
2294.20672	4.20E-04	2294.20672	3.90E-04	3147.18101	0.00216
2293.24236	4.30E-04	2293.24236	3.70E-04	3146.69883	0.00217
2292.278	4.30E-04	2292.278	3.50E-04	3146.21665	0.00219
2291.31364	4.00E-04	2291.31364	3.40E-04	3145.73447	0.0022
2290.34929	3.40E-04	2290.34929	3.40E-04	3145.25229	0.00221
2289.38493	2.90E-04	2289.38493	3.30E-04	3144.77011	0.00221
2288.42057	2.70E-04	2288.42057	3.30E-04	3144.28793	0.00221
2287.45621	3.00E-04	2287.45621	3.30E-04	3143.80576	0.0022
2286.49185	3.20E-04	2286.49185	3.20E-04	3143.32358	0.00219
2285.5275	2.70E-04	2285.5275	3.10E-04	3142.8414	0.00218
2284.56314	2.10E-04	2284.56314	3.10E-04	3142.35922	0.00217
2283.59878	1.80E-04	2283.59878	3.20E-04	3141.87704	0.00215
2282.63442	1.90E-04	2282.63442	3.30E-04	3141.39486	0.00215
2281.67007	2.00E-04	2281.67007	3.30E-04	3140.91268	0.00214
2280.70571	2.10E-04	2280.70571	3.30E-04	3140.4305	0.00213
2279.74135	2.50E-04	2279.74135	3.20E-04	3139.94833	0.00213
2278.77699	2.90E-04	2278.77699	3.10E-04	3139.46615	0.00213
2277.81264	3.20E-04	2277.81264	3.20E-04	3138.98397	0.00213
2276.84828	3.70E-04	2276.84828	3.40E-04	3138.50179	0.00212
2275.88392	3.90E-04	2275.88392	3.70E-04	3138.01961	0.00211
2274.91956	3.60E-04	2274.91956	4.00E-04	3137.53743	0.00212



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2273.95521	3.20E-04	2273.95521	4.10E-04	3137.05525	0.00214
2272.99085	3.00E-04	2272.99085	4.00E-04	3136.57307	0.00216
2272.02649	2.60E-04	2272.02649	3.70E-04	3136.0909	0.00218
2271.06213	2.00E-04	2271.06213	3.40E-04	3135.60872	0.0022
2270.09778	1.70E-04	2270.09778	3.20E-04	3135.12654	0.00221
2269.13342	1.90E-04	2269.13342	3.20E-04	3134.64436	0.00221
2268.16906	2.10E-04	2268.16906	3.20E-04	3134.16218	0.00221
2267.2047	2.50E-04	2267.2047	3.30E-04	3133.68	0.00219
2266.24035	2.90E-04	2266.24035	3.30E-04	3133.19782	0.00217
2265.27599	3.10E-04	2265.27599	3.30E-04	3132.71564	0.00215
2264.31163	3.00E-04	2264.31163	3.20E-04	3132.23346	0.00213
2263.34727	2.60E-04	2263.34727	3.10E-04	3131.75129	0.00213
2262.38292	2.40E-04	2262.38292	2.90E-04	3131.26911	0.00214
2261.41856	2.90E-04	2261.41856	2.90E-04	3130.78693	0.00214
2260.4542	3.10E-04	2260.4542	2.80E-04	3130.30475	0.00213
2259.48984	2.70E-04	2259.48984	2.80E-04	3129.82257	0.00211
2258.52548	2.50E-04	2258.52548	2.90E-04	3129.34039	0.00209
2257.56113	2.60E-04	2257.56113	2.90E-04	3128.85821	0.00207
2256.59677	2.60E-04	2256.59677	2.90E-04	3128.37603	0.00209
2255.63241	2.30E-04	2255.63241	2.90E-04	3127.89386	0.00211
2254.66805	2.20E-04	2254.66805	2.80E-04	3127.41168	0.00211
2253.7037	2.30E-04	2253.7037	2.80E-04	3126.9295	0.00209
2252.73934	2.20E-04	2252.73934	2.80E-04	3126.44732	0.00206
2251.77498	2.10E-04	2251.77498	2.80E-04	3125.96514	0.00203
2250.81062	2.00E-04	2250.81062	2.90E-04	3125.48296	0.00203
2249.84627	2.10E-04	2249.84627	2.90E-04	3125.00078	0.00207
2248.88191	2.10E-04	2248.88191	2.90E-04	3124.5186	0.00213
2247.91755	2.10E-04	2247.91755	3.00E-04	3124.03643	0.00217
2246.95319	2.00E-04	2246.95319	3.00E-04	3123.55425	0.00218
2245.98884	1.80E-04	2245.98884	3.00E-04	3123.07207	0.00217
2245.02448	1.50E-04	2245.02448	3.00E-04	3122.58989	0.00215
2244.06012	1.40E-04	2244.06012	2.90E-04	3122.10771	0.00213
2243.09576	1.50E-04	2243.09576	2.80E-04	3121.62553	0.00212
2242.13141	1.50E-04	2242.13141	2.70E-04	3121.14335	0.00211
2241.16705	1.50E-04	2241.16705	2.70E-04	3120.66117	0.0021
2240.20269	1.90E-04	2240.20269	2.80E-04	3120.17899	0.0021
2239.23833	2.30E-04	2239.23833	2.90E-04	3119.69682	0.0021
2238.27398	2.40E-04	2238.27398	3.00E-04	3119.21464	0.00211
2237.30962	2.40E-04	2237.30962	3.00E-04	3118.73246	0.00213
2236.34526	2.10E-04	2236.34526	3.00E-04	3118.25028	0.00214
2235.3809	1.80E-04	2235.3809	3.00E-04	3117.7681	0.00213

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2234.41654	1.80E-04	2234.41654	3.00E-04	3117.28592	0.00209
2233.45219	1.90E-04	2233.45219	2.90E-04	3116.80374	0.00205
2232.48783	1.70E-04	2232.48783	2.90E-04	3116.32156	0.00203
2231.52347	1.50E-04	2231.52347	2.90E-04	3115.83939	0.00202
2230.55911	1.60E-04	2230.55911	3.00E-04	3115.35721	0.00203
2229.59476	1.80E-04	2229.59476	3.00E-04	3114.87503	0.00206
2228.6304	1.90E-04	2228.6304	3.00E-04	3114.39285	0.0021
2227.66604	1.80E-04	2227.66604	3.00E-04	3113.91067	0.00213
2226.70168	1.90E-04	2226.70168	2.90E-04	3113.42849	0.00215
2225.73733	2.30E-04	2225.73733	2.80E-04	3112.94631	0.00216
2224.77297	2.40E-04	2224.77297	2.70E-04	3112.46413	0.00215
2223.80861	2.00E-04	2223.80861	2.60E-04	3111.98196	0.00213
2222.84425	1.60E-04	2222.84425	2.50E-04	3111.49978	0.00209
2221.8799	1.60E-04	2221.8799	2.40E-04	3111.0176	0.00204
2220.91554	1.60E-04	2220.91554	2.40E-04	3110.53542	0.00201
2219.95118	1.40E-04	2219.95118	2.50E-04	3110.05324	0.00199
2218.98682	1.40E-04	2218.98682	2.50E-04	3109.57106	0.00199
2218.02247	1.60E-04	2218.02247	2.50E-04	3109.08888	0.00199
2217.05811	1.70E-04	2217.05811	2.50E-04	3108.6067	0.002
2216.09375	1.80E-04	2216.09375	2.50E-04	3108.12452	0.00203
2215.12939	1.80E-04	2215.12939	2.40E-04	3107.64235	0.00206
2214.16504	1.80E-04	2214.16504	2.50E-04	3107.16017	0.00209
2213.20068	1.60E-04	2213.20068	2.50E-04	3106.67799	0.0021
2212.23632	1.40E-04	2212.23632	2.50E-04	3106.19581	0.00209
2211.27196	1.40E-04	2211.27196	2.40E-04	3105.71363	0.00205
2210.30761	1.70E-04	2210.30761	2.40E-04	3105.23145	0.00199
2209.34325	1.50E-04	2209.34325	2.30E-04	3104.74927	0.00192
2208.37889	1.00E-04	2208.37889	2.30E-04	3104.26709	0.00189
2207.41453	8.00E-05	2207.41453	2.40E-04	3103.78492	0.00188
2206.45017	1.20E-04	2206.45017	2.50E-04	3103.30274	0.00191
2205.48582	1.50E-04	2205.48582	2.50E-04	3102.82056	0.00194
2204.52146	1.30E-04	2204.52146	2.50E-04	3102.33838	0.00197
2203.5571	1.20E-04	2203.5571	2.50E-04	3101.8562	0.002
2202.59274	1.40E-04	2202.59274	2.50E-04	3101.37402	0.00201
2201.62839	1.90E-04	2201.62839	2.60E-04	3100.89184	0.002
2200.66403	2.10E-04	2200.66403	2.70E-04	3100.40966	0.00199
2199.69967	2.00E-04	2199.69967	2.70E-04	3099.92749	0.00197
2198.73531	1.80E-04	2198.73531	2.60E-04	3099.44531	0.00197
2197.77096	1.70E-04	2197.77096	2.50E-04	3098.96313	0.00196
2196.8066	1.80E-04	2196.8066	2.40E-04	3098.48095	0.00195
2195.84224	1.90E-04	2195.84224	2.50E-04	3097.99877	0.00195

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2194.87788	1.80E-04	2194.87788	2.50E-04	3097.51659	0.00197
2193.91353	1.70E-04	2193.91353	2.60E-04	3097.03441	0.00198
2192.94917	1.80E-04	2192.94917	2.60E-04	3096.55223	0.002
2191.98481	1.90E-04	2191.98481	2.60E-04	3096.07005	0.00201
2191.02045	1.60E-04	2191.02045	2.40E-04	3095.58788	0.00203
2190.0561	1.50E-04	2190.0561	2.20E-04	3095.1057	0.00203
2189.09174	1.80E-04	2189.09174	2.00E-04	3094.62352	0.00202
2188.12738	1.90E-04	2188.12738	2.10E-04	3094.14134	0.00201
2187.16302	1.60E-04	2187.16302	2.20E-04	3093.65916	0.00201
2186.19867	1.40E-04	2186.19867	2.30E-04	3093.17698	0.00202
2185.23431	1.50E-04	2185.23431	2.40E-04	3092.6948	0.00203
2184.26995	1.40E-04	2184.26995	2.40E-04	3092.21262	0.00203
2183.30559	1.20E-04	2183.30559	2.30E-04	3091.73045	0.00202
2182.34123	1.20E-04	2182.34123	2.20E-04	3091.24827	0.002
2181.37688	1.20E-04	2181.37688	2.20E-04	3090.76609	0.00198
2180.41252	9.00E-05	2180.41252	2.30E-04	3090.28391	0.00195
2179.44816	6.00E-05	2179.44816	2.30E-04	3089.80173	0.00192
2178.4838	7.00E-05	2178.4838	2.30E-04	3089.31955	0.0019
2177.51945	1.10E-04	2177.51945	2.30E-04	3088.83737	0.00191
2176.55509	1.60E-04	2176.55509	2.30E-04	3088.35519	0.00193
2175.59073	1.70E-04	2175.59073	2.20E-04	3087.87302	0.00195
2174.62637	1.80E-04	2174.62637	2.20E-04	3087.39084	0.00199
2173.66202	1.80E-04	2173.66202	2.20E-04	3086.90866	0.00202
2172.69766	1.60E-04	2172.69766	2.30E-04	3086.42648	0.00204
2171.7333	1.20E-04	2171.7333	2.30E-04	3085.9443	0.00204
2170.76894	1.00E-04	2170.76894	2.30E-04	3085.46212	0.00203
2169.80459	8.00E-05	2169.80459	2.30E-04	3084.97994	0.00201
2168.84023	6.00E-05	2168.84023	2.30E-04	3084.49776	0.00198
2167.87587	6.00E-05	2167.87587	2.30E-04	3084.01559	0.00197
2166.91151	8.00E-05	2166.91151	2.30E-04	3083.53341	0.00197
2165.94716	1.10E-04	2165.94716	2.30E-04	3083.05123	0.00198
2164.9828	1.20E-04	2164.9828	2.30E-04	3082.56905	0.002
2164.01844	1.20E-04	2164.01844	2.20E-04	3082.08687	0.00202
2163.05408	1.40E-04	2163.05408	2.20E-04	3081.60469	0.00203
2162.08973	1.20E-04	2162.08973	2.20E-04	3081.12251	0.00204
2161.12537	1.00E-04	2161.12537	2.20E-04	3080.64033	0.00205
2160.16101	1.00E-04	2160.16101	2.20E-04	3080.15815	0.00204
2159.19665	1.10E-04	2159.19665	2.30E-04	3079.67598	0.00203
2158.23229	1.10E-04	2158.23229	2.40E-04	3079.1938	0.002
2157.26794	1.30E-04	2157.26794	2.40E-04	3078.71162	0.00195
2156.30358	1.10E-04	2156.30358	2.40E-04	3078.22944	0.00192

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2155.33922	1.10E-04	2155.33922	2.30E-04	3077.74726	0.00192
2154.37486	1.40E-04	2154.37486	2.10E-04	3077.26508	0.00195
2153.41051	1.80E-04	2153.41051	2.00E-04	3076.7829	0.00198
2152.44615	2.00E-04	2152.44615	2.00E-04	3076.30072	0.00199
2151.48179	2.00E-04	2151.48179	2.00E-04	3075.81855	0.00199
2150.51743	2.00E-04	2150.51743	2.10E-04	3075.33637	0.00198
2149.55308	1.50E-04	2149.55308	2.30E-04	3074.85419	0.00197
2148.58872	7.00E-05	2148.58872	2.30E-04	3074.37201	0.00197
2147.62436	4.00E-05	2147.62436	2.30E-04	3073.88983	0.00198
2146.66	8.00E-05	2146.66	2.30E-04	3073.40765	0.002
2145.69565	1.50E-04	2145.69565	2.30E-04	3072.92547	0.00201
2144.73129	1.80E-04	2144.73129	2.30E-04	3072.44329	0.00201
2143.76693	1.70E-04	2143.76693	2.20E-04	3071.96112	0.00201
2142.80257	1.50E-04	2142.80257	2.10E-04	3071.47894	0.00201
2141.83822	1.60E-04	2141.83822	2.10E-04	3070.99676	0.002
2140.87386	1.80E-04	2140.87386	2.00E-04	3070.51458	0.00199
2139.9095	1.50E-04	2139.9095	2.10E-04	3070.0324	0.00197
2138.94514	1.10E-04	2138.94514	2.20E-04	3069.55022	0.00198
2137.98079	1.00E-04	2137.98079	2.20E-04	3069.06804	0.00198
2137.01643	1.10E-04	2137.01643	2.30E-04	3068.58586	0.00199
2136.05207	1.40E-04	2136.05207	2.40E-04	3068.10368	0.002
2135.08771	1.40E-04	2135.08771	2.40E-04	3067.62151	0.002
2134.12336	1.20E-04	2134.12336	2.40E-04	3067.13933	0.002
2133.159	1.00E-04	2133.159	2.40E-04	3066.65715	0.00199
2132.19464	9.00E-05	2132.19464	2.40E-04	3066.17497	0.00197
2131.23028	9.00E-05	2131.23028	2.40E-04	3065.69279	0.00196
2130.26592	1.00E-04	2130.26592	2.40E-04	3065.21061	0.00194
2129.30157	1.10E-04	2129.30157	2.40E-04	3064.72843	0.00192
2128.33721	1.20E-04	2128.33721	2.30E-04	3064.24625	0.00189
2127.37285	1.30E-04	2127.37285	2.30E-04	3063.76408	0.00189
2126.40849	1.50E-04	2126.40849	2.20E-04	3063.2819	0.00191
2125.44414	1.50E-04	2125.44414	2.30E-04	3062.79972	0.00193
2124.47978	1.30E-04	2124.47978	2.30E-04	3062.31754	0.00194
2123.51542	1.20E-04	2123.51542	2.30E-04	3061.83536	0.00194
2122.55106	1.20E-04	2122.55106	2.20E-04	3061.35318	0.00194
2121.58671	1.30E-04	2121.58671	2.20E-04	3060.871	0.00192
2120.62235	1.00E-04	2120.62235	2.20E-04	3060.38882	0.0019
2119.65799	8.00E-05	2119.65799	2.20E-04	3059.90665	0.00189
2118.69363	8.00E-05	2118.69363	2.20E-04	3059.42447	0.00191
2117.72928	1.10E-04	2117.72928	2.30E-04	3058.94229	0.00193
2116.76492	1.20E-04	2116.76492	2.40E-04	3058.46011	0.00194

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2115.80056	1.50E-04	2115.80056	2.30E-04	3057.97793	0.00195
2114.8362	1.70E-04	2114.8362	2.30E-04	3057.49575	0.00196
2113.87185	1.60E-04	2113.87185	2.20E-04	3057.01357	0.00195
2112.90749	1.60E-04	2112.90749	2.30E-04	3056.53139	0.00194
2111.94313	1.70E-04	2111.94313	2.30E-04	3056.04921	0.00194
2110.97877	1.50E-04	2110.97877	2.30E-04	3055.56704	0.00194
2110.01442	1.20E-04	2110.01442	2.50E-04	3055.08486	0.00195
2109.05006	1.30E-04	2109.05006	2.60E-04	3054.60268	0.00194
2108.0857	1.50E-04	2108.0857	2.60E-04	3054.1205	0.00192
2107.12134	1.70E-04	2107.12134	2.50E-04	3053.63832	0.00189
2106.15698	1.80E-04	2106.15698	2.40E-04	3053.15614	0.00188
2105.19263	1.90E-04	2105.19263	2.30E-04	3052.67396	0.00189
2104.22827	1.80E-04	2104.22827	2.30E-04	3052.19178	0.0019
2103.26391	1.50E-04	2103.26391	2.20E-04	3051.70961	0.0019
2102.29955	1.40E-04	2102.29955	2.20E-04	3051.22743	0.0019
2101.3352	1.40E-04	2101.3352	2.20E-04	3050.74525	0.0019
2100.37084	1.60E-04	2100.37084	2.20E-04	3050.26307	0.00189
2099.40648	1.90E-04	2099.40648	2.10E-04	3049.78089	0.00188
2098.44212	1.90E-04	2098.44212	2.10E-04	3049.29871	0.00188
2097.47777	1.60E-04	2097.47777	2.10E-04	3048.81653	0.0019
2096.51341	1.00E-04	2096.51341	2.20E-04	3048.33435	0.00191
2095.54905	8.00E-05	2095.54905	2.20E-04	3047.85218	0.00192
2094.58469	7.00E-05	2094.58469	2.20E-04	3047.37	0.00191
2093.62034	5.00E-05	2093.62034	2.10E-04	3046.88782	0.00189
2092.65598	6.00E-05	2092.65598	2.10E-04	3046.40564	0.00186
2091.69162	9.00E-05	2091.69162	2.20E-04	3045.92346	0.00184
2090.72726	1.30E-04	2090.72726	2.20E-04	3045.44128	0.00182
2089.76291	1.50E-04	2089.76291	2.30E-04	3044.9591	0.00182
2088.79855	1.80E-04	2088.79855	2.40E-04	3044.47692	0.00182
2087.83419	2.20E-04	2087.83419	2.40E-04	3043.99474	0.00182
2086.86983	2.10E-04	2086.86983	2.40E-04	3043.51257	0.00183
2085.90548	1.40E-04	2085.90548	2.30E-04	3043.03039	0.00184
2084.94112	8.00E-05	2084.94112	2.10E-04	3042.54821	0.00186
2083.97676	8.00E-05	2083.97676	2.00E-04	3042.06603	0.00188
2083.0124	1.30E-04	2083.0124	2.00E-04	3041.58385	0.0019
2082.04805	1.70E-04	2082.04805	2.00E-04	3041.10167	0.0019
2081.08369	1.80E-04	2081.08369	2.10E-04	3040.61949	0.00187
2080.11933	1.50E-04	2080.11933	2.10E-04	3040.13731	0.00185
2079.15497	1.50E-04	2079.15497	2.20E-04	3039.65514	0.00185
2078.19061	2.00E-04	2078.19061	2.20E-04	3039.17296	0.00185
2077.22626	2.40E-04	2077.22626	2.20E-04	3038.69078	0.00186

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2076.2619	2.10E-04	2076.2619	2.20E-04	3038.2086	0.00185
2075.29754	1.60E-04	2075.29754	2.30E-04	3037.72642	0.00183
2074.33318	1.60E-04	2074.33318	2.40E-04	3037.24424	0.00181
2073.36883	1.80E-04	2073.36883	2.40E-04	3036.76206	0.00181
2072.40447	1.80E-04	2072.40447	2.40E-04	3036.27988	0.00183
2071.44011	1.70E-04	2071.44011	2.30E-04	3035.79771	0.00184
2070.47575	1.40E-04	2070.47575	2.20E-04	3035.31553	0.00186
2069.5114	1.10E-04	2069.5114	2.10E-04	3034.83335	0.00186
2068.54704	1.00E-04	2068.54704	2.00E-04	3034.35117	0.00186
2067.58268	1.10E-04	2067.58268	2.00E-04	3033.86899	0.00185
2066.61832	1.20E-04	2066.61832	2.00E-04	3033.38681	0.00184
2065.65397	1.30E-04	2065.65397	2.10E-04	3032.90463	0.00182
2064.68961	1.20E-04	2064.68961	2.30E-04	3032.42245	0.00179
2063.72525	6.00E-05	2063.72525	2.30E-04	3031.94027	0.00176
2062.76089	3.00E-05	2062.76089	2.30E-04	3031.4581	0.00174
2061.79654	6.00E-05	2061.79654	2.10E-04	3030.97592	0.00175
2060.83218	1.00E-04	2060.83218	1.90E-04	3030.49374	0.00177
2059.86782	1.00E-04	2059.86782	1.80E-04	3030.01156	0.00181
2058.90346	9.00E-05	2058.90346	1.70E-04	3029.52938	0.00183
2057.93911	1.10E-04	2057.93911	1.80E-04	3029.0472	0.00184
2056.97475	1.50E-04	2056.97475	2.10E-04	3028.56502	0.00183
2056.01039	1.80E-04	2056.01039	2.40E-04	3028.08284	0.00182
2055.04603	2.00E-04	2055.04603	2.60E-04	3027.60067	0.0018
2054.08167	2.10E-04	2054.08167	2.60E-04	3027.11849	0.00178
2053.11732	1.90E-04	2053.11732	2.50E-04	3026.63631	0.00176
2052.15296	1.70E-04	2052.15296	2.40E-04	3026.15413	0.00175
2051.1886	1.90E-04	2051.1886	2.30E-04	3025.67195	0.00175
2050.22424	2.20E-04	2050.22424	2.20E-04	3025.18977	0.00175
2049.25989	2.30E-04	2049.25989	2.20E-04	3024.70759	0.00173
2048.29553	2.20E-04	2048.29553	2.20E-04	3024.22541	0.00172
2047.33117	2.00E-04	2047.33117	2.30E-04	3023.74324	0.00172
2046.36681	1.60E-04	2046.36681	2.30E-04	3023.26106	0.00172
2045.40246	1.20E-04	2045.40246	2.30E-04	3022.77888	0.00172
2044.4381	1.10E-04	2044.4381	2.20E-04	3022.2967	0.00173
2043.47374	1.20E-04	2043.47374	2.20E-04	3021.81452	0.00173
2042.50938	1.40E-04	2042.50938	2.10E-04	3021.33234	0.00172
2041.54503	1.60E-04	2041.54503	2.10E-04	3020.85016	0.00172
2040.58067	1.70E-04	2040.58067	2.10E-04	3020.36798	0.00172
2039.61631	1.60E-04	2039.61631	2.10E-04	3019.88581	0.00173
2038.65195	1.40E-04	2038.65195	2.20E-04	3019.40363	0.00175
2037.6876	1.40E-04	2037.6876	2.20E-04	3018.92145	0.00176

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2036.72324	1.80E-04	2036.72324	2.10E-04	3018.43927	0.00176
2035.75888	1.90E-04	2035.75888	1.90E-04	3017.95709	0.00176
2034.79452	1.80E-04	2034.79452	1.90E-04	3017.47491	0.00175
2033.83017	1.80E-04	2033.83017	1.90E-04	3016.99273	0.00175
2032.86581	1.80E-04	2032.86581	1.90E-04	3016.51055	0.00174
2031.90145	1.70E-04	2031.90145	1.90E-04	3016.02837	0.00173
2030.93709	1.40E-04	2030.93709	2.00E-04	3015.5462	0.00173
2029.97273	1.10E-04	2029.97273	1.90E-04	3015.06402	0.00174
2029.00838	1.20E-04	2029.00838	1.90E-04	3014.58184	0.00176
2028.04402	1.40E-04	2028.04402	1.90E-04	3014.09966	0.00177
2027.07966	1.30E-04	2027.07966	2.00E-04	3013.61748	0.00178
2026.1153	1.00E-04	2026.1153	2.00E-04	3013.1353	0.00178
2025.15095	8.00E-05	2025.15095	1.90E-04	3012.65312	0.00177
2024.18659	8.00E-05	2024.18659	1.80E-04	3012.17094	0.00177
2023.22223	1.00E-04	2023.22223	1.70E-04	3011.68877	0.00177
2022.25787	1.20E-04	2022.25787	1.70E-04	3011.20659	0.00177
2021.29352	1.50E-04	2021.29352	1.70E-04	3010.72441	0.00176
2020.32916	1.50E-04	2020.32916	1.80E-04	3010.24223	0.00173
2019.3648	1.30E-04	2019.3648	1.90E-04	3009.76005	0.0017
2018.40044	1.30E-04	2018.40044	1.90E-04	3009.27787	0.00169
2017.43609	1.40E-04	2017.43609	1.90E-04	3008.79569	0.00169
2016.47173	1.50E-04	2016.47173	1.80E-04	3008.31351	0.00169
2015.50737	1.50E-04	2015.50737	1.70E-04	3007.83134	0.0017
2014.54301	1.30E-04	2014.54301	1.60E-04	3007.34916	0.0017
2013.57866	1.10E-04	2013.57866	1.50E-04	3006.86698	0.0017
2012.6143	1.20E-04	2012.6143	1.50E-04	3006.3848	0.00171
2011.64994	1.40E-04	2011.64994	1.50E-04	3005.90262	0.00171
2010.68558	1.00E-04	2010.68558	1.70E-04	3005.42044	0.00173
2009.72123	5.00E-05	2009.72123	1.80E-04	3004.93826	0.00174
2008.75687	4.00E-05	2008.75687	1.90E-04	3004.45608	0.00175
2007.79251	5.00E-05	2007.79251	1.90E-04	3003.9739	0.00174
2006.82815	5.00E-05	2006.82815	1.90E-04	3003.49173	0.00171
2005.8638	5.00E-05	2005.8638	1.80E-04	3003.00955	0.00169
2004.89944	7.00E-05	2004.89944	1.70E-04	3002.52737	0.00169
2003.93508	6.00E-05	2003.93508	1.60E-04	3002.04519	0.00169
2002.97072	4.00E-05	2002.97072	1.60E-04	3001.56301	0.0017
2002.00636	3.00E-05	2002.00636	1.60E-04	3001.08083	0.00172
2001.04201	2.00E-05	2001.04201	1.60E-04	3000.59865	0.00175
2000.07765	3.00E-05	2000.07765	1.60E-04	3000.11647	0.00176
1999.11329	6.00E-05	1999.11329	1.70E-04	2999.6343	0.00175
1998.14893	9.00E-05	1998.14893	1.70E-04	2999.15212	0.00173

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1997.18458	1.30E-04	1997.18458	1.60E-04	2998.66994	0.00171
1996.22022	1.20E-04	1996.22022	1.50E-04	2998.18776	0.00169
1995.25586	9.00E-05	1995.25586	1.40E-04	2997.70558	0.00167
1994.2915	7.00E-05	1994.2915	1.20E-04	2997.2234	0.00167
1993.32715	7.00E-05	1993.32715	1.20E-04	2996.74122	0.00167
1992.36279	7.00E-05	1992.36279	1.30E-04	2996.25904	0.00168
1991.39843	8.00E-05	1991.39843	1.30E-04	2995.77687	0.00167
1990.43407	7.00E-05	1990.43407	1.40E-04	2995.29469	0.00166
1989.46972	0	1989.46972	1.40E-04	2994.81251	0.00165
1988.50536	-3.00E-05	1988.50536	1.40E-04	2994.33033	0.00167
1987.541	2.00E-05	1987.541	1.40E-04	2993.84815	0.00168
1986.57664	1.00E-04	1986.57664	1.40E-04	2993.36597	0.0017
1985.61229	1.30E-04	1985.61229	1.50E-04	2992.88379	0.00172
1984.64793	1.10E-04	1984.64793	1.60E-04	2992.40161	0.00173
1983.68357	7.00E-05	1983.68357	1.60E-04	2991.91943	0.00173
1982.71921	5.00E-05	1982.71921	1.60E-04	2991.43726	0.00174
1981.75486	4.00E-05	1981.75486	1.50E-04	2990.95508	0.00174
1980.7905	4.00E-05	1980.7905	1.40E-04	2990.4729	0.00175
1979.82614	7.00E-05	1979.82614	1.30E-04	2989.99072	0.00176
1978.86178	1.10E-04	1978.86178	1.20E-04	2989.50854	0.00177
1977.89742	1.20E-04	1977.89742	1.20E-04	2989.02636	0.00178
1976.93307	9.00E-05	1976.93307	1.30E-04	2988.54418	0.00178
1975.96871	4.00E-05	1975.96871	1.40E-04	2988.062	0.00178
1975.00435	2.00E-05	1975.00435	1.40E-04	2987.57983	0.00178
1974.03999	6.00E-05	1974.03999	1.50E-04	2987.09765	0.00177
1973.07564	8.00E-05	1973.07564	1.50E-04	2986.61547	0.00176
1972.11128	9.00E-05	1972.11128	1.50E-04	2986.13329	0.00175
1971.14692	7.00E-05	1971.14692	1.50E-04	2985.65111	0.00174
1970.18256	3.00E-05	1970.18256	1.60E-04	2985.16893	0.00174
1969.21821	0	1969.21821	1.60E-04	2984.68675	0.00174
1968.25385	2.00E-05	1968.25385	1.60E-04	2984.20457	0.00175
1967.28949	6.00E-05	1967.28949	1.60E-04	2983.7224	0.00175
1966.32513	8.00E-05	1966.32513	1.60E-04	2983.24022	0.00175
1965.36078	7.00E-05	1965.36078	1.60E-04	2982.75804	0.00175
1964.39642	8.00E-05	1964.39642	1.60E-04	2982.27586	0.00175
1963.43206	9.00E-05	1963.43206	1.60E-04	2981.79368	0.00175
1962.4677	7.00E-05	1962.4677	1.60E-04	2981.3115	0.00175
1961.50335	5.00E-05	1961.50335	1.60E-04	2980.82932	0.00177
1960.53899	7.00E-05	1960.53899	1.60E-04	2980.34714	0.0018
1959.57463	1.00E-04	1959.57463	1.60E-04	2979.86496	0.00183
1958.61027	9.00E-05	1958.61027	1.60E-04	2979.38279	0.00184



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1957.64592	6.00E-05	1957.64592	1.50E-04	2978.90061	0.00184
1956.68156	7.00E-05	1956.68156	1.50E-04	2978.41843	0.00184
1955.7172	9.00E-05	1955.7172	1.40E-04	2977.93625	0.00184
1954.75284	1.00E-04	1954.75284	1.30E-04	2977.45407	0.00184
1953.78849	9.00E-05	1953.78849	1.40E-04	2976.97189	0.00185
1952.82413	6.00E-05	1952.82413	1.40E-04	2976.48971	0.00187
1951.85977	5.00E-05	1951.85977	1.50E-04	2976.00753	0.00188
1950.89541	7.00E-05	1950.89541	1.50E-04	2975.52536	0.00189
1949.93105	9.00E-05	1949.93105	1.50E-04	2975.04318	0.00189
1948.9667	9.00E-05	1948.9667	1.50E-04	2974.561	0.00188
1948.00234	1.00E-04	1948.00234	1.50E-04	2974.07882	0.00188
1947.03798	1.10E-04	1947.03798	1.50E-04	2973.59664	0.00188
1946.07362	1.40E-04	1946.07362	1.40E-04	2973.11446	0.00188
1945.10927	1.70E-04	1945.10927	1.30E-04	2972.63228	0.00188
1944.14491	1.90E-04	1944.14491	1.30E-04	2972.1501	0.00189
1943.18055	1.60E-04	1943.18055	1.30E-04	2971.66793	0.00188
1942.21619	1.00E-04	1942.21619	1.30E-04	2971.18575	0.00189
1941.25184	4.00E-05	1941.25184	1.30E-04	2970.70357	0.00189
1940.28748	4.00E-05	1940.28748	1.30E-04	2970.22139	0.0019
1939.32312	8.00E-05	1939.32312	1.40E-04	2969.73921	0.0019
1938.35876	1.50E-04	1938.35876	1.30E-04	2969.25703	0.00191
1937.39441	2.10E-04	1937.39441	1.30E-04	2968.77485	0.00192
1936.43005	2.10E-04	1936.43005	1.40E-04	2968.29267	0.00195
1935.46569	1.70E-04	1935.46569	1.40E-04	2967.81049	0.00198
1934.50133	1.20E-04	1934.50133	1.50E-04	2967.32832	0.002
1933.53698	1.00E-04	1933.53698	1.50E-04	2966.84614	0.00201
1932.57262	1.00E-04	1932.57262	1.60E-04	2966.36396	0.002
1931.60826	1.00E-04	1931.60826	1.60E-04	2965.88178	0.00198
1930.6439	8.00E-05	1930.6439	1.50E-04	2965.3996	0.00199
1929.67955	7.00E-05	1929.67955	1.50E-04	2964.91742	0.00201
1928.71519	7.00E-05	1928.71519	1.40E-04	2964.43524	0.00203
1927.75083	9.00E-05	1927.75083	1.30E-04	2963.95306	0.00204
1926.78647	1.10E-04	1926.78647	1.20E-04	2963.47089	0.00204
1925.82211	1.00E-04	1925.82211	1.10E-04	2962.98871	0.00203
1924.85776	9.00E-05	1924.85776	1.10E-04	2962.50653	0.00201
1923.8934	1.10E-04	1923.8934	1.30E-04	2962.02435	0.00199
1922.92904	1.40E-04	1922.92904	1.40E-04	2961.54217	0.002
1921.96468	1.50E-04	1921.96468	1.50E-04	2961.05999	0.00202
1921.00033	1.40E-04	1921.00033	1.30E-04	2960.57781	0.00203
1920.03597	1.60E-04	1920.03597	1.20E-04	2960.09563	0.00204
1919.07161	1.80E-04	1919.07161	1.20E-04	2959.61346	0.00206

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1918.10725	1.50E-04	1918.10725	1.30E-04	2959.13128	0.00207
1917.1429	1.20E-04	1917.1429	1.50E-04	2958.6491	0.00207
1916.17854	1.40E-04	1916.17854	1.80E-04	2958.16692	0.00208
1915.21418	1.70E-04	1915.21418	1.90E-04	2957.68474	0.0021
1914.24982	1.90E-04	1914.24982	1.80E-04	2957.20256	0.00213
1913.28547	2.00E-04	1913.28547	1.60E-04	2956.72038	0.00215
1912.32111	2.20E-04	1912.32111	1.40E-04	2956.2382	0.00215
1911.35675	2.50E-04	1911.35675	1.40E-04	2955.75603	0.00214
1910.39239	2.50E-04	1910.39239	1.40E-04	2955.27385	0.00211
1909.42804	2.10E-04	1909.42804	1.50E-04	2954.79167	0.00209
1908.46368	1.90E-04	1908.46368	1.60E-04	2954.30949	0.00208
1907.49932	2.00E-04	1907.49932	1.70E-04	2953.82731	0.00209
1906.53496	2.20E-04	1906.53496	1.80E-04	2953.34513	0.00212
1905.57061	2.30E-04	1905.57061	1.80E-04	2952.86295	0.00213
1904.60625	2.30E-04	1904.60625	1.80E-04	2952.38077	0.00215
1903.64189	2.60E-04	1903.64189	1.80E-04	2951.89859	0.00216
1902.67753	2.90E-04	1902.67753	1.80E-04	2951.41642	0.00217
1901.71317	3.10E-04	1901.71317	1.80E-04	2950.93424	0.00218
1900.74882	2.90E-04	1900.74882	1.90E-04	2950.45206	0.00219
1899.78446	2.50E-04	1899.78446	1.90E-04	2949.96988	0.00218
1898.8201	2.20E-04	1898.8201	1.80E-04	2949.4877	0.00216
1897.85574	2.20E-04	1897.85574	1.80E-04	2949.00552	0.00215
1896.89139	2.10E-04	1896.89139	1.70E-04	2948.52334	0.00216
1895.92703	2.00E-04	1895.92703	1.70E-04	2948.04116	0.00217
1894.96267	2.00E-04	1894.96267	1.70E-04	2947.55899	0.00218
1893.99831	2.20E-04	1893.99831	1.70E-04	2947.07681	0.0022
1893.03396	2.30E-04	1893.03396	1.60E-04	2946.59463	0.00222
1892.0696	2.20E-04	1892.0696	1.60E-04	2946.11245	0.00222
1891.10524	2.00E-04	1891.10524	1.50E-04	2945.63027	0.00222
1890.14088	1.90E-04	1890.14088	1.40E-04	2945.14809	0.00221
1889.17653	1.70E-04	1889.17653	1.50E-04	2944.66591	0.0022
1888.21217	1.70E-04	1888.21217	1.50E-04	2944.18373	0.0022
1887.24781	1.50E-04	1887.24781	1.60E-04	2943.70156	0.0022
1886.28345	1.40E-04	1886.28345	1.50E-04	2943.21938	0.0022
1885.3191	1.50E-04	1885.3191	1.40E-04	2942.7372	0.00221
1884.35474	1.60E-04	1884.35474	1.30E-04	2942.25502	0.00222
1883.39038	1.60E-04	1883.39038	1.30E-04	2941.77284	0.00222
1882.42602	1.60E-04	1882.42602	1.40E-04	2941.29066	0.00221
1881.46167	1.50E-04	1881.46167	1.50E-04	2940.80848	0.00221
1880.49731	1.30E-04	1880.49731	1.60E-04	2940.3263	0.00221
1879.53295	1.10E-04	1879.53295	1.60E-04	2939.84412	0.00222

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1878.56859	1.40E-04	1878.56859	1.60E-04	2939.36195	0.00223
1877.60424	1.80E-04	1877.60424	1.50E-04	2938.87977	0.00222
1876.63988	1.60E-04	1876.63988	1.50E-04	2938.39759	0.00221
1875.67552	1.10E-04	1875.67552	1.50E-04	2937.91541	0.0022
1874.71116	8.00E-05	1874.71116	1.60E-04	2937.43323	0.0022
1873.7468	8.00E-05	1873.7468	1.60E-04	2936.95105	0.00221
1872.78245	8.00E-05	1872.78245	1.50E-04	2936.46887	0.00222
1871.81809	1.00E-04	1871.81809	1.20E-04	2935.98669	0.00223
1870.85373	1.40E-04	1870.85373	9.00E-05	2935.50452	0.00224
1869.88937	1.80E-04	1869.88937	8.00E-05	2935.02234	0.00225
1868.92502	1.80E-04	1868.92502	9.00E-05	2934.54016	0.00225
1867.96066	1.40E-04	1867.96066	1.10E-04	2934.05798	0.00226
1866.9963	1.00E-04	1866.9963	1.30E-04	2933.5758	0.00227
1866.03194	8.00E-05	1866.03194	1.40E-04	2933.09362	0.00227
1865.06759	8.00E-05	1865.06759	1.40E-04	2932.61144	0.00225
1864.10323	9.00E-05	1864.10323	1.40E-04	2932.12926	0.00224
1863.13887	1.00E-04	1863.13887	1.40E-04	2931.64709	0.00224
1862.17451	1.10E-04	1862.17451	1.50E-04	2931.16491	0.00226
1861.21016	9.00E-05	1861.21016	1.60E-04	2930.68273	0.00227
1860.2458	8.00E-05	1860.2458	1.50E-04	2930.20055	0.00227
1859.28144	8.00E-05	1859.28144	1.40E-04	2929.71837	0.00225
1858.31708	8.00E-05	1858.31708	1.30E-04	2929.23619	0.00223
1857.35273	4.00E-05	1857.35273	1.20E-04	2928.75401	0.00221
1856.38837	2.00E-05	1856.38837	1.10E-04	2928.27183	0.0022
1855.42401	5.00E-05	1855.42401	1.20E-04	2927.78965	0.0022
1854.45965	8.00E-05	1854.45965	1.20E-04	2927.30748	0.00221
1853.4953	9.00E-05	1853.4953	1.30E-04	2926.8253	0.00223
1852.53094	9.00E-05	1852.53094	1.30E-04	2926.34312	0.00223
1851.56658	7.00E-05	1851.56658	1.30E-04	2925.86094	0.00224
1850.60222	6.00E-05	1850.60222	1.20E-04	2925.37876	0.00226
1849.63786	7.00E-05	1849.63786	1.10E-04	2924.89658	0.00229
1848.67351	1.00E-04	1848.67351	9.00E-05	2924.4144	0.00231
1847.70915	1.10E-04	1847.70915	7.00E-05	2923.93222	0.00231
1846.74479	1.20E-04	1846.74479	5.00E-05	2923.45005	0.0023
1845.78043	1.40E-04	1845.78043	4.00E-05	2922.96787	0.00227
1844.81608	1.00E-04	1844.81608	6.00E-05	2922.48569	0.00222
1843.85172	6.00E-05	1843.85172	8.00E-05	2922.00351	0.00217
1842.88736	7.00E-05	1842.88736	1.10E-04	2921.52133	0.00214
1841.923	8.00E-05	1841.923	1.20E-04	2921.03915	0.00214
1840.95865	7.00E-05	1840.95865	1.20E-04	2920.55697	0.00217
1839.99429	7.00E-05	1839.99429	1.00E-04	2920.07479	0.00222

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1839.02993	9.00E-05	1839.02993	8.00E-05	2919.59262	0.00226
1838.06557	9.00E-05	1838.06557	7.00E-05	2919.11044	0.00229
1837.10122	1.00E-04	1837.10122	7.00E-05	2918.62826	0.00231
1836.13686	1.00E-04	1836.13686	7.00E-05	2918.14608	0.00229
1835.1725	9.00E-05	1835.1725	7.00E-05	2917.6639	0.00226
1834.20814	6.00E-05	1834.20814	8.00E-05	2917.18172	0.00223
1833.24379	3.00E-05	1833.24379	7.00E-05	2916.69954	0.00223
1832.27943	3.00E-05	1832.27943	5.00E-05	2916.21736	0.00223
1831.31507	6.00E-05	1831.31507	5.00E-05	2915.73518	0.00222
1830.35071	1.00E-04	1830.35071	5.00E-05	2915.25301	0.00222
1829.38636	1.20E-04	1829.38636	5.00E-05	2914.77083	0.0022
1828.422	1.10E-04	1828.422	4.00E-05	2914.28865	0.00217
1827.45764	9.00E-05	1827.45764	4.00E-05	2913.80647	0.00214
1826.49328	1.00E-04	1826.49328	5.00E-05	2913.32429	0.00211
1825.52893	1.10E-04	1825.52893	5.00E-05	2912.84211	0.00209
1824.56457	9.00E-05	1824.56457	5.00E-05	2912.35993	0.00209
1823.60021	7.00E-05	1823.60021	6.00E-05	2911.87775	0.0021
1822.63585	3.00E-05	1822.63585	8.00E-05	2911.39558	0.00211
1821.67149	0	1821.67149	9.00E-05	2910.9134	0.00212
1820.70714	1.00E-05	1820.70714	9.00E-05	2910.43122	0.00213
1819.74278	3.00E-05	1819.74278	8.00E-05	2909.94904	0.00214
1818.77842	5.00E-05	1818.77842	7.00E-05	2909.46686	0.00215
1817.81406	8.00E-05	1817.81406	7.00E-05	2908.98468	0.00214
1816.84971	9.00E-05	1816.84971	7.00E-05	2908.5025	0.00213
1815.88535	6.00E-05	1815.88535	7.00E-05	2908.02032	0.00212
1814.92099	2.00E-05	1814.92099	8.00E-05	2907.53815	0.0021
1813.95663	1.00E-05	1813.95663	9.00E-05	2907.05597	0.00208
1812.99228	1.00E-05	1812.99228	9.00E-05	2906.57379	0.00205
1812.02792	3.00E-05	1812.02792	8.00E-05	2906.09161	0.00203
1811.06356	2.00E-05	1811.06356	8.00E-05	2905.60943	0.00203
1810.0992	2.00E-05	1810.0992	8.00E-05	2905.12725	0.00203
1809.13485	5.00E-05	1809.13485	8.00E-05	2904.64507	0.00204
1808.17049	8.00E-05	1808.17049	8.00E-05	2904.16289	0.00205
1807.20613	8.00E-05	1807.20613	8.00E-05	2903.68071	0.00204
1806.24177	6.00E-05	1806.24177	8.00E-05	2903.19854	0.00201
1805.27742	5.00E-05	1805.27742	6.00E-05	2902.71636	0.00196
1804.31306	4.00E-05	1804.31306	5.00E-05	2902.23418	0.00193
1803.3487	4.00E-05	1803.3487	4.00E-05	2901.752	0.00191
1802.38434	5.00E-05	1802.38434	4.00E-05	2901.26982	0.0019
1801.41999	6.00E-05	1801.41999	5.00E-05	2900.78764	0.0019
1800.45563	7.00E-05	1800.45563	7.00E-05	2900.30546	0.00191

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1799.49127	8.00E-05	1799.49127	9.00E-05	2899.82328	0.00191
1798.52691	1.10E-04	1798.52691	1.10E-04	2899.34111	0.00191
1797.56255	1.10E-04	1797.56255	1.30E-04	2898.85893	0.00191
1796.5982	7.00E-05	1796.5982	1.20E-04	2898.37675	0.00191
1795.63384	4.00E-05	1795.63384	9.00E-05	2897.89457	0.0019
1794.66948	6.00E-05	1794.66948	5.00E-05	2897.41239	0.00188
1793.70512	1.00E-04	1793.70512	4.00E-05	2896.93021	0.00186
1792.74077	1.10E-04	1792.74077	6.00E-05	2896.44803	0.00184
1791.77641	9.00E-05	1791.77641	9.00E-05	2895.96585	0.00182
1790.81205	6.00E-05	1790.81205	1.30E-04	2895.48368	0.0018
1789.84769	4.00E-05	1789.84769	1.70E-04	2895.0015	0.0018
1788.88334	4.00E-05	1788.88334	1.80E-04	2894.51932	0.00181
1787.91898	2.00E-05	1787.91898	1.70E-04	2894.03714	0.00183
1786.95462	0	1786.95462	1.50E-04	2893.55496	0.00183
1785.99026	2.00E-05	1785.99026	1.40E-04	2893.07278	0.00182
1785.02591	5.00E-05	1785.02591	1.40E-04	2892.5906	0.0018
1784.06155	7.00E-05	1784.06155	1.30E-04	2892.10842	0.00178
1783.09719	1.00E-04	1783.09719	1.30E-04	2891.62625	0.00177
1782.13283	1.20E-04	1782.13283	1.30E-04	2891.14407	0.00177
1781.16848	1.10E-04	1781.16848	1.30E-04	2890.66189	0.00179
1780.20412	1.00E-04	1780.20412	1.40E-04	2890.17971	0.0018
1779.23976	1.30E-04	1779.23976	1.50E-04	2889.69753	0.0018
1778.2754	1.70E-04	1778.2754	1.70E-04	2889.21535	0.00177
1777.31105	1.80E-04	1777.31105	1.90E-04	2888.73317	0.00175
1776.34669	1.60E-04	1776.34669	1.80E-04	2888.25099	0.00174
1775.38233	1.50E-04	1775.38233	1.30E-04	2887.76881	0.00174
1774.41797	1.60E-04	1774.41797	9.00E-05	2887.28664	0.00176
1773.45362	1.70E-04	1773.45362	8.00E-05	2886.80446	0.00178
1772.48926	1.60E-04	1772.48926	9.00E-05	2886.32228	0.00179
1771.5249	1.40E-04	1771.5249	1.10E-04	2885.8401	0.00179
1770.56054	1.40E-04	1770.56054	1.40E-04	2885.35792	0.00179
1769.59618	1.70E-04	1769.59618	1.80E-04	2884.87574	0.00178
1768.63183	1.80E-04	1768.63183	2.10E-04	2884.39356	0.00178
1767.66747	1.50E-04	1767.66747	2.20E-04	2883.91138	0.0018
1766.70311	1.30E-04	1766.70311	2.20E-04	2883.42921	0.00182
1765.73875	1.20E-04	1765.73875	2.20E-04	2882.94703	0.00183
1764.7744	9.00E-05	1764.7744	2.10E-04	2882.46485	0.00182
1763.81004	9.00E-05	1763.81004	1.80E-04	2881.98267	0.0018
1762.84568	1.70E-04	1762.84568	1.80E-04	2881.50049	0.00178
1761.88132	2.20E-04	1761.88132	1.90E-04	2881.01831	0.00176
1760.91697	1.80E-04	1760.91697	2.00E-04	2880.53613	0.00176

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1759.95261	1.50E-04	1759.95261	2.20E-04	2880.05395	0.00178
1758.98825	1.80E-04	1758.98825	2.50E-04	2879.57178	0.00179
1758.02389	2.20E-04	1758.02389	2.60E-04	2879.0896	0.00179
1757.05954	2.20E-04	1757.05954	2.70E-04	2878.60742	0.00177
1756.09518	2.30E-04	1756.09518	2.80E-04	2878.12524	0.00174
1755.13082	2.60E-04	1755.13082	3.00E-04	2877.64306	0.00173
1754.16646	2.80E-04	1754.16646	3.00E-04	2877.16088	0.00172
1753.20211	2.70E-04	1753.20211	3.10E-04	2876.6787	0.00173
1752.23775	2.80E-04	1752.23775	3.30E-04	2876.19652	0.00175
1751.27339	3.00E-04	1751.27339	3.50E-04	2875.71434	0.00174
1750.30903	3.60E-04	1750.30903	3.80E-04	2875.23217	0.00172
1749.34468	4.40E-04	1749.34468	4.20E-04	2874.74999	0.0017
1748.38032	4.70E-04	1748.38032	4.40E-04	2874.26781	0.00168
1747.41596	4.50E-04	1747.41596	4.50E-04	2873.78563	0.00169
1746.4516	4.10E-04	1746.4516	4.60E-04	2873.30345	0.00172
1745.48724	4.20E-04	1745.48724	4.80E-04	2872.82127	0.00175
1744.52289	4.50E-04	1744.52289	5.30E-04	2872.33909	0.00178
1743.55853	4.50E-04	1743.55853	5.60E-04	2871.85691	0.00178
1742.59417	4.60E-04	1742.59417	5.80E-04	2871.37474	0.00178
1741.62981	5.20E-04	1741.62981	6.10E-04	2870.89256	0.00177
1740.66546	5.80E-04	1740.66546	6.50E-04	2870.41038	0.00175
1739.7011	5.70E-04	1739.7011	7.10E-04	2869.9282	0.00173
1738.73674	5.60E-04	1738.73674	7.70E-04	2869.44602	0.00171
1737.77238	5.90E-04	1737.77238	8.00E-04	2868.96384	0.00172
1736.80803	6.50E-04	1736.80803	7.90E-04	2868.48166	0.00172
1735.84367	7.40E-04	1735.84367	7.90E-04	2867.99948	0.00172
1734.87931	8.40E-04	1734.87931	8.10E-04	2867.51731	0.00172
1733.91495	8.70E-04	1733.91495	8.60E-04	2867.03513	0.00172
1732.9506	8.40E-04	1732.9506	9.30E-04	2866.55295	0.0017
1731.98624	8.30E-04	1731.98624	1.00E-03	2866.07077	0.00168
1731.02188	8.40E-04	1731.02188	0.00107	2865.58859	0.00166
1730.05752	8.40E-04	1730.05752	0.00109	2865.10641	0.00166
1729.09317	8.60E-04	1729.09317	0.0011	2864.62423	0.00168
1728.12881	8.90E-04	1728.12881	0.00112	2864.14205	0.0017
1727.16445	9.10E-04	1727.16445	0.00114	2863.65987	0.00172
1726.20009	9.50E-04	1726.20009	0.00116	2863.1777	0.00174
1725.23574	9.90E-04	1725.23574	0.00116	2862.69552	0.00175
1724.27138	1.00E-03	1724.27138	0.00118	2862.21334	0.00174
1723.30702	1.00E-03	1723.30702	0.0012	2861.73116	0.00172
1722.34266	0.00105	1722.34266	0.00121	2861.24898	0.00172
1721.3783	0.00112	1721.3783	0.00119	2860.7668	0.00172

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1720.41395	0.0012	1720.41395	0.00116	2860.28462	0.00171
1719.44959	0.00128	1719.44959	0.00113	2859.80244	0.0017
1718.48523	0.00133	1718.48523	0.0011	2859.32027	0.00167
1717.52087	0.00133	1717.52087	0.00109	2858.83809	0.00162
1716.55652	0.00136	1716.55652	0.0011	2858.35591	0.00159
1715.59216	0.0014	1715.59216	0.00115	2857.87373	0.00158
1714.6278	0.00141	1714.6278	0.00121	2857.39155	0.00159
1713.66344	0.00143	1713.66344	0.00124	2856.90937	0.00163
1712.69909	0.00145	1712.69909	0.00127	2856.42719	0.00165
1711.73473	0.00146	1711.73473	0.00132	2855.94501	0.00166
1710.77037	0.00146	1710.77037	0.00134	2855.46284	0.00166
1709.80601	0.0015	1709.80601	0.00134	2854.98066	0.00165
1708.84166	0.00158	1708.84166	0.00136	2854.49848	0.00165
1707.8773	0.00167	1707.8773	0.00138	2854.0163	0.00166
1706.91294	0.00175	1706.91294	0.00142	2853.53412	0.00167
1705.94858	0.00183	1705.94858	0.00148	2853.05194	0.00169
1704.98423	0.00192	1704.98423	0.00155	2852.56976	0.0017
1704.01987	0.00204	1704.01987	0.00158	2852.08758	0.00169
1703.05551	0.00216	1703.05551	0.00158	2851.6054	0.00169
1702.09115	0.00231	1702.09115	0.00162	2851.12323	0.00169
1701.1268	0.00249	1701.1268	0.00172	2850.64105	0.0017
1700.16244	0.00262	1700.16244	0.00185	2850.15887	0.0017
1699.19808	0.0027	1699.19808	0.00197	2849.67669	0.00167
1698.23372	0.00283	1698.23372	0.00214	2849.19451	0.00163
1697.26937	0.00302	1697.26937	0.00235	2848.71233	0.0016
1696.30501	0.00325	1696.30501	0.00253	2848.23015	0.00158
1695.34065	0.00352	1695.34065	0.0027	2847.74797	0.0016
1694.37629	0.00379	1694.37629	0.00292	2847.2658	0.00162
1693.41193	0.00407	1693.41193	0.00315	2846.78362	0.00164
1692.44758	0.00438	1692.44758	0.00335	2846.30144	0.00165
1691.48322	0.0047	1691.48322	0.00352	2845.81926	0.00163
1690.51886	0.00506	1690.51886	0.00373	2845.33708	0.00161
1689.5545	0.00549	1689.5545	0.00398	2844.8549	0.00159
1688.59015	0.00594	1688.59015	0.0042	2844.37272	0.00158
1687.62579	0.00638	1687.62579	0.00435	2843.89054	0.00158
1686.66143	0.00682	1686.66143	0.00452	2843.40837	0.00159
1685.69707	0.00723	1685.69707	0.00474	2842.92619	0.00159
1684.73272	0.0077	1684.73272	0.00502	2842.44401	0.00158
1683.76836	0.00821	1683.76836	0.00532	2841.96183	0.00157
1682.804	0.00859	1682.804	0.00565	2841.47965	0.00156
1681.83964	0.00892	1681.83964	0.00599	2840.99747	0.00156

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1680.87529	0.00925	1680.87529	0.00627	2840.51529	0.00156
1679.91093	0.0096	1679.91093	0.00648	2840.03311	0.00156
1678.94657	0.00994	1678.94657	0.00667	2839.55093	0.00156
1677.98221	0.01026	1677.98221	0.00686	2839.06876	0.00154
1677.01786	0.01056	1677.01786	0.00707	2838.58658	0.00152
1676.0535	0.01083	1676.0535	0.00728	2838.1044	0.0015
1675.08914	0.0111	1675.08914	0.00748	2837.62222	0.00148
1674.12478	0.01136	1674.12478	0.0077	2837.14004	0.00148
1673.16043	0.01157	1673.16043	0.00792	2836.65786	0.00147
1672.19607	0.01175	1672.19607	0.00812	2836.17568	0.00145
1671.23171	0.01194	1671.23171	0.0083	2835.6935	0.00144
1670.26735	0.01218	1670.26735	0.00851	2835.21133	0.00145
1669.30299	0.01236	1669.30299	0.00876	2834.72915	0.00147
1668.33864	0.01241	1668.33864	0.00901	2834.24697	0.00148
1667.37428	0.01245	1667.37428	0.00923	2833.76479	0.00149
1666.40992	0.01251	1666.40992	0.00942	2833.28261	0.0015
1665.44556	0.01256	1665.44556	0.00959	2832.80043	0.00149
1664.48121	0.01261	1664.48121	0.00974	2832.31825	0.00148
1663.51685	0.01262	1663.51685	0.00993	2831.83607	0.00147
1662.55249	0.01256	1662.55249	0.01013	2831.3539	0.00147
1661.58813	0.01253	1661.58813	0.01033	2830.87172	0.00147
1660.62378	0.01252	1660.62378	0.0105	2830.38954	0.00147
1659.65942	0.01248	1659.65942	0.01064	2829.90736	0.00146
1658.69506	0.01241	1658.69506	0.01073	2829.42518	0.00145
1657.7307	0.01231	1657.7307	0.01077	2828.943	0.00144
1656.76635	0.0122	1656.76635	0.01075	2828.46082	0.00142
1655.80199	0.01211	1655.80199	0.01067	2827.97864	0.00141
1654.83763	0.01206	1654.83763	0.01058	2827.49647	0.00141
1653.87327	0.01196	1653.87327	0.01051	2827.01429	0.00142
1652.90892	0.01155	1652.90892	0.01044	2826.53211	0.00144
1651.94456	0.0112	1651.94456	0.01037	2826.04993	0.00144
1650.9802	0.01104	1650.9802	0.01028	2825.56775	0.00143
1650.01584	0.01088	1650.01584	0.01015	2825.08557	0.00142
1649.05149	0.0107	1649.05149	0.00993	2824.60339	0.00142
1648.08713	0.01053	1648.08713	0.00969	2824.12121	0.00142
1647.12277	0.01033	1647.12277	0.00947	2823.63903	0.00142
1646.15841	0.01005	1646.15841	0.00928	2823.15686	0.00142
1645.19406	0.00975	1645.19406	0.00912	2822.67468	0.00142
1644.2297	0.00953	1644.2297	0.00896	2822.1925	0.0014
1643.26534	0.00933	1643.26534	0.0088	2821.71032	0.00138
1642.30098	0.00914	1642.30098	0.00863	2821.22814	0.00138



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1641.33662	0.00897	1641.33662	0.00844	2820.74596	0.00139
1640.37227	0.00878	1640.37227	0.00823	2820.26378	0.0014
1639.40791	0.00861	1639.40791	0.008	2819.7816	0.00141
1638.44355	0.00848	1638.44355	0.00776	2819.29943	0.00142
1637.47919	0.00839	1637.47919	0.00753	2818.81725	0.00144
1636.51484	0.00833	1636.51484	0.00735	2818.33507	0.00145
1635.55048	0.00812	1635.55048	0.00722	2817.85289	0.00144
1634.58612	0.00786	1634.58612	0.00712	2817.37071	0.00144
1633.62176	0.00775	1633.62176	0.00703	2816.88853	0.00145
1632.65741	0.00766	1632.65741	0.00693	2816.40635	0.00144
1631.69305	0.00757	1631.69305	0.00679	2815.92417	0.00143
1630.72869	0.00754	1630.72869	0.00663	2815.442	0.00142
1629.76433	0.00756	1629.76433	0.00649	2814.95982	0.00142
1628.79998	0.0076	1628.79998	0.00638	2814.47764	0.0014
1627.83562	0.00768	1627.83562	0.00628	2813.99546	0.00139
1626.87126	0.0078	1626.87126	0.00619	2813.51328	0.00139
1625.9069	0.00793	1625.9069	0.00611	2813.0311	0.0014
1624.94255	0.00809	1624.94255	0.00605	2812.54892	0.00139
1623.97819	0.00833	1623.97819	0.00601	2812.06674	0.00136
1623.01383	0.00867	1623.01383	0.006	2811.58456	0.00134
1622.04947	0.00904	1622.04947	0.00603	2811.10239	0.00131
1621.08512	0.00942	1621.08512	0.00609	2810.62021	0.00131
1620.12076	0.00984	1620.12076	0.00613	2810.13803	0.00132
1619.1564	0.0103	1619.1564	0.00617	2809.65585	0.00134
1618.19204	0.01077	1618.19204	0.00626	2809.17367	0.00135
1617.22768	0.01134	1617.22768	0.00639	2808.69149	0.00133
1616.26333	0.01207	1616.26333	0.00653	2808.20931	0.00131
1615.29897	0.01267	1615.29897	0.00669	2807.72713	0.0013
1614.33461	0.01314	1614.33461	0.00684	2807.24496	0.0013
1613.37025	0.01356	1613.37025	0.00695	2806.76278	0.0013
1612.4059	0.01393	1612.4059	0.007	2806.2806	0.0013
1611.44154	0.01423	1611.44154	0.00702	2805.79842	0.00131
1610.47718	0.01442	1610.47718	0.00702	2805.31624	0.00131
1609.51282	0.01446	1609.51282	0.00697	2804.83406	0.0013
1608.54847	0.01434	1608.54847	0.00688	2804.35188	0.00129
1607.58411	0.01405	1607.58411	0.00676	2803.8697	0.00129
1606.61975	0.01364	1606.61975	0.00662	2803.38753	0.00129
1605.65539	0.01319	1605.65539	0.00644	2802.90535	0.00128
1604.69104	0.01274	1604.69104	0.00625	2802.42317	0.00128
1603.72668	0.01224	1603.72668	0.00606	2801.94099	0.0013
1602.76232	0.0117	1602.76232	0.00587	2801.45881	0.00133

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1601.79796	0.01116	1601.79796	0.00568	2800.97663	0.00135
1600.83361	0.01069	1600.83361	0.0055	2800.49445	0.00136
1599.86925	0.01028	1599.86925	0.00535	2800.01227	0.00134
1598.90489	0.00995	1598.90489	0.00521	2799.53009	0.00132
1597.94053	0.00974	1597.94053	0.0051	2799.04792	0.00131
1596.97618	0.00964	1596.97618	0.00502	2798.56574	0.00131
1596.01182	0.00965	1596.01182	0.005	2798.08356	0.00133
1595.04746	0.00978	1595.04746	0.00502	2797.60138	0.00133
1594.0831	0.01006	1594.0831	0.00509	2797.1192	0.00133
1593.11874	0.01045	1593.11874	0.00521	2796.63702	0.00131
1592.15439	0.01094	1592.15439	0.00535	2796.15484	0.00129
1591.19003	0.01149	1591.19003	0.00551	2795.67266	0.00129
1590.22567	0.01205	1590.22567	0.00567	2795.19049	0.00131
1589.26131	0.01255	1589.26131	0.00583	2794.70831	0.00134
1588.29696	0.0129	1588.29696	0.00596	2794.22613	0.00135
1587.3326	0.01306	1587.3326	0.00604	2793.74395	0.00135
1586.36824	0.01298	1586.36824	0.00607	2793.26177	0.00134
1585.40388	0.01268	1585.40388	0.00602	2792.77959	0.00131
1584.43953	0.01221	1584.43953	0.00589	2792.29741	0.00128
1583.47517	0.01161	1583.47517	0.00573	2791.81523	0.00126
1582.51081	0.01093	1582.51081	0.00553	2791.33306	0.00125
1581.54645	0.01025	1581.54645	0.00533	2790.85088	0.00127
1580.5821	0.0096	1580.5821	0.00512	2790.3687	0.00129
1579.61774	0.00896	1579.61774	0.00489	2789.88652	0.00132
1578.65338	0.00838	1578.65338	0.00467	2789.40434	0.00134
1577.68902	0.00792	1577.68902	0.00448	2788.92216	0.00135
1576.72467	0.00742	1576.72467	0.00432	2788.43998	0.00135
1575.76031	0.00678	1575.76031	0.00421	2787.9578	0.00134
1574.79595	0.00634	1574.79595	0.00413	2787.47562	0.00132
1573.83159	0.00611	1573.83159	0.00409	2786.99345	0.0013
1572.86724	0.00597	1572.86724	0.00405	2786.51127	0.00129
1571.90288	0.00595	1571.90288	0.00402	2786.02909	0.00128
1570.93852	0.00601	1570.93852	0.00405	2785.54691	0.00126
1569.97416	0.00608	1569.97416	0.00413	2785.06473	0.00124
1569.00981	0.00618	1569.00981	0.00424	2784.58255	0.00123
1568.04545	0.00635	1568.04545	0.00435	2784.10037	0.00122
1567.08109	0.00654	1567.08109	0.00448	2783.61819	0.00122
1566.11673	0.00676	1566.11673	0.00462	2783.13602	0.00124
1565.15237	0.00706	1565.15237	0.00475	2782.65384	0.00126
1564.18802	0.00742	1564.18802	0.0049	2782.17166	0.00128
1563.22366	0.00779	1563.22366	0.00501	2781.68948	0.00129

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1562.2593	0.00814	1562.2593	0.00506	2781.2073	0.0013
1561.29494	0.0085	1561.29494	0.00515	2780.72512	0.0013
1560.33059	0.0089	1560.33059	0.00533	2780.24294	0.00129
1559.36623	0.00943	1559.36623	0.00562	2779.76076	0.00129
1558.40187	0.01001	1558.40187	0.00596	2779.27859	0.00129
1557.43751	0.01046	1557.43751	0.00632	2778.79641	0.00128
1556.47316	0.01077	1556.47316	0.00667	2778.31423	0.00128
1555.5088	0.01105	1555.5088	0.00695	2777.83205	0.00128
1554.54444	0.01143	1554.54444	0.00716	2777.34987	0.00129
1553.58008	0.01188	1553.58008	0.00738	2776.86769	0.0013
1552.61573	0.01228	1552.61573	0.00765	2776.38551	0.00131
1551.65137	0.01266	1551.65137	0.00793	2775.90333	0.00131
1550.68701	0.01307	1550.68701	0.00817	2775.42115	0.00131
1549.72265	0.01351	1549.72265	0.00838	2774.93898	0.00129
1548.7583	0.01389	1548.7583	0.00859	2774.4568	0.00128
1547.79394	0.01423	1547.79394	0.00879	2773.97462	0.00126
1546.82958	0.01457	1546.82958	0.00898	2773.49244	0.00125
1545.86522	0.01491	1545.86522	0.00914	2773.01026	0.00124
1544.90087	0.0152	1544.90087	0.00927	2772.52808	0.00125
1543.93651	0.01541	1543.93651	0.00937	2772.0459	0.00125
1542.97215	0.01558	1542.97215	0.00941	2771.56372	0.00124
1542.00779	0.0157	1542.00779	0.00939	2771.08155	0.00123
1541.04343	0.01579	1541.04343	0.00936	2770.59937	0.00122
1540.07908	0.01578	1540.07908	0.00934	2770.11719	0.00121
1539.11472	0.01553	1539.11472	0.00933	2769.63501	0.0012
1538.15036	0.01522	1538.15036	0.0093	2769.15283	0.0012
1537.186	0.01498	1537.186	0.00924	2768.67065	0.00122
1536.22165	0.01473	1536.22165	0.00913	2768.18847	0.00123
1535.25729	0.01447	1535.25729	0.00897	2767.70629	0.00124
1534.29293	0.01414	1534.29293	0.00878	2767.22412	0.00124
1533.32857	0.01361	1533.32857	0.0086	2766.74194	0.00125
1532.36422	0.01308	1532.36422	0.00844	2766.25976	0.00126
1531.39986	0.01266	1531.39986	0.00827	2765.77758	0.00127
1530.4355	0.01224	1530.4355	0.00808	2765.2954	0.00128
1529.47114	0.0118	1529.47114	0.00787	2764.81322	0.00129
1528.50679	0.01132	1528.50679	0.00764	2764.33104	0.00128
1527.54243	0.01081	1527.54243	0.00742	2763.84886	0.00126
1526.57807	0.01034	1526.57807	0.00721	2763.36669	0.00123
1525.61371	0.00986	1525.61371	0.00703	2762.88451	0.00121
1524.64936	0.0094	1524.64936	0.00684	2762.40233	0.0012
1523.685	0.00911	1523.685	0.00666	2761.92015	0.0012

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1522.72064	0.00886	1522.72064	0.00651	2761.43797	0.00122
1521.75628	0.00849	1521.75628	0.0064	2760.95579	0.00124
1520.79193	0.00801	1520.79193	0.0063	2760.47361	0.00125
1519.82757	0.00764	1519.82757	0.00622	2759.99143	0.00126
1518.86321	0.00743	1518.86321	0.00618	2759.50925	0.00126
1517.89885	0.00727	1517.89885	0.00615	2759.02708	0.00124
1516.9345	0.00711	1516.9345	0.00612	2758.5449	0.00122
1515.97014	0.00704	1515.97014	0.00608	2758.06272	0.00121
1515.00578	0.00706	1515.00578	0.00604	2757.58054	0.0012
1514.04142	0.00715	1514.04142	0.00602	2757.09836	0.0012
1513.07706	0.00733	1513.07706	0.006	2756.61618	0.0012
1512.11271	0.00768	1512.11271	0.00601	2756.134	0.00121
1511.14835	0.00818	1511.14835	0.00605	2755.65182	0.00122
1510.18399	0.00877	1510.18399	0.0061	2755.16965	0.00124
1509.21963	0.00951	1509.21963	0.0062	2754.68747	0.00124
1508.25528	0.01037	1508.25528	0.00638	2754.20529	0.00125
1507.29092	0.01145	1507.29092	0.00663	2753.72311	0.00125
1506.32656	0.01268	1506.32656	0.00691	2753.24093	0.00124
1505.3622	0.01344	1505.3622	0.00715	2752.75875	0.00122
1504.39785	0.01369	1504.39785	0.00731	2752.27657	0.00121
1503.43349	0.01365	1503.43349	0.00731	2751.79439	0.00121
1502.46913	0.01338	1502.46913	0.00712	2751.31222	0.00122
1501.50477	0.01294	1501.50477	0.00684	2750.83004	0.00122
1500.54042	0.01252	1500.54042	0.00656	2750.34786	0.00122
1499.57606	0.0122	1499.57606	0.00633	2749.86568	0.00122
1498.6117	0.01203	1498.6117	0.00619	2749.3835	0.0012
1497.64734	0.01208	1497.64734	0.00619	2748.90132	0.00119
1496.68299	0.01248	1496.68299	0.00634	2748.41914	0.00118
1495.71863	0.01338	1495.71863	0.00664	2747.93696	0.00119
1494.75427	0.01462	1494.75427	0.00706	2747.45478	0.00119
1493.78991	0.01619	1493.78991	0.00758	2746.97261	0.00119
1492.82556	0.01818	1492.82556	0.00821	2746.49043	0.00119
1491.8612	0.02042	1491.8612	0.00891	2746.00825	0.00118
1490.89684	0.02287	1490.89684	0.00962	2745.52607	0.00117
1489.93248	0.02521	1489.93248	0.0102	2745.04389	0.00117
1488.96812	0.02654	1488.96812	0.01052	2744.56171	0.00117
1488.00377	0.02658	1488.00377	0.01051	2744.07953	0.00117
1487.03941	0.02533	1487.03941	0.01015	2743.59735	0.00118
1486.07505	0.02326	1486.07505	0.0095	2743.11518	0.00118
1485.11069	0.02101	1485.11069	0.00871	2742.633	0.00118
1484.14634	0.01874	1484.14634	0.00791	2742.15082	0.00118

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1483.18198	0.01669	1483.18198	0.00719	2741.66864	0.00118
1482.21762	0.01501	1482.21762	0.00657	2741.18646	0.00119
1481.25326	0.01354	1481.25326	0.00606	2740.70428	0.0012
1480.28891	0.01223	1480.28891	0.00563	2740.2221	0.00121
1479.32455	0.01115	1479.32455	0.00526	2739.73992	0.00122
1478.36019	0.01027	1478.36019	0.00494	2739.25775	0.00122
1477.39583	0.00952	1477.39583	0.00466	2738.77557	0.00121
1476.43148	0.00878	1476.43148	0.00442	2738.29339	0.00118
1475.46712	0.00815	1475.46712	0.00422	2737.81121	0.00116
1474.50276	0.00773	1474.50276	0.00407	2737.32903	0.00114
1473.5384	0.00732	1473.5384	0.00397	2736.84685	0.00114
1472.57405	0.00686	1472.57405	0.00391	2736.36467	0.00114
1471.60969	0.00652	1471.60969	0.00387	2735.88249	0.00116
1470.64533	0.00633	1470.64533	0.00385	2735.40031	0.00117
1469.68097	0.00623	1469.68097	0.00384	2734.91814	0.00117
1468.71662	0.00618	1468.71662	0.00381	2734.43596	0.00118
1467.75226	0.00619	1467.75226	0.00376	2733.95378	0.00119
1466.7879	0.00625	1466.7879	0.00373	2733.4716	0.0012
1465.82354	0.00634	1465.82354	0.00372	2732.98942	0.0012
1464.85918	0.00641	1464.85918	0.00375	2732.50724	0.00121
1463.89483	0.00646	1463.89483	0.0038	2732.02506	0.00121
1462.93047	0.00653	1462.93047	0.00387	2731.54288	0.00119
1461.96611	0.0066	1461.96611	0.00392	2731.06071	0.00116
1461.00175	0.00671	1461.00175	0.00393	2730.57853	0.00114
1460.0374	0.0069	1460.0374	0.00389	2730.09635	0.00113
1459.07304	0.00711	1459.07304	0.0039	2729.61417	0.00112
1458.10868	0.00728	1458.10868	0.00398	2729.13199	0.00113
1457.14432	0.0074	1457.14432	0.00411	2728.64981	0.00115
1456.17997	0.00757	1456.17997	0.00427	2728.16763	0.00116
1455.21561	0.00775	1455.21561	0.00443	2727.68545	0.00118
1454.25125	0.00787	1454.25125	0.00456	2727.20328	0.0012
1453.28689	0.00797	1453.28689	0.00463	2726.7211	0.00122
1452.32254	0.00813	1452.32254	0.00466	2726.23892	0.00123
1451.35818	0.00831	1451.35818	0.00467	2725.75674	0.00123
1450.39382	0.00842	1450.39382	0.00468	2725.27456	0.00122
1449.42946	0.00843	1449.42946	0.0047	2724.79238	0.00121
1448.46511	0.00836	1448.46511	0.00472	2724.3102	0.00119
1447.50075	0.00828	1447.50075	0.00471	2723.82802	0.00116
1446.53639	0.0083	1446.53639	0.00469	2723.34584	0.00115
1445.57203	0.00833	1445.57203	0.00466	2722.86367	0.00114
1444.60768	0.00825	1444.60768	0.00461	2722.38149	0.00113

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1443.64332	0.00817	1443.64332	0.00455	2721.89931	0.00113
1442.67896	0.00811	1442.67896	0.00449	2721.41713	0.00114
1441.7146	0.00802	1441.7146	0.00443	2720.93495	0.00115
1440.75025	0.00792	1440.75025	0.00437	2720.45277	0.00115
1439.78589	0.00779	1439.78589	0.00429	2719.97059	0.00114
1438.82153	0.0076	1438.82153	0.00419	2719.48841	0.00114
1437.85717	0.00741	1437.85717	0.0041	2719.00624	0.00114
1436.89281	0.0072	1436.89281	0.00403	2718.52406	0.00116
1435.92846	0.00703	1435.92846	0.00398	2718.04188	0.00116
1434.9641	0.00695	1434.9641	0.00394	2717.5597	0.00117
1433.99974	0.00689	1433.99974	0.00392	2717.07752	0.00118
1433.03538	0.00685	1433.03538	0.00389	2716.59534	0.00119
1432.07103	0.00684	1432.07103	0.00386	2716.11316	0.00119
1431.10667	0.00684	1431.10667	0.00383	2715.63098	0.00119
1430.14231	0.0068	1430.14231	0.00381	2715.14881	0.00119
1429.17795	0.00673	1429.17795	0.00382	2714.66663	0.00117
1428.2136	0.0067	1428.2136	0.00383	2714.18445	0.00115
1427.24924	0.00669	1427.24924	0.00385	2713.70227	0.00113
1426.28488	0.00673	1426.28488	0.00387	2713.22009	0.00112
1425.32052	0.00681	1425.32052	0.00391	2712.73791	0.00112
1424.35617	0.00694	1424.35617	0.00396	2712.25573	0.00114
1423.39181	0.00709	1423.39181	0.004	2711.77355	0.00115
1422.42745	0.00723	1422.42745	0.00404	2711.29138	0.00116
1421.46309	0.00738	1421.46309	0.0041	2710.8092	0.00115
1420.49874	0.00756	1420.49874	0.00418	2710.32702	0.00115
1419.53438	0.00777	1419.53438	0.00424	2709.84484	0.00115
1418.57002	0.00789	1418.57002	0.00431	2709.36266	0.00115
1417.60566	0.00793	1417.60566	0.00439	2708.88048	0.00116
1416.64131	0.00795	1416.64131	0.00446	2708.3983	0.00116
1415.67695	0.00796	1415.67695	0.0045	2707.91612	0.00117
1414.71259	0.00792	1414.71259	0.00452	2707.43394	0.00116
1413.74823	0.00783	1413.74823	0.00452	2706.95177	0.00115
1412.78387	0.00768	1412.78387	0.0045	2706.46959	0.00115
1411.81952	0.00744	1411.81952	0.00444	2705.98741	0.00115
1410.85516	0.00713	1410.85516	0.00436	2705.50523	0.00115
1409.8908	0.00679	1409.8908	0.00426	2705.02305	0.00115
1408.92644	0.00642	1408.92644	0.00414	2704.54087	0.00115
1407.96209	0.00605	1407.96209	0.00401	2704.05869	0.00116
1406.99773	0.00577	1406.99773	0.0039	2703.57651	0.00116
1406.03337	0.00554	1406.03337	0.0038	2703.09434	0.00115
1405.06901	0.00522	1405.06901	0.00371	2702.61216	0.00115

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1404.10466	0.00484	1404.10466	0.00363	2702.12998	0.00113
1403.1403	0.00451	1403.1403	0.00355	2701.6478	0.00112
1402.17594	0.00425	1402.17594	0.00346	2701.16562	0.00111
1401.21158	0.00406	1401.21158	0.00337	2700.68344	0.00112
1400.24723	0.00387	1400.24723	0.00329	2700.20126	0.00112
1399.28287	0.00358	1399.28287	0.0032	2699.71908	0.00114
1398.31851	0.00331	1398.31851	0.00311	2699.23691	0.00115
1397.35415	0.0032	1397.35415	0.00304	2698.75473	0.00116
1396.3898	0.00313	1396.3898	0.00299	2698.27255	0.00116
1395.42544	0.003	1395.42544	0.00294	2697.79037	0.00116
1394.46108	0.00285	1394.46108	0.00291	2697.30819	0.00114
1393.49672	0.00277	1393.49672	0.00289	2696.82601	0.0011
1392.53237	0.00276	1392.53237	0.00289	2696.34383	0.00107
1391.56801	0.00278	1391.56801	0.0029	2695.86165	0.00106
1390.60365	0.00284	1390.60365	0.00289	2695.37947	0.00106
1389.63929	0.00291	1389.63929	0.0029	2694.8973	0.00108
1388.67494	0.00301	1388.67494	0.00293	2694.41512	0.00111
1387.71058	0.00308	1387.71058	0.00296	2693.93294	0.00113
1386.74622	0.0031	1386.74622	0.00298	2693.45076	0.00114
1385.78186	0.0031	1385.78186	0.00298	2692.96858	0.00114
1384.8175	0.00309	1384.8175	0.00297	2692.4864	0.00113
1383.85315	0.00307	1383.85315	0.00294	2692.00422	0.00112
1382.88879	0.00302	1382.88879	0.00287	2691.52204	0.00112
1381.92443	0.00296	1381.92443	0.0028	2691.03987	0.00112
1380.96007	0.00292	1380.96007	0.00273	2690.55769	0.00112
1379.99572	0.00295	1379.99572	0.00268	2690.07551	0.00112
1379.03136	0.00299	1379.03136	0.00264	2689.59333	0.0011
1378.067	0.00295	1378.067	0.00261	2689.11115	0.00109
1377.10264	0.00287	1377.10264	0.00257	2688.62897	0.00107
1376.13829	0.00281	1376.13829	0.00253	2688.14679	0.00107
1375.17393	0.00277	1375.17393	0.00249	2687.66461	0.00106
1374.20957	0.0027	1374.20957	0.00246	2687.18244	0.00106
1373.24521	0.00262	1373.24521	0.00244	2686.70026	0.00106
1372.28086	0.00258	1372.28086	0.00242	2686.21808	0.00107
1371.3165	0.00261	1371.3165	0.00242	2685.7359	0.00107
1370.35214	0.00266	1370.35214	0.00242	2685.25372	0.00108
1369.38778	0.00267	1369.38778	0.00242	2684.77154	0.0011
1368.42343	0.00271	1368.42343	0.00244	2684.28936	0.00111
1367.45907	0.00283	1367.45907	0.00246	2683.80718	0.00112
1366.49471	0.00296	1366.49471	0.00249	2683.325	0.00111
1365.53035	0.00306	1365.53035	0.00251	2682.84283	0.00109

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1364.566	0.00315	1364.566	0.00253	2682.36065	0.00106
1363.60164	0.00321	1363.60164	0.00252	2681.87847	0.00104
1362.63728	0.0032	1362.63728	0.0025	2681.39629	0.00104
1361.67292	0.0031	1361.67292	0.00246	2680.91411	0.00104
1360.70856	0.00293	1360.70856	0.00242	2680.43193	0.00105
1359.74421	0.00275	1359.74421	0.00238	2679.94975	0.00106
1358.77985	0.00263	1358.77985	0.00234	2679.46757	0.00107
1357.81549	0.0026	1357.81549	0.00231	2678.9854	0.00108
1356.85113	0.00265	1356.85113	0.00231	2678.50322	0.00109
1355.88678	0.00271	1355.88678	0.00231	2678.02104	0.0011
1354.92242	0.00277	1354.92242	0.00232	2677.53886	0.00112
1353.95806	0.00286	1353.95806	0.00235	2677.05668	0.00112
1352.9937	0.00297	1352.9937	0.0024	2676.5745	0.0011
1352.02935	0.00311	1352.02935	0.00247	2676.09232	0.00108
1351.06499	0.00324	1351.06499	0.00254	2675.61014	0.00107
1350.10063	0.00334	1350.10063	0.0026	2675.12797	0.00107
1349.13627	0.00345	1349.13627	0.00267	2674.64579	0.00109
1348.17192	0.00358	1348.17192	0.00273	2674.16361	0.00111
1347.20756	0.0037	1347.20756	0.00278	2673.68143	0.00112
1346.2432	0.00383	1346.2432	0.00286	2673.19925	0.00111
1345.27884	0.00399	1345.27884	0.00294	2672.71707	0.00108
1344.31449	0.00421	1344.31449	0.00303	2672.23489	0.00106
1343.35013	0.00443	1343.35013	0.00311	2671.75271	0.00105
1342.38577	0.0046	1342.38577	0.0032	2671.27053	0.00104
1341.42141	0.00477	1341.42141	0.00329	2670.78836	0.00104
1340.45706	0.00497	1340.45706	0.00338	2670.30618	0.00104
1339.4927	0.00522	1339.4927	0.00349	2669.824	0.00103
1338.52834	0.0055	1338.52834	0.0036	2669.34182	0.00104
1337.56398	0.00579	1337.56398	0.00371	2668.85964	0.00107
1336.59963	0.00609	1336.59963	0.00384	2668.37746	0.00109
1335.63527	0.00644	1335.63527	0.00398	2667.89528	0.00111
1334.67091	0.00684	1334.67091	0.00413	2667.4131	0.00112
1333.70655	0.00726	1333.70655	0.00429	2666.93093	0.00111
1332.74219	0.0077	1332.74219	0.00447	2666.44875	0.00109
1331.77784	0.00816	1331.77784	0.00466	2665.96657	0.00108
1330.81348	0.00866	1330.81348	0.00485	2665.48439	0.00107
1329.84912	0.00916	1329.84912	0.00502	2665.00221	0.00107
1328.88476	0.0096	1328.88476	0.00519	2664.52003	0.00107
1327.92041	0.0099	1327.92041	0.00533	2664.03785	0.00107
1326.95605	0.01009	1326.95605	0.00545	2663.55567	0.00107
1325.99169	0.01025	1325.99169	0.00553	2663.0735	0.00106



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1325.02733	0.01036	1325.02733	0.00558	2662.59132	0.00106
1324.06298	0.01037	1324.06298	0.00559	2662.10914	0.00106
1323.09862	0.01027	1323.09862	0.00555	2661.62696	0.00106
1322.13426	0.01008	1322.13426	0.00548	2661.14478	0.00107
1321.1699	0.00983	1321.1699	0.0054	2660.6626	0.00109
1320.20555	0.0096	1320.20555	0.00532	2660.18042	0.0011
1319.24119	0.00938	1319.24119	0.00523	2659.69824	0.00109
1318.27683	0.00915	1318.27683	0.00516	2659.21606	0.00107
1317.31247	0.00889	1317.31247	0.00511	2658.73389	0.00105
1316.34812	0.00864	1316.34812	0.00508	2658.25171	0.00104
1315.38376	0.00849	1315.38376	0.00505	2657.76953	0.00105
1314.4194	0.00847	1314.4194	0.00503	2657.28735	0.00105
1313.45504	0.00852	1313.45504	0.00503	2656.80517	0.00106
1312.49069	0.00862	1312.49069	0.00504	2656.32299	0.00106
1311.52633	0.00876	1311.52633	0.00509	2655.84081	0.00106
1310.56197	0.00893	1310.56197	0.00516	2655.35863	0.00107
1309.59761	0.0091	1309.59761	0.00526	2654.87646	0.00109
1308.63325	0.00921	1308.63325	0.00535	2654.39428	0.0011
1307.6689	0.0092	1307.6689	0.00542	2653.9121	0.0011
1306.70454	0.00912	1306.70454	0.00546	2653.42992	0.0011
1305.74018	0.00906	1305.74018	0.00548	2652.94774	0.00109
1304.77582	0.00905	1304.77582	0.00547	2652.46556	0.00108
1303.81147	0.00907	1303.81147	0.00546	2651.98338	0.00109
1302.84711	0.00912	1302.84711	0.00548	2651.5012	0.0011
1301.88275	0.0092	1301.88275	0.00552	2651.01903	0.00111
1300.91839	0.0093	1300.91839	0.0056	2650.53685	0.00109
1299.95404	0.00945	1299.95404	0.00573	2650.05467	0.00107
1298.98968	0.0097	1298.98968	0.00587	2649.57249	0.00105
1298.02532	0.01004	1298.02532	0.00602	2649.09031	0.00105
1297.06096	0.01033	1297.06096	0.00614	2648.60813	0.00105
1296.09661	0.01049	1296.09661	0.00625	2648.12595	0.00106
1295.13225	0.01054	1295.13225	0.0063	2647.64377	0.00106
1294.16789	0.01049	1294.16789	0.00629	2647.1616	0.00106
1293.20353	0.01028	1293.20353	0.00622	2646.67942	0.00105
1292.23918	0.00991	1292.23918	0.00611	2646.19724	0.00104
1291.27482	0.00947	1291.27482	0.00597	2645.71506	0.00105
1290.31046	0.00905	1290.31046	0.00582	2645.23288	0.00107
1289.3461	0.00871	1289.3461	0.00569	2644.7507	0.00108
1288.38175	0.00844	1288.38175	0.00559	2644.26852	0.00109
1287.41739	0.00824	1287.41739	0.0055	2643.78634	0.00109
1286.45303	0.00804	1286.45303	0.00541	2643.30416	0.00109

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1285.48867	0.00778	1285.48867	0.00531	2642.82199	0.00108
1284.52431	0.00754	1284.52431	0.0052	2642.33981	0.00108
1283.55996	0.00736	1283.55996	0.0051	2641.85763	0.00108
1282.5956	0.00717	1282.5956	0.00502	2641.37545	0.00108
1281.63124	0.00699	1281.63124	0.00496	2640.89327	0.00108
1280.66688	0.00685	1280.66688	0.00492	2640.41109	0.00107
1279.70253	0.00671	1279.70253	0.00488	2639.92891	0.00107
1278.73817	0.00661	1278.73817	0.00485	2639.44673	0.00106
1277.77381	0.00656	1277.77381	0.0048	2638.96456	0.00105
1276.80945	0.00654	1276.80945	0.00477	2638.48238	0.00105
1275.8451	0.00652	1275.8451	0.00476	2638.0002	0.00103
1274.88074	0.00652	1274.88074	0.00477	2637.51802	0.00101
1273.91638	0.00658	1273.91638	0.0048	2637.03584	9.90E-04
1272.95202	0.00665	1272.95202	0.00485	2636.55366	9.90E-04
1271.98767	0.00673	1271.98767	0.00492	2636.07148	1.00E-03
1271.02331	0.00685	1271.02331	0.00499	2635.5893	0.00101
1270.05895	0.00706	1270.05895	0.00508	2635.10713	0.00102
1269.09459	0.0074	1269.09459	0.00519	2634.62495	0.00102
1268.13024	0.00779	1268.13024	0.00532	2634.14277	0.00101
1267.16588	0.00819	1267.16588	0.00549	2633.66059	1.00E-03
1266.20152	0.00867	1266.20152	0.00569	2633.17841	1.00E-03
1265.23716	0.00922	1265.23716	0.00594	2632.69623	0.00101
1264.27281	0.00983	1264.27281	0.00622	2632.21405	0.00102
1263.30845	0.01052	1263.30845	0.00654	2631.73187	0.00102
1262.34409	0.01131	1262.34409	0.0069	2631.24969	0.00101
1261.37973	0.01219	1261.37973	0.00732	2630.76752	0.00101
1260.41538	0.0132	1260.41538	0.00779	2630.28534	0.00102
1259.45102	0.01435	1259.45102	0.00829	2629.80316	0.00104
1258.48666	0.01556	1258.48666	0.00883	2629.32098	0.00104
1257.5223	0.0168	1257.5223	0.0094	2628.8388	0.00105
1256.55794	0.0181	1256.55794	0.01	2628.35662	0.00106
1255.59359	0.01942	1255.59359	0.0106	2627.87444	0.00106
1254.62923	0.02072	1254.62923	0.0112	2627.39226	0.00105
1253.66487	0.022	1253.66487	0.01178	2626.91009	0.00105
1252.70051	0.02326	1252.70051	0.01233	2626.42791	0.00104
1251.73616	0.02442	1251.73616	0.01284	2625.94573	0.00102
1250.7718	0.02541	1250.7718	0.0133	2625.46355	1.00E-03
1249.80744	0.02627	1249.80744	0.01371	2624.98137	9.80E-04
1248.84308	0.02703	1248.84308	0.01408	2624.49919	9.80E-04
1247.87873	0.02762	1247.87873	0.0144	2624.01701	9.90E-04
1246.91437	0.02807	1246.91437	0.01468	2623.53483	9.90E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1245.95001	0.0284	1245.95001	0.01487	2623.05266	9.80E-04
1244.98565	0.02858	1244.98565	0.01497	2622.57048	9.70E-04
1244.0213	0.02857	1244.0213	0.01497	2622.0883	9.70E-04
1243.05694	0.02831	1243.05694	0.01485	2621.60612	9.70E-04
1242.09258	0.02779	1242.09258	0.01464	2621.12394	9.80E-04
1241.12822	0.02712	1241.12822	0.01436	2620.64176	9.90E-04
1240.16387	0.02635	1240.16387	0.01402	2620.15958	9.90E-04
1239.19951	0.02541	1239.19951	0.01364	2619.6774	1.00E-03
1238.23515	0.02427	1238.23515	0.01322	2619.19522	1.00E-03
1237.27079	0.02302	1237.27079	0.01275	2618.71305	1.00E-03
1236.30644	0.02175	1236.30644	0.01224	2618.23087	1.00E-03
1235.34208	0.02049	1235.34208	0.01171	2617.74869	1.00E-03
1234.37772	0.01924	1234.37772	0.01116	2617.26651	1.00E-03
1233.41336	0.01799	1233.41336	0.01061	2616.78433	1.00E-03
1232.449	0.01671	1232.449	0.01008	2616.30215	1.00E-03
1231.48465	0.01546	1231.48465	0.00956	2615.81997	1.00E-03
1230.52029	0.0143	1230.52029	0.00906	2615.33779	0.00101
1229.55593	0.01322	1229.55593	0.00858	2614.85562	0.00101
1228.59157	0.01218	1228.59157	0.00813	2614.37344	0.00101
1227.62722	0.01122	1227.62722	0.00771	2613.89126	1.00E-03
1226.66286	0.01035	1226.66286	0.00731	2613.40908	9.90E-04
1225.6985	0.00955	1225.6985	0.00693	2612.9269	9.80E-04
1224.73414	0.00881	1224.73414	0.00658	2612.44472	9.80E-04
1223.76979	0.00812	1223.76979	0.00625	2611.96254	9.80E-04
1222.80543	0.00753	1222.80543	0.00594	2611.48036	9.90E-04
1221.84107	0.00703	1221.84107	0.00566	2610.99819	1.00E-03
1220.87671	0.00658	1220.87671	0.00541	2610.51601	1.00E-03
1219.91236	0.00615	1219.91236	0.00517	2610.03383	1.00E-03
1218.948	0.00576	1218.948	0.00496	2609.55165	9.90E-04
1217.98364	0.00542	1217.98364	0.00477	2609.06947	9.90E-04
1217.01928	0.0051	1217.01928	0.00461	2608.58729	9.80E-04
1216.05493	0.00481	1216.05493	0.00448	2608.10511	9.90E-04
1215.09057	0.00458	1215.09057	0.00436	2607.62293	9.90E-04
1214.12621	0.00443	1214.12621	0.00426	2607.14075	1.00E-03
1213.16185	0.00434	1213.16185	0.00418	2606.65858	0.00102
1212.1975	0.00426	1212.1975	0.00413	2606.1764	0.00102
1211.23314	0.0042	1211.23314	0.00411	2605.69422	0.00102
1210.26878	0.00421	1210.26878	0.00411	2605.21204	0.00101
1209.30442	0.00427	1209.30442	0.00411	2604.72986	9.90E-04
1208.34007	0.00433	1208.34007	0.00411	2604.24768	9.80E-04
1207.37571	0.00436	1207.37571	0.00409	2603.7655	9.60E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1206.41135	0.00435	1206.41135	0.00405	2603.28332	9.60E-04
1205.44699	0.0043	1205.44699	0.00399	2602.80115	9.70E-04
1204.48263	0.00422	1204.48263	0.00392	2602.31897	9.90E-04
1203.51828	0.00411	1203.51828	0.00384	2601.83679	9.90E-04
1202.55392	0.00396	1202.55392	0.00375	2601.35461	9.90E-04
1201.58956	0.00377	1201.58956	0.00366	2600.87243	9.80E-04
1200.6252	0.0036	1200.6252	0.00357	2600.39025	9.80E-04
1199.66085	0.00341	1199.66085	0.00348	2599.90807	9.80E-04
1198.69649	0.0032	1198.69649	0.00337	2599.42589	9.90E-04
1197.73213	0.00303	1197.73213	0.00328	2598.94372	9.90E-04
1196.76777	0.00292	1196.76777	0.00319	2598.46154	9.80E-04
1195.80342	0.00282	1195.80342	0.00312	2597.97936	9.60E-04
1194.83906	0.00274	1194.83906	0.00308	2597.49718	9.50E-04
1193.8747	0.00267	1193.8747	0.00307	2597.015	9.40E-04
1192.91034	0.00258	1192.91034	0.00308	2596.53282	9.60E-04
1191.94599	0.00252	1191.94599	0.0031	2596.05064	9.80E-04
1190.98163	0.00255	1190.98163	0.00312	2595.56846	0.00102
1190.01727	0.00259	1190.01727	0.00313	2595.08628	0.00104
1189.05291	0.00259	1189.05291	0.00313	2594.60411	0.00104
1188.08856	0.00257	1188.08856	0.00313	2594.12193	0.00102
1187.1242	0.00259	1187.1242	0.00315	2593.63975	1.00E-03
1186.15984	0.00265	1186.15984	0.00317	2593.15757	9.80E-04
1185.19548	0.00275	1185.19548	0.00321	2592.67539	9.60E-04
1184.23113	0.00288	1184.23113	0.00326	2592.19321	9.70E-04
1183.26677	0.00306	1183.26677	0.00333	2591.71103	9.80E-04
1182.30241	0.00329	1182.30241	0.00341	2591.22885	9.90E-04
1181.33805	0.00358	1181.33805	0.00352	2590.74668	1.00E-03
1180.37369	0.00392	1180.37369	0.00367	2590.2645	1.00E-03
1179.40934	0.00438	1179.40934	0.00386	2589.78232	1.00E-03
1178.44498	0.00497	1178.44498	0.00411	2589.30014	9.90E-04
1177.48062	0.00566	1177.48062	0.00441	2588.81796	9.90E-04
1176.51626	0.00642	1176.51626	0.00478	2588.33578	1.00E-03
1175.55191	0.00726	1175.55191	0.00521	2587.8536	9.90E-04
1174.58755	0.00816	1174.58755	0.00566	2587.37142	9.80E-04
1173.62319	0.00908	1173.62319	0.00609	2586.88925	9.60E-04
1172.65883	0.00991	1172.65883	0.00647	2586.40707	9.40E-04
1171.69448	0.01056	1171.69448	0.00676	2585.92489	9.20E-04
1170.73012	0.01103	1170.73012	0.00694	2585.44271	9.20E-04
1169.76576	0.01128	1169.76576	0.00698	2584.96053	9.30E-04
1168.8014	0.01117	1168.8014	0.00686	2584.47835	9.60E-04
1167.83705	0.01068	1167.83705	0.00663	2583.99617	9.80E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1166.87269	0.00993	1166.87269	0.00632	2583.51399	9.80E-04
1165.90833	0.00908	1165.90833	0.00593	2583.03182	9.80E-04
1164.94397	0.00827	1164.94397	0.00552	2582.54964	9.70E-04
1163.97962	0.00759	1163.97962	0.00515	2582.06746	9.50E-04
1163.01526	0.00705	1163.01526	0.00486	2581.58528	9.40E-04
1162.0509	0.00657	1162.0509	0.00466	2581.1031	9.40E-04
1161.08654	0.00625	1161.08654	0.00456	2580.62092	9.50E-04
1160.12219	0.00636	1160.12219	0.00465	2580.13874	9.50E-04
1159.15783	0.00707	1159.15783	0.00498	2579.65656	9.50E-04
1158.19347	0.00836	1158.19347	0.00557	2579.17438	9.40E-04
1157.22911	0.01018	1157.22911	0.00639	2578.69221	9.30E-04
1156.26475	0.01234	1156.26475	0.00736	2578.21003	9.20E-04
1155.3004	0.01451	1155.3004	0.00836	2577.72785	9.00E-04
1154.33604	0.01629	1154.33604	0.00923	2577.24567	8.80E-04
1153.37168	0.01745	1153.37168	0.00983	2576.76349	8.80E-04
1152.40732	0.01799	1152.40732	0.0101	2576.28131	8.80E-04
1151.44297	0.01793	1151.44297	0.01007	2575.79913	8.90E-04
1150.47861	0.01733	1150.47861	0.0098	2575.31695	9.10E-04
1149.51425	0.01636	1149.51425	0.00935	2574.83478	9.40E-04
1148.54989	0.01509	1148.54989	0.00877	2574.3526	9.50E-04
1147.58554	0.01354	1147.58554	0.00813	2573.87042	9.50E-04
1146.62118	0.01188	1146.62118	0.00747	2573.38824	9.40E-04
1145.65682	0.01034	1145.65682	0.0068	2572.90606	9.20E-04
1144.69246	0.00898	1144.69246	0.00617	2572.42388	9.10E-04
1143.72811	0.00785	1143.72811	0.00562	2571.9417	9.00E-04
1142.76375	0.00699	1142.76375	0.00517	2571.45952	9.00E-04
1141.79939	0.00623	1141.79939	0.00477	2570.97735	9.10E-04
1140.83503	0.0055	1140.83503	0.00438	2570.49517	9.20E-04
1139.87068	0.00501	1139.87068	0.00403	2570.01299	9.20E-04
1138.90632	0.00477	1138.90632	0.00375	2569.53081	9.20E-04
1137.94196	0.00453	1137.94196	0.00354	2569.04863	9.20E-04
1136.9776	0.00425	1136.9776	0.00341	2568.56645	9.10E-04
1136.01325	0.00404	1136.01325	0.00337	2568.08427	9.20E-04
1135.04889	0.00394	1135.04889	0.00339	2567.60209	9.20E-04
1134.08453	0.00389	1134.08453	0.00342	2567.11991	9.30E-04
1133.12017	0.00381	1133.12017	0.00347	2566.63774	9.40E-04
1132.15582	0.00368	1132.15582	0.00353	2566.15556	9.40E-04
1131.19146	0.00365	1131.19146	0.00361	2565.67338	9.30E-04
1130.2271	0.00379	1130.2271	0.00373	2565.1912	9.30E-04
1129.26274	0.00389	1129.26274	0.00388	2564.70902	9.40E-04
1128.29838	0.00386	1128.29838	0.00401	2564.22684	9.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1127.33403	0.00393	1127.33403	0.00408	2563.74466	9.60E-04
1126.36967	0.00418	1126.36967	0.00411	2563.26248	9.70E-04
1125.40531	0.00435	1125.40531	0.0041	2562.78031	9.80E-04
1124.44095	0.00426	1124.44095	0.00406	2562.29813	9.80E-04
1123.4766	0.00405	1123.4766	0.00402	2561.81595	9.80E-04
1122.51224	0.004	1122.51224	0.00406	2561.33377	9.80E-04
1121.54788	0.00419	1121.54788	0.00419	2560.85159	9.70E-04
1120.58352	0.00442	1120.58352	0.00434	2560.36941	9.60E-04
1119.61917	0.00461	1119.61917	0.00448	2559.88723	9.50E-04
1118.65481	0.00494	1118.65481	0.00461	2559.40505	9.50E-04
1117.69045	0.00541	1117.69045	0.00473	2558.92288	9.40E-04
1116.72609	0.00587	1116.72609	0.00487	2558.4407	9.40E-04
1115.76174	0.0063	1115.76174	0.00506	2557.95852	9.30E-04
1114.79738	0.00687	1114.79738	0.00534	2557.47634	9.30E-04
1113.83302	0.00768	1113.83302	0.00571	2556.99416	9.40E-04
1112.86866	0.00868	1112.86866	0.00619	2556.51198	9.40E-04
1111.90431	0.00975	1111.90431	0.00676	2556.0298	9.50E-04
1110.93995	0.01093	1110.93995	0.0074	2555.54762	9.60E-04
1109.97559	0.01217	1109.97559	0.00803	2555.06544	9.50E-04
1109.01123	0.01325	1109.01123	0.00859	2554.58327	9.20E-04
1108.04688	0.01398	1108.04688	0.00902	2554.10109	8.90E-04
1107.08252	0.01436	1107.08252	0.00923	2553.61891	8.80E-04
1106.11816	0.01439	1106.11816	0.00918	2553.13673	8.70E-04
1105.1538	0.01392	1105.1538	0.00892	2552.65455	8.80E-04
1104.18944	0.01302	1104.18944	0.0085	2552.17237	9.00E-04
1103.22509	0.01204	1103.22509	0.00801	2551.69019	9.20E-04
1102.26073	0.01107	1102.26073	0.00749	2551.20801	9.30E-04
1101.29637	0.01	1101.29637	0.00698	2550.72584	9.30E-04
1100.33201	0.00897	1100.33201	0.00649	2550.24366	9.30E-04
1099.36766	0.00817	1099.36766	0.00601	2549.76148	9.30E-04
1098.4033	0.00751	1098.4033	0.00557	2549.2793	9.30E-04
1097.43894	0.00691	1097.43894	0.0052	2548.79712	9.40E-04
1096.47458	0.00633	1096.47458	0.00488	2548.31494	9.40E-04
1095.51023	0.00574	1095.51023	0.00459	2547.83276	9.40E-04
1094.54587	0.00522	1094.54587	0.00432	2547.35058	9.30E-04
1093.58151	0.00477	1093.58151	0.00408	2546.86841	9.20E-04
1092.61715	0.00439	1092.61715	0.00391	2546.38623	9.10E-04
1091.6528	0.00417	1091.6528	0.00382	2545.90405	9.00E-04
1090.68844	0.00409	1090.68844	0.00381	2545.42187	8.90E-04
1089.72408	0.00409	1089.72408	0.00383	2544.93969	8.90E-04
1088.75972	0.00408	1088.75972	0.00383	2544.45751	8.90E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1087.79537	0.00399	1087.79537	0.00379	2543.97533	9.00E-04
1086.83101	0.00397	1086.83101	0.00374	2543.49315	9.00E-04
1085.86665	0.00409	1085.86665	0.00372	2543.01097	9.10E-04
1084.90229	0.0042	1084.90229	0.00374	2542.5288	9.10E-04
1083.93794	0.00437	1083.93794	0.00383	2542.04662	9.10E-04
1082.97358	0.00471	1082.97358	0.00398	2541.56444	9.10E-04
1082.00922	0.00499	1082.00922	0.0041	2541.08226	9.10E-04
1081.04486	0.00493	1081.04486	0.00416	2540.60008	9.10E-04
1080.08051	0.00464	1080.08051	0.00412	2540.1179	9.10E-04
1079.11615	0.00436	1079.11615	0.00403	2539.63572	9.20E-04
1078.15179	0.00416	1078.15179	0.00391	2539.15354	9.30E-04
1077.18743	0.00407	1077.18743	0.00381	2538.67137	9.40E-04
1076.22307	0.00402	1076.22307	0.00376	2538.18919	9.30E-04
1075.25872	0.00391	1075.25872	0.00375	2537.70701	9.10E-04
1074.29436	0.00375	1074.29436	0.00373	2537.22483	9.00E-04
1073.33	0.0035	1073.33	0.00365	2536.74265	8.90E-04
1072.36564	0.00315	1072.36564	0.00349	2536.26047	8.80E-04
1071.40129	0.00279	1071.40129	0.00328	2535.77829	8.80E-04
1070.43693	0.0025	1070.43693	0.00306	2535.29611	8.80E-04
1069.47257	0.00222	1069.47257	0.0029	2534.81394	8.90E-04
1068.50821	0.00198	1068.50821	0.00277	2534.33176	9.00E-04
1067.54386	0.00182	1067.54386	0.00268	2533.84958	9.10E-04
1066.5795	0.0017	1066.5795	0.0026	2533.3674	9.20E-04
1065.61514	0.00158	1065.61514	0.00253	2532.88522	9.20E-04
1064.65078	0.00148	1064.65078	0.00245	2532.40304	9.20E-04
1063.68643	0.00141	1063.68643	0.00234	2531.92086	9.10E-04
1062.72207	0.00131	1062.72207	0.00224	2531.43868	8.90E-04
1061.75771	0.00124	1061.75771	0.00215	2530.9565	8.80E-04
1060.79335	0.00118	1060.79335	0.00203	2530.47433	8.80E-04
1059.829	0.00114	1059.829	0.00187	2529.99215	8.90E-04
1058.86464	0.00111	1058.86464	0.00174	2529.50997	8.90E-04
1057.90028	0.00105	1057.90028	0.00165	2529.02779	8.90E-04
1056.93592	9.40E-04	1056.93592	0.0016	2528.54561	9.00E-04
1055.97157	8.40E-04	1055.97157	0.00158	2528.06343	9.10E-04
1055.00721	7.40E-04	1055.00721	0.00161	2527.58125	9.20E-04
1054.04285	6.30E-04	1054.04285	0.00167	2527.09907	9.20E-04
1053.07849	6.30E-04	1053.07849	0.00172	2526.6169	9.30E-04
1052.11413	7.40E-04	1052.11413	0.00174	2526.13472	9.30E-04
1051.14978	7.90E-04	1051.14978	0.00171	2525.65254	9.20E-04
1050.18542	7.20E-04	1050.18542	0.00167	2525.17036	9.10E-04
1049.22106	6.80E-04	1049.22106	0.00164	2524.68818	9.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1048.2567	6.80E-04	1048.2567	0.00164	2524.206	9.10E-04
1047.29235	5.80E-04	1047.29235	0.00165	2523.72382	9.10E-04
1046.32799	4.30E-04	1046.32799	0.00167	2523.24164	9.10E-04
1045.36363	3.60E-04	1045.36363	0.0017	2522.75947	9.10E-04
1044.39927	3.80E-04	1044.39927	0.00171	2522.27729	9.10E-04
1043.43492	4.70E-04	1043.43492	0.00169	2521.79511	9.00E-04
1042.47056	5.30E-04	1042.47056	0.00165	2521.31293	8.90E-04
1041.5062	4.60E-04	1041.5062	0.00161	2520.83075	8.80E-04
1040.54184	3.50E-04	1040.54184	0.00159	2520.34857	8.70E-04
1039.57749	3.40E-04	1039.57749	0.00157	2519.86639	8.60E-04
1038.61313	3.70E-04	1038.61313	0.00154	2519.38421	8.50E-04
1037.64877	3.90E-04	1037.64877	0.00153	2518.90204	8.40E-04
1036.68441	4.40E-04	1036.68441	0.00154	2518.41986	8.30E-04
1035.72006	4.50E-04	1035.72006	0.00155	2517.93768	8.30E-04
1034.7557	4.00E-04	1034.7557	0.00153	2517.4555	8.40E-04
1033.79134	4.10E-04	1033.79134	0.00149	2516.97332	8.60E-04
1032.82698	4.30E-04	1032.82698	0.00144	2516.49114	8.80E-04
1031.86263	3.70E-04	1031.86263	0.0014	2516.00896	9.00E-04
1030.89827	2.90E-04	1030.89827	0.00135	2515.52678	9.10E-04
1029.93391	2.80E-04	1029.93391	0.00132	2515.0446	9.30E-04
1028.96955	3.10E-04	1028.96955	0.00128	2514.56243	9.40E-04
1028.0052	3.00E-04	1028.0052	0.00126	2514.08025	9.50E-04
1027.04084	2.00E-04	1027.04084	0.00124	2513.59807	9.50E-04
1026.07648	1.20E-04	1026.07648	0.00122	2513.11589	9.20E-04
1025.11212	1.60E-04	1025.11212	0.0012	2512.63371	8.90E-04
1024.14776	2.60E-04	1024.14776	0.00119	2512.15153	8.60E-04
1023.18341	3.50E-04	1023.18341	0.00118	2511.66935	8.40E-04
1022.21905	4.80E-04	1022.21905	0.00118	2511.18717	8.40E-04
1021.25469	7.50E-04	1021.25469	0.00122	2510.705	8.50E-04
1020.29033	0.00107	1020.29033	0.00135	2510.22282	8.60E-04
1019.32598	0.00139	1019.32598	0.00158	2509.74064	8.60E-04
1018.36162	0.00189	1018.36162	0.00187	2509.25846	8.50E-04
1017.39726	0.00256	1017.39726	0.00219	2508.77628	8.40E-04
1016.4329	0.00325	1016.4329	0.00251	2508.2941	8.20E-04
1015.46855	0.00374	1015.46855	0.00274	2507.81192	8.30E-04
1014.50419	0.0039	1014.50419	0.00285	2507.32974	8.40E-04
1013.53983	0.00371	1013.53983	0.00282	2506.84757	8.60E-04
1012.57547	0.00331	1012.57547	0.00268	2506.36539	8.70E-04
1011.61112	0.00293	1011.61112	0.00244	2505.88321	8.80E-04
1010.64676	0.00256	1010.64676	0.00213	2505.40103	8.80E-04
1009.6824	0.00214	1009.6824	0.0018	2504.91885	8.70E-04



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1008.71804	0.00182	1008.71804	0.00148	2504.43667	8.60E-04
1007.75369	0.00155	1007.75369	0.00121	2503.95449	8.50E-04
1006.78933	0.00125	1006.78933	9.90E-04	2503.47231	8.50E-04
1005.82497	0.00102	1005.82497	8.40E-04	2502.99013	8.40E-04
1004.86061	9.10E-04	1004.86061	7.60E-04	2502.50796	8.40E-04
1003.89626	8.10E-04	1003.89626	7.40E-04	2502.02578	8.40E-04
1002.9319	7.80E-04	1002.9319	7.20E-04	2501.5436	8.40E-04
1001.96754	9.20E-04	1001.96754	6.70E-04	2501.06142	8.40E-04
1001.00318	0.00104	1001.00318	5.70E-04	2500.57924	8.30E-04
1000.03882	0.00101	1000.03882	4.90E-04	2500.09706	8.30E-04
999.07447	9.80E-04	999.07447	4.50E-04	2499.61488	8.30E-04
998.11011	0.00101	998.11011	4.80E-04	2499.1327	8.40E-04
997.14575	0.00102	997.14575	5.80E-04	2498.65053	8.40E-04
996.18139	0.00103	996.18139	6.70E-04	2498.16835	8.40E-04
995.21704	0.00101	995.21704	6.90E-04	2497.68617	8.40E-04
994.25268	9.20E-04	994.25268	6.10E-04	2497.20399	8.40E-04
993.28832	9.30E-04	993.28832	5.00E-04	2496.72181	8.30E-04
992.32396	0.00114	992.32396	4.20E-04	2496.23963	8.30E-04
991.35961	0.00134	991.35961	4.10E-04	2495.75745	8.30E-04
990.39525	0.00146	990.39525	4.70E-04	2495.27527	8.30E-04
989.43089	0.00152	989.43089	5.60E-04	2494.7931	8.40E-04
988.46653	0.00154	988.46653	6.30E-04	2494.31092	8.50E-04
987.50218	0.00163	987.50218	6.40E-04	2493.82874	8.50E-04
986.53782	0.00178	986.53782	6.00E-04	2493.34656	8.40E-04
985.57346	0.00195	985.57346	5.50E-04	2492.86438	8.20E-04
984.6091	0.00211	984.6091	5.40E-04	2492.3822	8.00E-04
983.64475	0.00211	983.64475	5.70E-04	2491.90002	7.80E-04
982.68039	0.00186	982.68039	6.20E-04	2491.41784	7.70E-04
981.71603	0.00162	981.71603	6.50E-04	2490.93566	7.70E-04
980.75167	0.0017	980.75167	6.20E-04	2490.45349	7.80E-04
979.78732	0.00208	979.78732	5.50E-04	2489.97131	7.90E-04
978.82296	0.0025	978.82296	5.10E-04	2489.48913	8.00E-04
977.8586	0.00273	977.8586	5.30E-04	2489.00695	8.00E-04
976.89424	0.00281	976.89424	6.10E-04	2488.52477	7.90E-04
975.92988	0.00289	975.92988	7.10E-04	2488.04259	7.80E-04
974.96553	0.00301	974.96553	8.10E-04	2487.56041	7.70E-04
974.00117	0.00311	974.00117	8.50E-04	2487.07823	7.70E-04
973.03681	0.00314	973.03681	7.80E-04	2486.59606	7.80E-04
972.07245	0.00307	972.07245	6.80E-04	2486.11388	8.00E-04
971.1081	0.00298	971.1081	6.00E-04	2485.6317	8.10E-04
970.14374	0.0031	970.14374	5.30E-04	2485.14952	8.20E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
969.17938	0.00339	969.17938	5.00E-04	2484.66734	8.20E-04
968.21502	0.00347	968.21502	5.10E-04	2484.18516	8.10E-04
967.25067	0.00332	967.25067	5.20E-04	2483.70298	8.00E-04
966.28631	0.00322	966.28631	5.20E-04	2483.2208	7.90E-04
965.32195	0.00328	965.32195	5.20E-04	2482.73863	7.90E-04
964.35759	0.00346	964.35759	6.00E-04	2482.25645	7.90E-04
963.39324	0.0036	963.39324	7.40E-04	2481.77427	7.90E-04
962.42888	0.00358	962.42888	8.60E-04	2481.29209	8.10E-04
961.46452	0.00345	961.46452	9.90E-04	2480.80991	8.10E-04
960.50016	0.0033	960.50016	0.00117	2480.32773	8.10E-04
959.53581	0.00316	959.53581	0.0013	2479.84555	8.00E-04
958.57145	0.00314	958.57145	0.00131	2479.36337	7.90E-04
957.60709	0.00339	957.60709	0.00127	2478.88119	7.80E-04
956.64273	0.00363	956.64273	0.00125	2478.39902	7.80E-04
955.67838	0.00357	955.67838	0.00127	2477.91684	7.90E-04
954.71402	0.00346	954.71402	0.00124	2477.43466	8.10E-04
953.74966	0.00355	953.74966	0.00118	2476.95248	8.10E-04
952.7853	0.00364	952.7853	0.00109	2476.4703	8.10E-04
951.82095	0.00363	951.82095	9.70E-04	2475.98812	8.10E-04
950.85659	0.0036	950.85659	8.20E-04	2475.50594	8.00E-04
949.89223	0.0035	949.89223	7.30E-04	2475.02376	7.80E-04
948.92787	0.00342	948.92787	7.60E-04	2474.54159	7.70E-04
947.96351	0.00339	947.96351	8.50E-04	2474.05941	7.70E-04
946.99916	0.0034	946.99916	9.40E-04	2473.57723	7.80E-04
946.0348	0.00351	946.0348	9.90E-04	2473.09505	7.90E-04
945.07044	0.00349	945.07044	9.40E-04	2472.61287	8.10E-04
944.10608	0.00315	944.10608	8.30E-04	2472.13069	8.20E-04
943.14173	0.00282	943.14173	7.20E-04	2471.64851	8.20E-04
942.17737	0.0029	942.17737	7.10E-04	2471.16633	8.10E-04
941.21301	0.00324	941.21301	8.10E-04	2470.68416	8.00E-04
940.24865	0.00338	940.24865	9.40E-04	2470.20198	8.00E-04
939.2843	0.00337	939.2843	0.00106	2469.7198	8.00E-04
938.31994	0.00348	938.31994	0.00116	2469.23762	8.20E-04
937.35558	0.00368	937.35558	0.0012	2468.75544	8.30E-04
936.39122	0.00378	936.39122	0.00113	2468.27326	8.40E-04
935.42687	0.0036	935.42687	0.00102	2467.79108	8.50E-04
934.46251	0.00327	934.46251	9.70E-04	2467.3089	8.60E-04
933.49815	0.00323	933.49815	0.00104	2466.82672	8.70E-04
932.53379	0.0035	932.53379	0.0011	2466.34455	8.60E-04
931.56944	0.00388	931.56944	0.00113	2465.86237	8.50E-04
930.60508	0.00427	930.60508	0.00122	2465.38019	8.40E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
929.64072	0.00451	929.64072	0.00136	2464.89801	8.30E-04
928.67636	0.00462	928.67636	0.00138	2464.41583	8.10E-04
927.71201	0.00476	927.71201	0.00124	2463.93365	7.90E-04
926.74765	0.00482	926.74765	0.0011	2463.45147	7.70E-04
925.78329	0.00482	925.78329	0.00115	2462.96929	7.70E-04
924.81893	0.00483	924.81893	0.00126	2462.48712	7.70E-04
923.85457	0.00483	923.85457	0.00138	2462.00494	7.90E-04
922.89022	0.00492	922.89022	0.00155	2461.52276	8.10E-04
921.92586	0.00523	921.92586	0.00176	2461.04058	8.20E-04
920.9615	0.00539	920.9615	0.00188	2460.5584	8.20E-04
919.99714	0.0051	919.99714	0.00187	2460.07622	8.00E-04
919.03279	0.00487	919.03279	0.00187	2459.59404	7.70E-04
918.06843	0.00508	918.06843	0.00202	2459.11186	7.50E-04
917.10407	0.00556	917.10407	0.00226	2458.62969	7.50E-04
916.13971	0.00639	916.13971	0.00239	2458.14751	7.60E-04
915.17536	0.00727	915.17536	0.00232	2457.66533	7.90E-04
914.211	0.00761	914.211	0.00205	2457.18315	8.20E-04
913.24664	0.00771	913.24664	0.00184	2456.70097	8.50E-04
912.28228	0.00806	912.28228	0.00187	2456.21879	8.50E-04
911.31793	0.00828	911.31793	0.00206	2455.73661	8.30E-04
910.35357	0.00819	910.35357	0.00235	2455.25443	8.10E-04
909.38921	0.00839	909.38921	0.0027	2454.77226	7.90E-04
908.42485	0.00883	908.42485	0.00296	2454.29008	7.80E-04
907.4605	0.00888	907.4605	0.00286	2453.8079	7.80E-04
906.49614	0.00865	906.49614	0.00243	2453.32572	8.00E-04
905.53178	0.00872	905.53178	0.00205	2452.84354	8.10E-04
904.56742	0.00887	904.56742	0.00196	2452.36136	8.20E-04
903.60307	0.00863	903.60307	0.00215	2451.87918	8.10E-04
902.63871	0.00834	902.63871	0.00249	2451.397	8.00E-04
901.67435	0.00825	901.67435	0.00286	2450.91482	7.90E-04
900.70999	0.00827	900.70999	0.0031	2450.43265	7.70E-04
899.74564	0.00838	899.74564	0.00313	2449.95047	7.50E-04
898.78128	0.00825	898.78128	0.00302	2449.46829	7.40E-04
897.81692	0.00783	897.81692	0.0029	2448.98611	7.40E-04
896.85256	0.00773	896.85256	0.00282	2448.50393	7.50E-04
895.8882	0.00799	895.8882	0.00276	2448.02175	7.60E-04
894.92385	0.00801	894.92385	0.00264	2447.53957	7.70E-04
893.95949	0.00793	893.95949	0.00244	2447.05739	7.80E-04
892.99513	0.00817	892.99513	0.00227	2446.57522	7.80E-04
892.03077	0.00857	892.03077	0.00214	2446.09304	7.70E-04
891.06642	0.0087	891.06642	0.00208	2445.61086	7.80E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
890.10206	0.00862	890.10206	0.00213	2445.12868	7.80E-04
889.1377	0.00876	889.1377	0.00241	2444.6465	7.80E-04
888.17334	0.00902	888.17334	0.00288	2444.16432	7.80E-04
887.20899	0.00924	887.20899	0.00333	2443.68214	7.90E-04
886.24463	0.00949	886.24463	0.00362	2443.19996	8.00E-04
885.28027	0.00963	885.28027	0.00362	2442.71779	8.10E-04
884.31591	0.00978	884.31591	0.00315	2442.23561	8.10E-04
883.35156	0.00979	883.35156	0.00231	2441.75343	8.00E-04
882.3872	0.00946	882.3872	0.00152	2441.27125	7.80E-04
881.42284	0.00949	881.42284	0.00112	2440.78907	7.60E-04
880.45848	0.01033	880.45848	0.00117	2440.30689	7.60E-04
879.49413	0.01114	879.49413	0.00163	2439.82471	7.70E-04
878.52977	0.01113	878.52977	0.00239	2439.34253	8.00E-04
877.56541	0.01073	877.56541	0.00328	2438.86035	8.30E-04
876.60105	0.01074	876.60105	0.00401	2438.37818	8.50E-04
875.6367	0.0112	875.6367	0.00447	2437.896	8.40E-04
874.67234	0.0115	874.67234	0.00472	2437.41382	8.10E-04
873.70798	0.01159	873.70798	0.00473	2436.93164	7.80E-04
872.74362	0.01158	872.74362	0.00452	2436.44946	7.60E-04
871.77926	0.01124	871.77926	0.00419	2435.96728	7.50E-04
870.81491	0.01084	870.81491	0.00377	2435.4851	7.40E-04
869.85055	0.01039	869.85055	0.0033	2435.00292	7.30E-04
868.88619	0.00935	868.88619	0.00283	2434.52075	7.30E-04
867.92183	0.0082	867.92183	0.00243	2434.03857	7.10E-04
866.95748	0.00789	866.95748	0.00229	2433.55639	6.90E-04
865.99312	0.00844	865.99312	0.00258	2433.07421	6.80E-04
865.02876	0.00903	865.02876	0.00323	2432.59203	6.80E-04
864.0644	0.00913	864.0644	0.00393	2432.10985	7.00E-04
863.10005	0.00888	863.10005	0.00429	2431.62767	7.10E-04
862.13569	0.00856	862.13569	0.0042	2431.14549	7.20E-04
861.17133	0.00832	861.17133	0.00381	2430.66332	7.20E-04
860.20697	0.00818	860.20697	0.00332	2430.18114	7.20E-04
859.24262	0.00809	859.24262	0.00298	2429.69896	7.10E-04
858.27826	0.00819	858.27826	0.00308	2429.21678	7.10E-04
857.3139	0.00831	857.3139	0.00355	2428.7346	7.10E-04
856.34954	0.00812	856.34954	0.00404	2428.25242	7.20E-04
855.38519	0.00783	855.38519	0.0043	2427.77024	7.30E-04
854.42083	0.00789	854.42083	0.00437	2427.28806	7.10E-04
853.45647	0.00827	853.45647	0.00439	2426.80588	7.00E-04
852.49211	0.00839	852.49211	0.00437	2426.32371	7.00E-04
851.52776	0.00793	851.52776	0.00422	2425.84153	7.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
850.5634	0.00743	850.5634	0.00391	2425.35935	7.40E-04
849.59904	0.00739	849.59904	0.00356	2424.87717	7.60E-04
848.63468	0.00739	848.63468	0.0033	2424.39499	7.70E-04
847.67032	0.00664	847.67032	0.00317	2423.91281	7.80E-04
846.70597	0.00555	846.70597	0.00318	2423.43063	7.80E-04
845.74161	0.00536	845.74161	0.00332	2422.94845	7.70E-04
844.77725	0.00596	844.77725	0.00344	2422.46628	7.60E-04
843.81289	0.00649	843.81289	0.00341	2421.9841	7.60E-04
842.84854	0.00674	842.84854	0.00338	2421.50192	7.50E-04
841.88418	0.00688	841.88418	0.00367	2421.01974	7.40E-04
840.91982	0.00715	840.91982	0.00437	2420.53756	7.30E-04
839.95546	0.00747	839.95546	0.00523	2420.05538	7.30E-04
838.99111	0.00763	838.99111	0.00598	2419.5732	7.40E-04
838.02675	0.00779	838.02675	0.00646	2419.09102	7.50E-04
837.06239	0.00812	837.06239	0.00662	2418.60885	7.60E-04
836.09803	0.00855	836.09803	0.00649	2418.12667	7.60E-04
835.13368	0.0088	835.13368	0.00628	2417.64449	7.50E-04
834.16932	0.00883	834.16932	0.00618	2417.16231	7.40E-04
833.20496	0.00902	833.20496	0.00618	2416.68013	7.30E-04
832.2406	0.00919	832.2406	0.00618	2416.19795	7.20E-04
831.27625	0.00906	831.27625	0.00605	2415.71577	7.10E-04
830.31189	0.00906	830.31189	0.00567	2415.23359	7.10E-04
829.34753	0.00907	829.34753	0.00503	2414.75141	7.10E-04
828.38317	0.00868	828.38317	0.00421	2414.26924	7.10E-04
827.41882	0.00839	827.41882	0.00345	2413.78706	7.10E-04
826.45446	0.0086	826.45446	0.00293	2413.30488	7.00E-04
825.4901	0.00865	825.4901	0.00268	2412.8227	6.90E-04
824.52574	0.00805	824.52574	0.00267	2412.34052	6.90E-04
823.56139	0.0074	823.56139	0.00281	2411.85834	7.00E-04
822.59703	0.0074	822.59703	0.00289	2411.37616	7.00E-04
821.63267	0.00789	821.63267	0.00284	2410.89398	7.00E-04
820.66831	0.00812	820.66831	0.00261	2410.41181	6.90E-04
819.70395	0.00789	819.70395	0.00232	2409.92963	6.90E-04
818.7396	0.0077	818.7396	0.00224	2409.44745	6.90E-04
817.77524	0.00767	817.77524	0.00243	2408.96527	7.00E-04
816.81088	0.00779	816.81088	0.00279	2408.48309	7.10E-04
815.84652	0.00806	815.84652	0.00316	2408.00091	7.10E-04
814.88217	0.00789	814.88217	0.00331	2407.51873	7.10E-04
813.91781	0.00722	813.91781	0.00313	2407.03655	7.20E-04
812.95345	0.00664	812.95345	0.00263	2406.55438	7.10E-04
811.98909	0.00626	811.98909	0.00211	2406.0722	7.00E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
811.02474	0.00615	811.02474	0.0019	2405.59002	6.90E-04
810.06038	0.00645	810.06038	0.00188	2405.10784	6.90E-04
809.09602	0.00682	809.09602	0.00179	2404.62566	6.80E-04
808.13166	0.00688	808.13166	0.00173	2404.14348	6.70E-04
807.16731	0.00659	807.16731	0.00175	2403.6613	6.60E-04
806.20295	0.0062	806.20295	0.00183	2403.17912	6.60E-04
805.23859	0.00603	805.23859	0.002	2402.69694	6.70E-04
804.27423	0.00579	804.27423	0.0024	2402.21477	6.70E-04
803.30988	0.00515	803.30988	0.00288	2401.73259	6.80E-04
802.34552	0.00457	802.34552	0.00311	2401.25041	6.90E-04
801.38116	0.0045	801.38116	0.00301	2400.76823	6.90E-04
800.4168	0.00469	800.4168	0.00277	2400.28605	6.90E-04
799.45245	0.00489	799.45245	0.00252	2399.80387	6.90E-04
798.48809	0.00511	798.48809	0.00225	2399.32169	6.90E-04
797.52373	0.0055	797.52373	0.00209	2398.83951	6.90E-04
796.55937	0.00597	796.55937	0.0022	2398.35734	7.10E-04
795.59501	0.00641	795.59501	0.00264	2397.87516	7.20E-04
794.63066	0.00685	794.63066	0.00334	2397.39298	7.20E-04
793.6663	0.00713	793.6663	0.00405	2396.9108	7.00E-04
792.70194	0.00718	792.70194	0.00441	2396.42862	6.90E-04
791.73758	0.00703	791.73758	0.00423	2395.94644	6.70E-04
790.77323	0.00657	790.77323	0.00356	2395.46426	6.70E-04
789.80887	0.0061	789.80887	0.00275	2394.98208	6.80E-04
788.84451	0.00629	788.84451	0.00221	2394.49991	6.90E-04
787.88015	0.00688	787.88015	0.00222	2394.01773	7.00E-04
786.9158	0.00683	786.9158	0.00265	2393.53555	7.00E-04
785.95144	0.00639	785.95144	0.00307	2393.05337	6.90E-04
784.98708	0.00661	784.98708	0.00325	2392.57119	6.80E-04
784.02272	0.00692	784.02272	0.00329	2392.08901	6.80E-04
783.05837	0.00676	783.05837	0.00319	2391.60683	6.70E-04
782.09401	0.0067	782.09401	0.00293	2391.12465	6.70E-04
781.12965	0.00681	781.12965	0.00268	2390.64248	6.70E-04
780.16529	0.00679	780.16529	0.00264	2390.1603	6.70E-04
779.20094	0.00692	779.20094	0.00282	2389.67812	6.80E-04
778.23658	0.00728	778.23658	0.00303	2389.19594	6.80E-04
777.27222	0.0072	777.27222	0.00319	2388.71376	6.90E-04
776.30786	0.0065	776.30786	0.00336	2388.23158	7.00E-04
775.34351	0.00597	775.34351	0.0034	2387.7494	7.10E-04
774.37915	0.00611	774.37915	0.00307	2387.26722	7.00E-04
773.41479	0.00638	773.41479	0.0025	2386.78504	6.90E-04
772.45043	0.00639	772.45043	0.00213	2386.30287	6.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
771.48608	0.00656	771.48608	0.00225	2385.82069	6.50E-04
770.52172	0.00698	770.52172	0.00286	2385.33851	6.40E-04
769.55736	0.00723	769.55736	0.00366	2384.85633	6.30E-04
768.593	0.00713	768.593	0.00433	2384.37415	6.30E-04
767.62864	0.00696	767.62864	0.00455	2383.89197	6.30E-04
766.66429	0.00724	766.66429	0.00419	2383.40979	6.30E-04
765.69993	0.00766	765.69993	0.00357	2382.92761	6.30E-04
764.73557	0.00753	764.73557	0.00312	2382.44544	6.10E-04
763.77121	0.00714	763.77121	0.00304	2381.96326	5.90E-04
762.80686	0.00737	762.80686	0.00331	2381.48108	5.80E-04
761.8425	0.00826	761.8425	0.00389	2380.9989	5.80E-04
760.87814	0.00839	760.87814	0.00456	2380.51672	6.00E-04
759.91378	0.00734	759.91378	0.00479	2380.03454	6.30E-04
758.94943	0.00675	758.94943	0.00448	2379.55236	6.40E-04
757.98507	0.00725	757.98507	0.00413	2379.07018	6.30E-04
757.02071	0.00782	757.02071	0.00406	2378.58801	6.10E-04
756.05635	0.00825	756.05635	0.00406	2378.10583	5.80E-04
755.092	0.00859	755.092	0.00397	2377.62365	5.80E-04
754.12764	0.00843	754.12764	0.00384	2377.14147	6.00E-04
753.16328	0.0082	753.16328	0.00376	2376.65929	6.40E-04
752.19892	0.00847	752.19892	0.00368	2376.17711	6.60E-04
751.23457	0.00852	751.23457	0.00373	2375.69493	6.30E-04
750.27021	0.00809	750.27021	0.00412	2375.21275	5.90E-04
749.30585	0.00799	749.30585	0.00478	2374.73057	5.70E-04
748.34149	0.00811	748.34149	0.00548	2374.2484	5.70E-04
747.37714	0.00792	747.37714	0.00605	2373.76622	5.80E-04
746.41278	0.00818	746.41278	0.00636	2373.28404	6.20E-04
745.44842	0.00924	745.44842	0.00635	2372.80186	6.70E-04
744.48406	0.00981	744.48406	0.00613	2372.31968	7.10E-04
743.5197	0.00913	743.5197	0.00578	2371.8375	7.30E-04
742.55535	0.00802	742.55535	0.00531	2371.35532	7.20E-04
741.59099	0.00744	741.59099	0.00477	2370.87314	7.00E-04
740.62663	0.00783	740.62663	0.00417	2370.39097	6.80E-04
739.66227	0.00918	739.66227	0.00376	2369.90879	6.30E-04
738.69792	0.01056	738.69792	0.00372	2369.42661	5.90E-04
737.73356	0.01075	737.73356	0.00387	2368.94443	5.60E-04
736.7692	0.00978	736.7692	0.00411	2368.46225	5.90E-04
735.80484	0.00882	735.80484	0.00444	2367.98007	6.40E-04
734.84049	0.00854	734.84049	0.0048	2367.49789	6.70E-04
733.87613	0.00872	733.87613	0.00508	2367.01571	6.80E-04
732.91177	0.00897	732.91177	0.00517	2366.53354	6.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
731.94741	0.00891	731.94741	0.0052	2366.05136	6.70E-04
730.98306	0.00853	730.98306	0.00529	2365.56918	6.80E-04
730.0187	0.00845	730.0187	0.00537	2365.087	6.70E-04
729.05434	0.00892	729.05434	0.00531	2364.60482	7.30E-04
728.08998	0.0093	728.08998	0.00516	2364.12264	7.60E-04
727.12563	0.00921	727.12563	0.00505	2363.64046	7.30E-04
726.16127	0.00867	726.16127	0.00498	2363.15828	6.80E-04
725.19691	0.0081	725.19691	0.0049	2362.6761	5.70E-04
724.23255	0.00808	724.23255	0.00482	2362.19393	5.30E-04
723.2682	0.00831	723.2682	0.00473	2361.71175	5.80E-04
722.30384	0.00809	722.30384	0.00461	2361.22957	5.70E-04
721.33948	0.00759	721.33948	0.00452	2360.74739	5.40E-04
720.37512	0.00715	720.37512	0.00475	2360.26521	5.20E-04
719.41076	0.00675	719.41076	0.00541	2359.78303	4.90E-04
718.44641	0.00661	718.44641	0.00619	2359.30085	4.90E-04
717.48205	0.00669	717.48205	0.00674	2358.81867	4.80E-04
716.51769	0.00659	716.51769	0.00697	2358.3365	5.30E-04
715.55333	0.00632	715.55333	0.00676	2357.85432	6.50E-04
714.58898	0.00604	714.58898	0.00618	2357.37214	6.80E-04
713.62462	0.00565	713.62462	0.00553	2356.88996	6.40E-04
712.66026	0.00507	712.66026	0.00512	2356.40778	6.50E-04
711.6959	0.00446	711.6959	0.00498	2355.9256	6.30E-04
710.73155	0.00404	710.73155	0.00493	2355.44342	5.70E-04
709.76719	0.00374	709.76719	0.00488	2354.96124	5.20E-04
708.80283	0.00334	708.80283	0.00484	2354.47907	4.70E-04
707.83847	0.00291	707.83847	0.00485	2353.99689	4.30E-04
706.87412	0.00272	706.87412	0.00495	2353.51471	4.10E-04
705.90976	0.00285	705.90976	0.00513	2353.03253	4.20E-04
704.9454	0.00315	704.9454	0.00536	2352.55035	4.50E-04
703.98104	0.00344	703.98104	0.00556	2352.06817	4.70E-04
703.01669	0.00373	703.01669	0.00574	2351.58599	4.80E-04
702.05233	0.00409	702.05233	0.00597	2351.10381	5.10E-04
701.08797	0.00445	701.08797	0.00629	2350.62163	5.10E-04
700.12361	0.0048	700.12361	0.00672	2350.13946	4.80E-04
699.15926	0.00517	699.15926	0.00719	2349.65728	5.20E-04
698.1949	0.00551	698.1949	0.00762	2349.1751	5.70E-04
697.23054	0.00586	697.23054	0.00797	2348.69292	5.50E-04
696.26618	0.00626	696.26618	0.00822	2348.21074	5.40E-04
695.30183	0.00646	695.30183	0.00831	2347.72856	5.90E-04
694.33747	0.0063	694.33747	0.00826	2347.24638	5.80E-04
693.37311	0.00606	693.37311	0.00818	2346.7642	5.40E-04



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
692.40875	0.00598	692.40875	0.00822	2346.28203	5.70E-04
691.44439	0.00599	691.44439	0.0084	2345.79985	6.20E-04
690.48004	0.00597	690.48004	0.00867	2345.31767	5.90E-04
689.51568	0.00588	689.51568	0.00898	2344.83549	5.40E-04
688.55132	0.00583	688.55132	0.00914	2344.35331	5.30E-04
687.58696	0.00596	687.58696	0.009	2343.87113	4.90E-04
686.62261	0.00608	686.62261	0.00863	2343.38895	4.10E-04
685.65825	0.00588	685.65825	0.00818	2342.90677	4.30E-04
684.69389	0.00542	684.69389	0.00778	2342.4246	4.90E-04
683.72953	0.00493	683.72953	0.00742	2341.94242	4.60E-04
682.76518	0.00452	682.76518	0.00709	2341.46024	4.10E-04
681.80082	0.00422	681.80082	0.00679	2340.97806	4.40E-04
680.83646	0.004	680.83646	0.00647	2340.49588	4.20E-04
679.8721	0.00376	679.8721	0.00619	2340.0137	3.40E-04
678.90775	0.00328	678.90775	0.00601	2339.53152	3.90E-04
677.94339	0.00279	677.94339	0.00587	2339.04934	5.00E-04
676.97903	0.00256	676.97903	0.00572	2338.56716	5.10E-04
676.01467	0.00248	676.01467	0.0056	2338.08499	5.20E-04
675.05032	0.00239	675.05032	0.00551	2337.60281	6.20E-04
674.08596	0.00227	674.08596	0.0054	2337.12063	6.50E-04
673.1216	0.00227	673.1216	0.00529	2336.63845	5.70E-04
672.15724	0.00241	672.15724	0.00528	2336.15627	5.90E-04
671.19289	0.00245	671.19289	0.00539	2335.67409	6.70E-04
670.22853	0.00242	670.22853	0.0054	2335.19191	5.90E-04
669.26417	0.0025	669.26417	0.00533	2334.70973	4.40E-04
668.29981	0.00239	668.29981	0.00536	2334.22756	4.30E-04
667.33545	0.00224	667.33545	0.00547	2333.74538	4.20E-04
666.3711	0.00266	666.3711	0.0055	2333.2632	2.90E-04
665.40674	0.00299	665.40674	0.00541	2332.78102	2.30E-04
664.44238	0.0029	664.44238	0.00529	2332.29884	3.80E-04
663.47802	0.00252	663.47802	0.0052	2331.81666	4.50E-04
662.51367	0.0021	662.51367	0.00502	2331.33448	3.80E-04
661.54931	0.00194	661.54931	0.00486	2330.8523	3.90E-04
660.58495	0.00218	660.58495	0.00486	2330.37013	5.10E-04
659.62059	0.00258	659.62059	0.00504	2329.88795	5.00E-04
658.65624	0.00265	658.65624	0.00525	2329.40577	4.10E-04
657.69188	0.00234	657.69188	0.00543	2328.92359	4.50E-04
656.72752	0.00207	656.72752	0.00561	2328.44141	5.30E-04
655.76316	0.00189	655.76316	0.00575	2327.95923	4.30E-04
654.79881	0.00153	654.79881	0.00578	2327.47705	2.90E-04
653.83445	0.00115	653.83445	0.00566	2326.99487	3.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
652.87009	0.0012	652.87009	0.00546	2326.5127	4.10E-04
651.90573	0.00157	651.90573	0.00532	2326.03052	4.00E-04
650.94138	0.00195	650.94138	0.00527	2325.54834	3.90E-04
649.97702	0.00225	649.97702	0.00528	2325.06616	5.10E-04
649.01266	0.00243	649.01266	0.00529	2324.58398	5.80E-04
648.0483	0.00237	648.0483	0.00522	2324.1018	4.80E-04
647.08395	0.00213	647.08395	0.0049	2323.61962	3.80E-04
646.11959	0.00187	646.11959	0.00429	2323.13744	4.00E-04
645.15523	0.00165	645.15523	0.00362	2322.65526	4.30E-04
644.19087	0.00166	644.19087	0.00315	2322.17309	3.30E-04
643.22652	0.00211	643.22652	0.00297	2321.69091	2.60E-04
642.26216	0.00281	642.26216	0.00317	2321.20873	3.30E-04
641.2978	0.00341	641.2978	0.0039	2320.72655	4.00E-04
640.33344	0.00383	640.33344	0.0051	2320.24437	3.70E-04
639.36908	0.00385	639.36908	0.00638	2319.76219	3.80E-04
638.40473	0.00354	638.40473	0.00732	2319.28001	5.00E-04
637.44037	0.00359	637.44037	0.0078	2318.79783	5.70E-04
636.47601	0.00398	636.47601	0.0077	2318.31566	5.00E-04
635.51165	0.00416	635.51165	0.00702	2317.83348	4.30E-04
634.5473	0.00422	634.5473	0.00621	2317.3513	4.60E-04
633.58294	0.00429	633.58294	0.00591	2316.86912	4.70E-04
632.61858	0.00411	632.61858	0.0062	2316.38694	4.10E-04
631.65422	0.00402	631.65422	0.00653	2315.90476	3.60E-04
630.68987	0.00461	630.68987	0.00657	2315.42258	4.10E-04
629.72551	0.00562	629.72551	0.00651	2314.9404	4.70E-04
628.76115	0.00653	628.76115	0.0067	2314.45823	4.60E-04
627.79679	0.00741	627.79679	0.00726	2313.97605	4.30E-04
626.83244	0.00785	626.83244	0.00821	2313.49387	4.50E-04
625.86808	0.00759	625.86808	0.0092	2313.01169	5.10E-04
624.90372	0.00691	624.90372	0.00959	2312.52951	5.20E-04
623.93936	0.00588	623.93936	0.00893	2312.04733	4.90E-04
622.97501	0.00473	622.97501	0.00736	2311.56515	4.80E-04
622.01065	0.00399	622.01065	0.0055	2311.08297	5.10E-04
621.04629	0.00452	621.04629	0.00409	2310.60079	5.10E-04
620.08193	0.00606	620.08193	0.00342	2310.11862	4.60E-04
619.11758	0.00683	619.11758	0.0035	2309.63644	4.40E-04
618.15322	0.00641	618.15322	0.00405	2309.15426	4.80E-04
617.18886	0.00619	617.18886	0.00466	2308.67208	5.20E-04
616.2245	0.0067	616.2245	0.00517	2308.1899	4.90E-04
615.26014	0.00729	615.26014	0.00546	2307.70772	4.50E-04
614.29579	0.00729	614.29579	0.00561	2307.22554	4.60E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
613.33143	0.00679	613.33143	0.00576	2306.74336	5.00E-04
612.36707	0.00688	612.36707	0.00581	2306.26119	4.80E-04
611.40271	0.00757	611.40271	0.00585	2305.77901	4.50E-04
610.43836	0.00808	610.43836	0.00598	2305.29683	4.40E-04
609.474	0.00833	609.474	0.00606	2304.81465	4.60E-04
608.50964	0.00734	608.50964	0.00591	2304.33247	4.70E-04
607.54528	0.00528	607.54528	0.00541	2303.85029	4.50E-04
606.58093	0.00446	606.58093	0.00477	2303.36811	4.60E-04
605.61657	0.00512	605.61657	0.00437	2302.88593	4.90E-04
604.65221	0.00576	604.65221	0.00453	2302.40376	5.10E-04
603.68785	0.00627	603.68785	0.00508	2301.92158	4.90E-04
602.7235	0.00776	602.7235	0.00547	2301.4394	4.80E-04
601.75914	0.00991	601.75914	0.00546	2300.95722	4.90E-04
600.79478	0.01046	600.79478	0.00512	2300.47504	5.20E-04
599.83042	0.00939	599.83042	0.00483	2299.99286	5.30E-04
598.86607	0.00869	598.86607	0.00487	2299.51068	5.00E-04
597.90171	0.00851	597.90171	0.00515	2299.0285	4.90E-04
596.93735	0.00855	596.93735	0.00543	2298.54632	4.90E-04
595.97299	0.00876	595.97299	0.00535	2298.06415	4.90E-04
595.00864	0.00844	595.00864	0.00454	2297.58197	4.90E-04
594.04428	0.00812	594.04428	0.00318	2297.09979	4.90E-04
593.07992	0.00865	593.07992	0.00209	2296.61761	5.10E-04
592.11556	0.00932	592.11556	0.00229	2296.13543	5.30E-04
591.15121	0.00952	591.15121	0.00386	2295.65325	5.30E-04
590.18685	0.00919	590.18685	0.00593	2295.17107	5.20E-04
589.22249	0.0078	589.22249	0.00786	2294.68889	5.00E-04
588.25813	0.00595	588.25813	0.00933	2294.20672	5.00E-04
587.29377	0.00551	587.29377	0.00972	2293.72454	5.00E-04
586.32942	0.00653	586.32942	0.0088	2293.24236	5.00E-04
585.36506	0.00763	585.36506	0.00753	2292.76018	5.00E-04
584.4007	0.00804	584.4007	0.00672	2292.278	5.00E-04
583.43634	0.00734	583.43634	0.00625	2291.79582	5.00E-04
582.47199	0.00579	582.47199	0.00621	2291.31364	5.10E-04
581.50763	0.00508	581.50763	0.00687	2290.83146	5.20E-04
580.54327	0.00628	580.54327	0.00771	2290.34929	5.30E-04
579.57891	0.00795	579.57891	0.00812	2289.86711	5.40E-04
578.61456	0.00849	578.61456	0.00822	2289.38493	5.40E-04
577.6502	0.00818	577.6502	0.00813	2288.90275	5.30E-04
576.68584	0.00773	576.68584	0.0077	2288.42057	5.30E-04
575.72148	0.00721	575.72148	0.00729	2287.93839	5.30E-04
574.75713	0.00643	574.75713	0.00755	2287.45621	5.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
573.79277	0.0058	573.79277	0.00824	2286.97403	5.70E-04
572.82841	0.00619	572.82841	0.00861	2286.49185	5.80E-04
571.86405	0.0072	571.86405	0.00863	2286.00968	5.80E-04
570.8997	0.00816	570.8997	0.00844	2285.5275	5.80E-04
569.93534	0.00952	569.93534	0.00771	2285.04532	5.70E-04
568.97098	0.01036	568.97098	0.00655	2284.56314	5.50E-04
568.00662	0.00937	568.00662	0.00589	2284.08096	5.30E-04
567.04227	0.00749	567.04227	0.00641	2283.59878	5.20E-04
566.07791	0.00632	566.07791	0.00768	2283.1166	5.20E-04
565.11355	0.00645	565.11355	0.00879	2282.63442	5.40E-04
564.14919	0.00711	564.14919	0.00906	2282.15225	5.60E-04
563.18483	0.00764	563.18483	0.00855	2281.67007	5.70E-04
562.22048	0.00867	562.22048	0.00813	2281.18789	5.70E-04
561.25612	0.00995	561.25612	0.00867	2280.70571	5.60E-04
560.29176	0.01019	560.29176	0.01055	2280.22353	5.50E-04
559.3274	0.00955	559.3274	0.01339	2279.74135	5.30E-04
558.36305	0.009	558.36305	0.01558	2279.25917	5.20E-04
557.39869	0.0081	557.39869	0.01539	2278.77699	5.20E-04
556.43433	0.00681	556.43433	0.01288	2278.29482	5.20E-04
555.46997	0.00665	555.46997	0.00966	2277.81264	5.10E-04
554.50562	0.00718	554.50562	0.00775	2277.33046	5.10E-04
553.54126	0.00717	553.54126	0.00866	2276.84828	5.20E-04
552.5769	0.00676	552.5769	0.01192	2276.3661	5.20E-04
551.61254	0.006	551.61254	0.01507	2275.88392	5.20E-04
550.64819	0.00559	550.64819	0.01579	2275.40174	5.20E-04
549.68383	0.0062	549.68383	0.01351	2274.91956	5.10E-04
548.71947	0.00746	548.71947	0.00963	2274.43739	5.10E-04
547.75511	0.00864	547.75511	0.00627	2273.95521	5.30E-04
546.79076	0.00846	546.79076	0.00519	2273.47303	5.40E-04
545.8264	0.00722	545.8264	0.00679	2272.99085	5.50E-04
544.86204	0.0071	544.86204	0.00908	2272.50867	5.50E-04
543.89768	0.00833	543.89768	0.00965	2272.02649	5.50E-04
542.93333	0.00804	542.93333	0.0081	2271.54431	5.40E-04
541.96897	0.00537	541.96897	0.00551	2271.06213	5.30E-04
541.00461	0.00385	541.00461	0.00327	2270.57995	5.30E-04
540.04025	0.00408	540.04025	0.00333	2270.09778	5.50E-04
539.07589	0.0036	539.07589	0.00695	2269.6156	5.50E-04
538.11154	0.00339	538.11154	0.01246	2269.13342	5.40E-04
537.14718	0.00487	537.14718	0.01667	2268.65124	5.40E-04
536.18282	0.00644	536.18282	0.018	2268.16906	5.40E-04
535.21846	0.00607	535.21846	0.01691	2267.68688	5.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
534.25411	0.00397	534.25411	0.01424	2267.2047	5.20E-04
533.28975	0.00269	533.28975	0.0109	2266.72252	5.30E-04
532.32539	0.00353	532.32539	0.00857	2266.24035	5.40E-04
531.36103	0.0049	531.36103	0.00787	2265.75817	5.50E-04
530.39668	0.00524	530.39668	0.00755	2265.27599	5.50E-04
529.43232	0.00466	529.43232	0.00696	2264.79381	5.50E-04
528.46796	0.0033	528.46796	0.00676	2264.31163	5.40E-04
527.5036	0.0019	527.5036	0.0074	2263.82945	5.40E-04
526.53925	0.00219	526.53925	0.00842	2263.34727	5.40E-04
525.57489	0.00376	525.57489	0.00919	2262.86509	5.40E-04
524.61053	0.00497	524.61053	0.00947	2262.38292	5.40E-04
523.64617	0.00518	523.64617	0.00859	2261.90074	5.40E-04
522.68182	0.00464	522.68182	0.00612	2261.41856	5.50E-04
521.71746	0.00441	521.71746	0.00313	2260.93638	5.50E-04
520.7531	0.004	520.7531	0.00112	2260.4542	5.50E-04
519.78874	0.0027	519.78874	4.50E-04	2259.97202	5.50E-04
518.82439	0.00235	518.82439	5.60E-04	2259.48984	5.50E-04
517.86003	0.00349	517.86003	8.70E-04	2259.00766	5.40E-04
516.89567	0.00423	516.89567	9.10E-04	2258.52548	5.40E-04
515.93131	0.00422	515.93131	4.10E-04	2258.04331	5.40E-04
514.96696	0.00436	514.96696	-5.00E-05	2257.56113	5.70E-04
514.0026	0.0042	514.0026	1.90E-04	2257.07895	5.90E-04
513.03824	0.00416	513.03824	9.50E-04	2256.59677	6.00E-04
512.07388	0.00503	512.07388	0.00189	2256.11459	6.00E-04
511.10952	0.00572	511.10952	0.0028	2255.63241	6.00E-04
510.14517	0.00579	510.14517	0.00332	2255.15023	6.00E-04
509.18081	0.00605	509.18081	0.00291	2254.66805	6.00E-04
508.21645	0.00637	508.21645	0.00194	2254.18588	6.00E-04
507.25209	0.00604	507.25209	0.00163	2253.7037	5.90E-04
506.28774	0.00484	506.28774	0.00182	2253.22152	5.80E-04
505.32338	0.00325	505.32338	0.00113	2252.73934	5.50E-04
504.35902	0.00143	504.35902	-4.50E-04	2252.25716	5.40E-04
503.39466	0	503.39466	-0.00178	2251.77498	5.50E-04
502.43031	-5.30E-04	502.43031	-0.00178	2251.2928	5.70E-04
501.46595	7.60E-04	501.46595	-0.00178	2250.81062	5.90E-04
500.50159	0.00119	500.50159	-0.00178	2250.32845	6.10E-04
499.53723	0	499.53723	-0.00178	2249.84627	6.00E-04
				2249.36409	5.90E-04
				2248.88191	5.70E-04
				2248.39973	5.70E-04
				2247.91755	5.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				2247.43537	5.80E-04
				2246.95319	5.80E-04
				2246.47101	5.80E-04
				2245.98884	5.70E-04
				2245.50666	5.70E-04
				2245.02448	5.60E-04
				2244.5423	5.60E-04
				2244.06012	5.50E-04
				2243.57794	5.40E-04
				2243.09576	5.30E-04
				2242.61358	5.30E-04
				2242.13141	5.30E-04
				2241.64923	5.50E-04
				2241.16705	5.70E-04
				2240.68487	5.70E-04
				2240.20269	5.60E-04
				2239.72051	5.30E-04
				2239.23833	5.20E-04
				2238.75615	5.10E-04
				2238.27398	5.20E-04
				2237.7918	5.40E-04
				2237.30962	5.70E-04
				2236.82744	5.90E-04
				2236.34526	6.00E-04
				2235.86308	5.90E-04
				2235.3809	5.90E-04
				2234.89872	5.80E-04
				2234.41654	5.80E-04
				2233.93437	5.80E-04
				2233.45219	5.80E-04
				2232.97001	5.90E-04
				2232.48783	5.90E-04
				2232.00565	5.90E-04
				2231.52347	5.80E-04
				2231.04129	5.80E-04
				2230.55911	5.70E-04
				2230.07694	5.50E-04
				2229.59476	5.30E-04
				2229.11258	5.20E-04
				2228.6304	5.10E-04
				2228.14822	5.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				2227.66604	5.10E-04
				2227.18386	5.40E-04
				2226.70168	5.60E-04
				2226.21951	5.80E-04
				2225.73733	5.80E-04
				2225.25515	5.80E-04
				2224.77297	5.70E-04
				2224.29079	5.70E-04
				2223.80861	5.70E-04
				2223.32643	5.70E-04
				2222.84425	5.60E-04
				2222.36207	5.50E-04
				2221.8799	5.30E-04
				2221.39772	5.20E-04
				2220.91554	5.20E-04
				2220.43336	5.30E-04
				2219.95118	5.50E-04
				2219.469	5.60E-04
				2218.98682	5.60E-04
				2218.50464	5.50E-04
				2218.02247	5.40E-04
				2217.54029	5.30E-04
				2217.05811	5.30E-04
				2216.57593	5.30E-04
				2216.09375	5.30E-04
				2215.61157	5.20E-04
				2215.12939	5.20E-04
				2214.64721	5.10E-04
				2214.16504	5.00E-04
				2213.68286	5.00E-04
				2213.20068	5.10E-04
				2212.7185	5.20E-04
				2212.23632	5.10E-04
				2211.75414	5.10E-04
				2211.27196	5.20E-04
				2210.78978	5.30E-04
				2210.30761	5.50E-04
				2209.82543	5.70E-04
				2209.34325	5.80E-04
				2208.86107	5.70E-04
				2208.37889	5.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2207.89671	5.60E-04
				2207.41453	5.60E-04
				2206.93235	5.60E-04
				2206.45017	5.60E-04
				2205.968	5.60E-04
				2205.48582	5.50E-04
				2205.00364	5.40E-04
				2204.52146	5.30E-04
				2204.03928	5.20E-04
				2203.5571	5.20E-04
				2203.07492	5.20E-04
				2202.59274	5.20E-04
				2202.11057	5.20E-04
				2201.62839	5.20E-04
				2201.14621	5.20E-04
				2200.66403	5.20E-04
				2200.18185	5.10E-04
				2199.69967	5.00E-04
				2199.21749	4.90E-04
				2198.73531	4.90E-04
				2198.25314	4.90E-04
				2197.77096	4.90E-04
				2197.28878	5.00E-04
				2196.8066	5.20E-04
				2196.32442	5.50E-04
				2195.84224	5.70E-04
				2195.36006	5.80E-04
				2194.87788	5.60E-04
				2194.3957	5.40E-04
				2193.91353	5.10E-04
				2193.43135	4.90E-04
				2192.94917	4.80E-04
				2192.46699	4.90E-04
				2191.98481	5.00E-04
				2191.50263	5.00E-04
				2191.02045	5.10E-04
				2190.53827	5.20E-04
				2190.0561	5.30E-04
				2189.57392	5.50E-04
				2189.09174	5.60E-04
				2188.60956	5.70E-04



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2188.12738	5.70E-04
				2187.6452	5.60E-04
				2187.16302	5.60E-04
				2186.68084	5.60E-04
				2186.19867	5.70E-04
				2185.71649	5.70E-04
				2185.23431	5.70E-04
				2184.75213	5.60E-04
				2184.26995	5.40E-04
				2183.78777	5.40E-04
				2183.30559	5.40E-04
				2182.82341	5.50E-04
				2182.34123	5.50E-04
				2181.85906	5.60E-04
				2181.37688	5.60E-04
				2180.8947	5.60E-04
				2180.41252	5.60E-04
				2179.93034	5.50E-04
				2179.44816	5.50E-04
				2178.96598	5.40E-04
				2178.4838	5.30E-04
				2178.00163	5.30E-04
				2177.51945	5.40E-04
				2177.03727	5.40E-04
				2176.55509	5.40E-04
				2176.07291	5.40E-04
				2175.59073	5.40E-04
				2175.10855	5.30E-04
				2174.62637	5.30E-04
				2174.1442	5.30E-04
				2173.66202	5.20E-04
				2173.17984	5.00E-04
				2172.69766	4.90E-04
				2172.21548	4.90E-04
				2171.7333	5.00E-04
				2171.25112	5.20E-04
				2170.76894	5.40E-04
				2170.28676	5.50E-04
				2169.80459	5.50E-04
				2169.32241	5.40E-04
				2168.84023	5.40E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2168.35805	5.30E-04
				2167.87587	5.20E-04
				2167.39369	5.20E-04
				2166.91151	5.30E-04
				2166.42933	5.40E-04
				2165.94716	5.50E-04
				2165.46498	5.60E-04
				2164.9828	5.50E-04
				2164.50062	5.50E-04
				2164.01844	5.40E-04
				2163.53626	5.40E-04
				2163.05408	5.40E-04
				2162.5719	5.40E-04
				2162.08973	5.30E-04
				2161.60755	5.10E-04
				2161.12537	4.90E-04
				2160.64319	4.80E-04
				2160.16101	4.70E-04
				2159.67883	4.70E-04
				2159.19665	4.90E-04
				2158.71447	5.10E-04
				2158.23229	5.30E-04
				2157.75012	5.60E-04
				2157.26794	5.60E-04
				2156.78576	5.50E-04
				2156.30358	5.30E-04
				2155.8214	5.10E-04
				2155.33922	5.00E-04
				2154.85704	4.90E-04
				2154.37486	4.80E-04
				2153.89269	4.90E-04
				2153.41051	5.00E-04
				2152.92833	5.10E-04
				2152.44615	5.30E-04
				2151.96397	5.40E-04
				2151.48179	5.40E-04
				2150.99961	5.20E-04
				2150.51743	5.10E-04
				2150.03526	5.00E-04
				2149.55308	5.10E-04
				2149.0709	5.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2148.58872	5.40E-04
				2148.10654	5.50E-04
				2147.62436	5.50E-04
				2147.14218	5.30E-04
				2146.66	5.10E-04
				2146.17783	4.90E-04
				2145.69565	4.80E-04
				2145.21347	4.90E-04
				2144.73129	5.00E-04
				2144.24911	5.20E-04
				2143.76693	5.40E-04
				2143.28475	5.40E-04
				2142.80257	5.40E-04
				2142.32039	5.10E-04
				2141.83822	4.90E-04
				2141.35604	4.80E-04
				2140.87386	4.80E-04
				2140.39168	4.90E-04
				2139.9095	4.90E-04
				2139.42732	5.00E-04
				2138.94514	4.90E-04
				2138.46296	4.80E-04
				2137.98079	4.80E-04
				2137.49861	4.90E-04
				2137.01643	5.00E-04
				2136.53425	5.00E-04
				2136.05207	5.00E-04
				2135.56989	5.00E-04
				2135.08771	5.00E-04
				2134.60553	4.90E-04
				2134.12336	4.90E-04
				2133.64118	5.10E-04
				2133.159	5.20E-04
				2132.67682	5.30E-04
				2132.19464	5.40E-04
				2131.71246	5.50E-04
				2131.23028	5.60E-04
				2130.7481	5.60E-04
				2130.26592	5.50E-04
				2129.78375	5.50E-04
				2129.30157	5.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2128.81939	5.40E-04
				2128.33721	5.20E-04
				2127.85503	5.10E-04
				2127.37285	5.10E-04
				2126.89067	5.10E-04
				2126.40849	5.10E-04
				2125.92632	5.10E-04
				2125.44414	5.10E-04
				2124.96196	5.10E-04
				2124.47978	5.10E-04
				2123.9976	5.20E-04
				2123.51542	5.30E-04
				2123.03324	5.40E-04
				2122.55106	5.50E-04
				2122.06889	5.50E-04
				2121.58671	5.40E-04
				2121.10453	5.30E-04
				2120.62235	5.10E-04
				2120.14017	4.90E-04
				2119.65799	4.80E-04
				2119.17581	4.70E-04
				2118.69363	4.70E-04
				2118.21145	4.70E-04
				2117.72928	4.80E-04
				2117.2471	4.90E-04
				2116.76492	4.90E-04
				2116.28274	4.90E-04
				2115.80056	4.80E-04
				2115.31838	4.60E-04
				2114.8362	4.50E-04
				2114.35402	4.50E-04
				2113.87185	4.60E-04
				2113.38967	4.70E-04
				2112.90749	4.90E-04
				2112.42531	5.00E-04
				2111.94313	5.00E-04
				2111.46095	5.00E-04
				2110.97877	5.10E-04
				2110.49659	5.10E-04
				2110.01442	5.10E-04
				2109.53224	5.00E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2109.05006	4.90E-04
				2108.56788	4.80E-04
				2108.0857	4.70E-04
				2107.60352	4.70E-04
				2107.12134	4.80E-04
				2106.63916	4.90E-04
				2106.15698	5.00E-04
				2105.67481	5.10E-04
				2105.19263	5.10E-04
				2104.71045	5.10E-04
				2104.22827	5.10E-04
				2103.74609	5.00E-04
				2103.26391	4.90E-04
				2102.78173	4.80E-04
				2102.29955	4.70E-04
				2101.81738	4.70E-04
				2101.3352	4.70E-04
				2100.85302	4.80E-04
				2100.37084	4.90E-04
				2099.88866	4.90E-04
				2099.40648	4.90E-04
				2098.9243	4.80E-04
				2098.44212	4.80E-04
				2097.95995	4.90E-04
				2097.47777	5.00E-04
				2096.99559	4.90E-04
				2096.51341	4.90E-04
				2096.03123	4.80E-04
				2095.54905	4.80E-04
				2095.06687	4.80E-04
				2094.58469	4.90E-04
				2094.10251	5.00E-04
				2093.62034	5.00E-04
				2093.13816	4.80E-04
				2092.65598	4.70E-04
				2092.1738	4.60E-04
				2091.69162	4.60E-04
				2091.20944	4.70E-04
				2090.72726	4.90E-04
				2090.24508	5.10E-04
				2089.76291	5.20E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2089.28073	5.20E-04
				2088.79855	5.10E-04
				2088.31637	4.90E-04
				2087.83419	4.70E-04
				2087.35201	4.40E-04
				2086.86983	4.40E-04
				2086.38765	4.40E-04
				2085.90548	4.60E-04
				2085.4233	4.70E-04
				2084.94112	4.80E-04
				2084.45894	4.90E-04
				2083.97676	4.90E-04
				2083.49458	4.80E-04
				2083.0124	4.80E-04
				2082.53022	4.70E-04
				2082.04805	4.60E-04
				2081.56587	4.40E-04
				2081.08369	4.20E-04
				2080.60151	4.10E-04
				2080.11933	4.00E-04
				2079.63715	4.00E-04
				2079.15497	4.10E-04
				2078.67279	4.30E-04
				2078.19061	4.40E-04
				2077.70844	4.50E-04
				2077.22626	4.50E-04
				2076.74408	4.60E-04
				2076.2619	4.60E-04
				2075.77972	4.70E-04
				2075.29754	4.80E-04
				2074.81536	4.90E-04
				2074.33318	4.80E-04
				2073.85101	4.80E-04
				2073.36883	4.70E-04
				2072.88665	4.70E-04
				2072.40447	4.70E-04
				2071.92229	4.70E-04
				2071.44011	4.60E-04
				2070.95793	4.50E-04
				2070.47575	4.40E-04
				2069.99358	4.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2069.5114	4.10E-04
				2069.02922	4.10E-04
				2068.54704	4.20E-04
				2068.06486	4.40E-04
				2067.58268	4.50E-04
				2067.1005	4.50E-04
				2066.61832	4.40E-04
				2066.13614	4.10E-04
				2065.65397	3.80E-04
				2065.17179	3.70E-04
				2064.68961	3.90E-04
				2064.20743	4.20E-04
				2063.72525	4.50E-04
				2063.24307	4.80E-04
				2062.76089	4.90E-04
				2062.27871	4.90E-04
				2061.79654	4.70E-04
				2061.31436	4.50E-04
				2060.83218	4.40E-04
				2060.35	4.40E-04
				2059.86782	4.40E-04
				2059.38564	4.50E-04
				2058.90346	4.50E-04
				2058.42128	4.50E-04
				2057.93911	4.40E-04
				2057.45693	4.20E-04
				2056.97475	4.20E-04
				2056.49257	4.20E-04
				2056.01039	4.30E-04
				2055.52821	4.50E-04
				2055.04603	4.60E-04
				2054.56385	4.60E-04
				2054.08167	4.60E-04
				2053.5995	4.50E-04
				2053.11732	4.50E-04
				2052.63514	4.60E-04
				2052.15296	4.60E-04
				2051.67078	4.60E-04
				2051.1886	4.50E-04
				2050.70642	4.40E-04
				2050.22424	4.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2049.74207	4.30E-04
				2049.25989	4.40E-04
				2048.77771	4.50E-04
				2048.29553	4.60E-04
				2047.81335	4.50E-04
				2047.33117	4.30E-04
				2046.84899	4.10E-04
				2046.36681	4.00E-04
				2045.88464	4.00E-04
				2045.40246	4.00E-04
				2044.92028	4.00E-04
				2044.4381	4.00E-04
				2043.95592	4.00E-04
				2043.47374	4.10E-04
				2042.99156	4.20E-04
				2042.50938	4.40E-04
				2042.0272	4.50E-04
				2041.54503	4.60E-04
				2041.06285	4.60E-04
				2040.58067	4.60E-04
				2040.09849	4.60E-04
				2039.61631	4.60E-04
				2039.13413	4.50E-04
				2038.65195	4.40E-04
				2038.16977	4.30E-04
				2037.6876	4.30E-04
				2037.20542	4.40E-04
				2036.72324	4.50E-04
				2036.24106	4.50E-04
				2035.75888	4.40E-04
				2035.2767	4.30E-04
				2034.79452	4.20E-04
				2034.31234	4.10E-04
				2033.83017	4.10E-04
				2033.34799	4.20E-04
				2032.86581	4.20E-04
				2032.38363	4.20E-04
				2031.90145	4.20E-04
				2031.41927	4.20E-04
				2030.93709	4.10E-04
				2030.45491	4.00E-04



Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				2029.97273	3.90E-04
				2029.49056	3.90E-04
				2029.00838	4.00E-04
				2028.5262	4.00E-04
				2028.04402	4.00E-04
				2027.56184	3.90E-04
				2027.07966	3.80E-04
				2026.59748	3.70E-04
				2026.1153	3.70E-04
				2025.63313	3.80E-04
				2025.15095	4.00E-04
				2024.66877	4.20E-04
				2024.18659	4.30E-04
				2023.70441	4.30E-04
				2023.22223	4.30E-04
				2022.74005	4.20E-04
				2022.25787	4.10E-04
				2021.7757	4.00E-04
				2021.29352	3.90E-04
				2020.81134	3.90E-04
				2020.32916	3.90E-04
				2019.84698	4.10E-04
				2019.3648	4.20E-04
				2018.88262	4.20E-04
				2018.40044	4.10E-04
				2017.91827	3.90E-04
				2017.43609	3.60E-04
				2016.95391	3.40E-04
				2016.47173	3.40E-04
				2015.98955	3.60E-04
				2015.50737	3.80E-04
				2015.02519	4.00E-04
				2014.54301	4.10E-04
				2014.06083	4.20E-04
				2013.57866	4.10E-04
				2013.09648	4.00E-04
				2012.6143	3.90E-04
				2012.13212	3.80E-04
				2011.64994	3.70E-04
				2011.16776	3.50E-04
				2010.68558	3.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				2010.2034	3.50E-04
				2009.72123	3.60E-04
				2009.23905	3.70E-04
				2008.75687	3.70E-04
				2008.27469	3.80E-04
				2007.79251	3.80E-04
				2007.31033	3.80E-04
				2006.82815	3.80E-04
				2006.34597	3.90E-04
				2005.8638	4.00E-04
				2005.38162	4.10E-04
				2004.89944	4.20E-04
				2004.41726	4.20E-04
				2003.93508	4.10E-04
				2003.4529	4.10E-04
				2002.97072	4.00E-04
				2002.48854	3.90E-04
				2002.00636	3.80E-04
				2001.52419	3.80E-04
				2001.04201	3.70E-04
				2000.55983	3.70E-04
				2000.07765	3.60E-04
				1999.59547	3.60E-04
				1999.11329	3.60E-04
				1998.63111	3.70E-04
				1998.14893	3.80E-04
				1997.66676	3.90E-04
				1997.18458	4.00E-04
				1996.7024	4.10E-04
				1996.22022	4.00E-04
				1995.73804	3.90E-04
				1995.25586	3.70E-04
				1994.77368	3.60E-04
				1994.2915	3.60E-04
				1993.80933	3.50E-04
				1993.32715	3.50E-04
				1992.84497	3.50E-04
				1992.36279	3.50E-04
				1991.88061	3.60E-04
				1991.39843	3.60E-04
				1990.91625	3.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1990.43407	3.70E-04
				1989.95189	3.70E-04
				1989.46972	3.50E-04
				1988.98754	3.40E-04
				1988.50536	3.40E-04
				1988.02318	3.60E-04
				1987.541	3.70E-04
				1987.05882	3.60E-04
				1986.57664	3.50E-04
				1986.09446	3.30E-04
				1985.61229	3.10E-04
				1985.13011	3.10E-04
				1984.64793	3.30E-04
				1984.16575	3.60E-04
				1983.68357	3.80E-04
				1983.20139	4.00E-04
				1982.71921	4.00E-04
				1982.23703	4.00E-04
				1981.75486	3.80E-04
				1981.27268	3.70E-04
				1980.7905	3.50E-04
				1980.30832	3.40E-04
				1979.82614	3.40E-04
				1979.34396	3.40E-04
				1978.86178	3.40E-04
				1978.3796	3.40E-04
				1977.89742	3.40E-04
				1977.41525	3.40E-04
				1976.93307	3.40E-04
				1976.45089	3.50E-04
				1975.96871	3.60E-04
				1975.48653	3.80E-04
				1975.00435	3.90E-04
				1974.52217	3.90E-04
				1974.03999	3.90E-04
				1973.55782	3.90E-04
				1973.07564	3.80E-04
				1972.59346	3.80E-04
				1972.11128	3.70E-04
				1971.6291	3.60E-04
				1971.14692	3.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1970.66474	3.40E-04
				1970.18256	3.30E-04
				1969.70039	3.30E-04
				1969.21821	3.30E-04
				1968.73603	3.30E-04
				1968.25385	3.30E-04
				1967.77167	3.20E-04
				1967.28949	3.10E-04
				1966.80731	3.10E-04
				1966.32513	3.10E-04
				1965.84295	3.20E-04
				1965.36078	3.40E-04
				1964.8786	3.50E-04
				1964.39642	3.60E-04
				1963.91424	3.70E-04
				1963.43206	3.80E-04
				1962.94988	3.90E-04
				1962.4677	3.90E-04
				1961.98552	3.90E-04
				1961.50335	3.80E-04
				1961.02117	3.70E-04
				1960.53899	3.50E-04
				1960.05681	3.40E-04
				1959.57463	3.40E-04
				1959.09245	3.40E-04
				1958.61027	3.60E-04
				1958.12809	3.70E-04
				1957.64592	3.70E-04
				1957.16374	3.60E-04
				1956.68156	3.50E-04
				1956.19938	3.40E-04
				1955.7172	3.30E-04
				1955.23502	3.20E-04
				1954.75284	3.10E-04
				1954.27066	3.10E-04
				1953.78849	3.00E-04
				1953.30631	3.00E-04
				1952.82413	3.10E-04
				1952.34195	3.30E-04
				1951.85977	3.50E-04
				1951.37759	3.60E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1950.89541	3.50E-04
				1950.41323	3.40E-04
				1949.93105	3.30E-04
				1949.44888	3.20E-04
				1948.9667	3.20E-04
				1948.48452	3.40E-04
				1948.00234	3.50E-04
				1947.52016	3.50E-04
				1947.03798	3.30E-04
				1946.5558	3.10E-04
				1946.07362	3.00E-04
				1945.59145	3.00E-04
				1945.10927	3.20E-04
				1944.62709	3.40E-04
				1944.14491	3.60E-04
				1943.66273	3.50E-04
				1943.18055	3.20E-04
				1942.69837	3.10E-04
				1942.21619	3.00E-04
				1941.73402	3.10E-04
				1941.25184	3.20E-04
				1940.76966	3.50E-04
				1940.28748	3.70E-04
				1939.8053	3.80E-04
				1939.32312	3.90E-04
				1938.84094	3.90E-04
				1938.35876	3.80E-04
				1937.87658	3.60E-04
				1937.39441	3.40E-04
				1936.91223	3.20E-04
				1936.43005	3.10E-04
				1935.94787	3.10E-04
				1935.46569	3.10E-04
				1934.98351	3.20E-04
				1934.50133	3.20E-04
				1934.01915	3.30E-04
				1933.53698	3.30E-04
				1933.0548	3.30E-04
				1932.57262	3.30E-04
				1932.09044	3.30E-04
				1931.60826	3.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1931.12608	3.40E-04
				1930.6439	3.40E-04
				1930.16172	3.30E-04
				1929.67955	3.20E-04
				1929.19737	3.10E-04
				1928.71519	2.90E-04
				1928.23301	2.90E-04
				1927.75083	3.00E-04
				1927.26865	3.20E-04
				1926.78647	3.50E-04
				1926.30429	3.70E-04
				1925.82211	3.90E-04
				1925.33994	3.90E-04
				1924.85776	3.90E-04
				1924.37558	3.60E-04
				1923.8934	3.20E-04
				1923.41122	2.80E-04
				1922.92904	2.60E-04
				1922.44686	2.50E-04
				1921.96468	2.60E-04
				1921.48251	2.80E-04
				1921.00033	3.10E-04
				1920.51815	3.40E-04
				1920.03597	3.50E-04
				1919.55379	3.60E-04
				1919.07161	3.40E-04
				1918.58943	3.10E-04
				1918.10725	2.90E-04
				1917.62508	2.80E-04
				1917.1429	2.70E-04
				1916.66072	2.90E-04
				1916.17854	3.20E-04
				1915.69636	3.40E-04
				1915.21418	3.50E-04
				1914.732	3.50E-04
				1914.24982	3.50E-04
				1913.76764	3.50E-04
				1913.28547	3.50E-04
				1912.80329	3.50E-04
				1912.32111	3.60E-04
				1911.83893	3.60E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1911.35675	3.50E-04
				1910.87457	3.40E-04
				1910.39239	3.30E-04
				1909.91021	3.30E-04
				1909.42804	3.30E-04
				1908.94586	3.40E-04
				1908.46368	3.50E-04
				1907.9815	3.60E-04
				1907.49932	3.60E-04
				1907.01714	3.50E-04
				1906.53496	3.40E-04
				1906.05278	3.30E-04
				1905.57061	3.30E-04
				1905.08843	3.20E-04
				1904.60625	3.30E-04
				1904.12407	3.30E-04
				1903.64189	3.40E-04
				1903.15971	3.60E-04
				1902.67753	3.70E-04
				1902.19535	3.70E-04
				1901.71317	3.70E-04
				1901.231	3.60E-04
				1900.74882	3.50E-04
				1900.26664	3.40E-04
				1899.78446	3.30E-04
				1899.30228	3.30E-04
				1898.8201	3.30E-04
				1898.33792	3.40E-04
				1897.85574	3.60E-04
				1897.37357	3.70E-04
				1896.89139	3.80E-04
				1896.40921	3.70E-04
				1895.92703	3.40E-04
				1895.44485	3.20E-04
				1894.96267	3.20E-04
				1894.48049	3.20E-04
				1893.99831	3.40E-04
				1893.51614	3.40E-04
				1893.03396	3.40E-04
				1892.55178	3.20E-04
				1892.0696	3.10E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1891.58742	3.20E-04
				1891.10524	3.30E-04
				1890.62306	3.10E-04
				1890.14088	2.80E-04
				1889.65871	2.50E-04
				1889.17653	2.50E-04
				1888.69435	2.60E-04
				1888.21217	3.00E-04
				1887.72999	3.50E-04
				1887.24781	3.80E-04
				1886.76563	3.70E-04
				1886.28345	3.40E-04
				1885.80127	3.10E-04
				1885.3191	2.80E-04
				1884.83692	2.70E-04
				1884.35474	2.70E-04
				1883.87256	2.90E-04
				1883.39038	3.00E-04
				1882.9082	3.10E-04
				1882.42602	3.10E-04
				1881.94384	3.00E-04
				1881.46167	3.00E-04
				1880.97949	3.10E-04
				1880.49731	3.20E-04
				1880.01513	3.30E-04
				1879.53295	3.30E-04
				1879.05077	3.30E-04
				1878.56859	3.20E-04
				1878.08641	3.00E-04
				1877.60424	2.90E-04
				1877.12206	2.80E-04
				1876.63988	2.70E-04
				1876.1577	2.70E-04
				1875.67552	2.80E-04
				1875.19334	2.80E-04
				1874.71116	2.80E-04
				1874.22898	2.80E-04
				1873.7468	2.90E-04
				1873.26463	3.00E-04
				1872.78245	3.00E-04
				1872.30027	3.00E-04



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1871.81809	3.00E-04
				1871.33591	3.00E-04
				1870.85373	2.90E-04
				1870.37155	2.60E-04
				1869.88937	2.40E-04
				1869.4072	2.40E-04
				1868.92502	2.30E-04
				1868.44284	2.30E-04
				1867.96066	2.40E-04
				1867.47848	2.50E-04
				1866.9963	2.60E-04
				1866.51412	2.60E-04
				1866.03194	2.80E-04
				1865.54977	2.90E-04
				1865.06759	2.90E-04
				1864.58541	2.90E-04
				1864.10323	2.80E-04
				1863.62105	2.80E-04
				1863.13887	2.70E-04
				1862.65669	2.70E-04
				1862.17451	2.60E-04
				1861.69233	2.50E-04
				1861.21016	2.50E-04
				1860.72798	2.70E-04
				1860.2458	2.90E-04
				1859.76362	3.00E-04
				1859.28144	3.00E-04
				1858.79926	2.90E-04
				1858.31708	2.80E-04
				1857.8349	2.70E-04
				1857.35273	2.70E-04
				1856.87055	2.60E-04
				1856.38837	2.60E-04
				1855.90619	2.50E-04
				1855.42401	2.50E-04
				1854.94183	2.60E-04
				1854.45965	2.70E-04
				1853.97747	2.80E-04
				1853.4953	2.70E-04
				1853.01312	2.70E-04
				1852.53094	2.80E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1852.04876	2.90E-04
				1851.56658	3.00E-04
				1851.0844	3.10E-04
				1850.60222	3.00E-04
				1850.12004	2.90E-04
				1849.63786	2.70E-04
				1849.15569	2.50E-04
				1848.67351	2.20E-04
				1848.19133	2.10E-04
				1847.70915	2.10E-04
				1847.22697	2.10E-04
				1846.74479	2.20E-04
				1846.26261	2.60E-04
				1845.78043	2.60E-04
				1845.29826	2.00E-04
				1844.81608	1.40E-04
				1844.3339	1.10E-04
				1843.85172	1.10E-04
				1843.36954	1.40E-04
				1842.88736	1.90E-04
				1842.40518	2.60E-04
				1841.923	2.90E-04
				1841.44083	2.80E-04
				1840.95865	2.70E-04
				1840.47647	2.80E-04
				1839.99429	2.80E-04
				1839.51211	2.80E-04
				1839.02993	2.80E-04
				1838.54775	2.80E-04
				1838.06557	2.70E-04
				1837.5834	2.70E-04
				1837.10122	2.60E-04
				1836.61904	2.60E-04
				1836.13686	2.50E-04
				1835.65468	2.50E-04
				1835.1725	2.60E-04
				1834.69032	2.60E-04
				1834.20814	2.50E-04
				1833.72596	2.40E-04
				1833.24379	2.30E-04
				1832.76161	2.20E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1832.27943	2.20E-04
				1831.79725	2.20E-04
				1831.31507	2.00E-04
				1830.83289	1.70E-04
				1830.35071	1.20E-04
				1829.86853	8.00E-05
				1829.38636	7.00E-05
				1828.90418	1.00E-04
				1828.422	1.60E-04
				1827.93982	2.40E-04
				1827.45764	2.90E-04
				1826.97546	3.20E-04
				1826.49328	2.90E-04
				1826.0111	2.20E-04
				1825.52893	1.70E-04
				1825.04675	1.40E-04
				1824.56457	1.30E-04
				1824.08239	1.50E-04
				1823.60021	1.90E-04
				1823.11803	2.30E-04
				1822.63585	2.30E-04
				1822.15367	2.20E-04
				1821.67149	2.10E-04
				1821.18932	2.00E-04
				1820.70714	1.90E-04
				1820.22496	1.90E-04
				1819.74278	1.90E-04
				1819.2606	1.90E-04
				1818.77842	1.90E-04
				1818.29624	1.80E-04
				1817.81406	1.80E-04
				1817.33189	1.90E-04
				1816.84971	2.00E-04
				1816.36753	2.10E-04
				1815.88535	2.20E-04
				1815.40317	2.30E-04
				1814.92099	2.40E-04
				1814.43881	2.40E-04
				1813.95663	2.50E-04
				1813.47446	2.40E-04
				1812.99228	2.30E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1812.5101	2.20E-04
				1812.02792	1.90E-04
				1811.54574	1.50E-04
				1811.06356	1.30E-04
				1810.58138	1.30E-04
				1810.0992	1.40E-04
				1809.61702	1.50E-04
				1809.13485	1.70E-04
				1808.65267	1.80E-04
				1808.17049	1.90E-04
				1807.68831	1.80E-04
				1807.20613	1.90E-04
				1806.72395	2.00E-04
				1806.24177	2.00E-04
				1805.75959	1.90E-04
				1805.27742	1.70E-04
				1804.79524	1.60E-04
				1804.31306	1.60E-04
				1803.83088	1.60E-04
				1803.3487	1.60E-04
				1802.86652	1.60E-04
				1802.38434	1.60E-04
				1801.90216	1.60E-04
				1801.41999	1.60E-04
				1800.93781	1.50E-04
				1800.45563	1.30E-04
				1799.97345	1.10E-04
				1799.49127	1.10E-04
				1799.00909	1.30E-04
				1798.52691	1.60E-04
				1798.04473	2.10E-04
				1797.56255	2.30E-04
				1797.08038	2.10E-04
				1796.5982	1.80E-04
				1796.11602	1.60E-04
				1795.63384	1.50E-04
				1795.15166	1.70E-04
				1794.66948	2.10E-04
				1794.1873	2.40E-04
				1793.70512	2.20E-04
				1793.22295	1.80E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1792.74077	1.50E-04
				1792.25859	1.20E-04
				1791.77641	7.00E-05
				1791.29423	6.00E-05
				1790.81205	8.00E-05
				1790.32987	1.10E-04
				1789.84769	1.20E-04
				1789.36552	1.50E-04
				1788.88334	2.00E-04
				1788.40116	2.20E-04
				1787.91898	2.20E-04
				1787.4368	2.30E-04
				1786.95462	2.30E-04
				1786.47244	2.20E-04
				1785.99026	1.90E-04
				1785.50808	1.40E-04
				1785.02591	1.20E-04
				1784.54373	1.10E-04
				1784.06155	1.20E-04
				1783.57937	1.60E-04
				1783.09719	2.10E-04
				1782.61501	2.40E-04
				1782.13283	2.20E-04
				1781.65065	1.90E-04
				1781.16848	1.70E-04
				1780.6863	1.70E-04
				1780.20412	1.70E-04
				1779.72194	1.80E-04
				1779.23976	1.90E-04
				1778.75758	2.00E-04
				1778.2754	2.00E-04
				1777.79322	2.00E-04
				1777.31105	2.00E-04
				1776.82887	2.10E-04
				1776.34669	2.10E-04
				1775.86451	2.10E-04
				1775.38233	2.00E-04
				1774.90015	2.10E-04
				1774.41797	2.20E-04
				1773.93579	2.00E-04
				1773.45362	1.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1772.97144	1.40E-04
				1772.48926	1.00E-04
				1772.00708	6.00E-05
				1771.5249	6.00E-05
				1771.04272	1.00E-04
				1770.56054	1.60E-04
				1770.07836	2.00E-04
				1769.59618	2.30E-04
				1769.11401	2.30E-04
				1768.63183	1.90E-04
				1768.14965	1.70E-04
				1767.66747	1.70E-04
				1767.18529	1.90E-04
				1766.70311	2.30E-04
				1766.22093	2.80E-04
				1765.73875	3.10E-04
				1765.25658	3.00E-04
				1764.7744	2.80E-04
				1764.29222	2.70E-04
				1763.81004	2.80E-04
				1763.32786	2.70E-04
				1762.84568	2.20E-04
				1762.3635	1.70E-04
				1761.88132	1.40E-04
				1761.39915	1.20E-04
				1760.91697	1.40E-04
				1760.43479	1.90E-04
				1759.95261	2.70E-04
				1759.47043	3.10E-04
				1758.98825	3.20E-04
				1758.50607	3.10E-04
				1758.02389	2.70E-04
				1757.54171	2.20E-04
				1757.05954	1.90E-04
				1756.57736	2.00E-04
				1756.09518	2.30E-04
				1755.613	2.70E-04
				1755.13082	3.30E-04
				1754.64864	3.70E-04
				1754.16646	3.80E-04
				1753.68428	3.80E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1753.20211	4.20E-04
				1752.71993	4.30E-04
				1752.23775	3.80E-04
				1751.75557	3.40E-04
				1751.27339	3.30E-04
				1750.79121	3.60E-04
				1750.30903	3.80E-04
				1749.82685	4.20E-04
				1749.34468	4.70E-04
				1748.8625	4.80E-04
				1748.38032	4.50E-04
				1747.89814	4.40E-04
				1747.41596	4.60E-04
				1746.93378	4.80E-04
				1746.4516	5.00E-04
				1745.96942	5.20E-04
				1745.48724	5.40E-04
				1745.00507	5.50E-04
				1744.52289	5.50E-04
				1744.04071	5.60E-04
				1743.55853	5.80E-04
				1743.07635	6.10E-04
				1742.59417	6.60E-04
				1742.11199	7.20E-04
				1741.62981	7.60E-04
				1741.14764	7.50E-04
				1740.66546	6.80E-04
				1740.18328	6.20E-04
				1739.7011	6.10E-04
				1739.21892	6.40E-04
				1738.73674	7.00E-04
				1738.25456	7.80E-04
				1737.77238	8.50E-04
				1737.29021	8.70E-04
				1736.80803	8.80E-04
				1736.32585	9.10E-04
				1735.84367	8.90E-04
				1735.36149	8.40E-04
				1734.87931	7.70E-04
				1734.39713	6.90E-04
				1733.91495	6.50E-04

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1733.43277	6.70E-04
				1732.9506	7.70E-04
				1732.46842	8.90E-04
				1731.98624	9.80E-04
				1731.50406	0.00103
				1731.02188	0.00102
				1730.5397	9.90E-04
				1730.05752	9.70E-04
				1729.57534	9.70E-04
				1729.09317	9.90E-04
				1728.61099	0.00103
				1728.12881	0.00108
				1727.64663	0.0011
				1727.16445	0.0011
				1726.68227	0.0011
				1726.20009	0.0011
				1725.71791	0.00111
				1725.23574	0.00112
				1724.75356	0.00113
				1724.27138	0.00112
				1723.7892	0.00112
				1723.30702	0.0011
				1722.82484	0.00109
				1722.34266	0.00108
				1721.86048	0.00108
				1721.3783	0.00109
				1720.89613	0.00112
				1720.41395	0.00114
				1719.93177	0.00113
				1719.44959	0.00111
				1718.96741	0.00106
				1718.48523	9.80E-04
				1718.00305	9.30E-04
				1717.52087	9.40E-04
				1717.0387	0.00101
				1716.55652	0.00107
				1716.07434	0.00108
				1715.59216	0.00107
				1715.10998	0.00105
				1714.6278	0.00102
				1714.14562	0.00102



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1713.66344	0.00108
				1713.18127	0.00115
				1712.69909	0.00121
				1712.21691	0.00124
				1711.73473	0.00124
				1711.25255	0.00122
				1710.77037	0.0012
				1710.28819	0.0012
				1709.80601	0.00122
				1709.32384	0.00125
				1708.84166	0.00129
				1708.35948	0.00132
				1707.8773	0.00132
				1707.39512	0.00128
				1706.91294	0.00125
				1706.43076	0.00127
				1705.94858	0.0013
				1705.4664	0.00131
				1704.98423	0.00133
				1704.50205	0.00136
				1704.01987	0.00139
				1703.53769	0.00143
				1703.05551	0.0015
				1702.57333	0.00162
				1702.09115	0.0017
				1701.60897	0.00164
				1701.1268	0.00152
				1700.64462	0.00143
				1700.16244	0.00139
				1699.68026	0.00144
				1699.19808	0.00156
				1698.7159	0.00175
				1698.23372	0.00195
				1697.75154	0.00209
				1697.26937	0.00213
				1696.78719	0.00209
				1696.30501	0.00205
				1695.82283	0.00206
				1695.34065	0.00211
				1694.85847	0.00223
				1694.37629	0.00242

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1693.89411	0.00266
				1693.41193	0.00283
				1692.92976	0.00294
				1692.44758	0.00304
				1691.9654	0.00314
				1691.48322	0.00322
				1691.00104	0.00329
				1690.51886	0.00339
				1690.03668	0.00349
				1689.5545	0.00359
				1689.07233	0.00369
				1688.59015	0.00381
				1688.10797	0.00392
				1687.62579	0.00402
				1687.14361	0.00414
				1686.66143	0.00431
				1686.17925	0.00442
				1685.69707	0.00444
				1685.2149	0.00442
				1684.73272	0.0044
				1684.25054	0.00441
				1683.76836	0.0045
				1683.28618	0.0047
				1682.804	0.00499
				1682.32182	0.00524
				1681.83964	0.00542
				1681.35746	0.00556
				1680.87529	0.00565
				1680.39311	0.00572
				1679.91093	0.00581
				1679.42875	0.00594
				1678.94657	0.00608
				1678.46439	0.00622
				1677.98221	0.00635
				1677.50003	0.00647
				1677.01786	0.00657
				1676.53568	0.00658
				1676.0535	0.00658
				1675.57132	0.00661
				1675.08914	0.00668
				1674.60696	0.00678

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1674.12478	0.00692
				1673.6426	0.0071
				1673.16043	0.00725
				1672.67825	0.00731
				1672.19607	0.00735
				1671.71389	0.00743
				1671.23171	0.00753
				1670.74953	0.00761
				1670.26735	0.00764
				1669.78517	0.00767
				1669.30299	0.0077
				1668.82082	0.00776
				1668.33864	0.00786
				1667.85646	0.00802
				1667.37428	0.00821
				1666.8921	0.00835
				1666.40992	0.00845
				1665.92774	0.00852
				1665.44556	0.00859
				1664.96339	0.00866
				1664.48121	0.00873
				1663.99903	0.00876
				1663.51685	0.00876
				1663.03467	0.00877
				1662.55249	0.00881
				1662.07031	0.00888
				1661.58813	0.00899
				1661.10596	0.00911
				1660.62378	0.00922
				1660.1416	0.00928
				1659.65942	0.0093
				1659.17724	0.00932
				1658.69506	0.00934
				1658.21288	0.00936
				1657.7307	0.00937
				1657.24852	0.00938
				1656.76635	0.0094
				1656.28417	0.00941
				1655.80199	0.00936
				1655.31981	0.0093
				1654.83763	0.0093

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1654.35545	0.00929
				1653.87327	0.00919
				1653.39109	0.00906
				1652.90892	0.00895
				1652.42674	0.00886
				1651.94456	0.00877
				1651.46238	0.00875
				1650.9802	0.00882
				1650.49802	0.00888
				1650.01584	0.00885
				1649.53366	0.00876
				1649.05149	0.00864
				1648.56931	0.0085
				1648.08713	0.00839
				1647.60495	0.00832
				1647.12277	0.00822
				1646.64059	0.00811
				1646.15841	0.00802
				1645.67623	0.00792
				1645.19406	0.00783
				1644.71188	0.00776
				1644.2297	0.00775
				1643.74752	0.00774
				1643.26534	0.00767
				1642.78316	0.00759
				1642.30098	0.00752
				1641.8188	0.00745
				1641.33662	0.00739
				1640.85445	0.00733
				1640.37227	0.00726
				1639.89009	0.0072
				1639.40791	0.00713
				1638.92573	0.00704
				1638.44355	0.00692
				1637.96137	0.00681
				1637.47919	0.00677
				1636.99702	0.00673
				1636.51484	0.00659
				1636.03266	0.00644
				1635.55048	0.00631
				1635.0683	0.00619

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1634.58612	0.00612
				1634.10394	0.00613
				1633.62176	0.00624
				1633.13959	0.00631
				1632.65741	0.00629
				1632.17523	0.00623
				1631.69305	0.00617
				1631.21087	0.0061
				1630.72869	0.00604
				1630.24651	0.006
				1629.76433	0.00596
				1629.28215	0.00592
				1628.79998	0.00586
				1628.3178	0.00581
				1627.83562	0.00577
				1627.35344	0.00575
				1626.87126	0.00574
				1626.38908	0.00574
				1625.9069	0.00574
				1625.42472	0.00574
				1624.94255	0.0057
				1624.46037	0.00563
				1623.97819	0.00557
				1623.49601	0.00553
				1623.01383	0.00553
				1622.53165	0.00556
				1622.04947	0.00564
				1621.56729	0.00575
				1621.08512	0.00583
				1620.60294	0.00588
				1620.12076	0.00591
				1619.63858	0.00593
				1619.1564	0.00597
				1618.67422	0.00605
				1618.19204	0.0061
				1617.70986	0.00609
				1617.22768	0.00609
				1616.74551	0.00611
				1616.26333	0.00615
				1615.78115	0.00623
				1615.29897	0.00635

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1614.81679	0.0065
				1614.33461	0.00663
				1613.85243	0.00671
				1613.37025	0.00679
				1612.88808	0.00685
				1612.4059	0.0069
				1611.92372	0.00693
				1611.44154	0.00696
				1610.95936	0.00697
				1610.47718	0.00698
				1609.995	0.00698
				1609.51282	0.00697
				1609.03065	0.00696
				1608.54847	0.00692
				1608.06629	0.00687
				1607.58411	0.00682
				1607.10193	0.00675
				1606.61975	0.00666
				1606.13757	0.00657
				1605.65539	0.00649
				1605.17321	0.00643
				1604.69104	0.00636
				1604.20886	0.0063
				1603.72668	0.00624
				1603.2445	0.00618
				1602.76232	0.00611
				1602.28014	0.00602
				1601.79796	0.00594
				1601.31578	0.00587
				1600.83361	0.00579
				1600.35143	0.00571
				1599.86925	0.00564
				1599.38707	0.00558
				1598.90489	0.00552
				1598.42271	0.00547
				1597.94053	0.00544
				1597.45835	0.0054
				1596.97618	0.00538
				1596.494	0.00538
				1596.01182	0.00539
				1595.52964	0.00541

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1595.04746	0.00543
				1594.56528	0.00547
				1594.0831	0.00553
				1593.60092	0.0056
				1593.11874	0.00569
				1592.63657	0.0058
				1592.15439	0.00591
				1591.67221	0.00601
				1591.19003	0.00611
				1590.70785	0.00622
				1590.22567	0.00634
				1589.74349	0.00646
				1589.26131	0.00656
				1588.77914	0.00665
				1588.29696	0.00672
				1587.81478	0.00677
				1587.3326	0.00681
				1586.85042	0.00683
				1586.36824	0.00683
				1585.88606	0.0068
				1585.40388	0.00673
				1584.92171	0.00665
				1584.43953	0.00655
				1583.95735	0.00644
				1583.47517	0.00632
				1582.99299	0.00621
				1582.51081	0.00609
				1582.02863	0.00596
				1581.54645	0.00583
				1581.06428	0.0057
				1580.5821	0.00557
				1580.09992	0.00545
				1579.61774	0.00533
				1579.13556	0.00522
				1578.65338	0.00511
				1578.1712	0.00502
				1577.68902	0.00491
				1577.20684	0.00472
				1576.72467	0.00453
				1576.24249	0.00438
				1575.76031	0.00429

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1575.27813	0.00424
				1574.79595	0.00425
				1574.31377	0.0043
				1573.83159	0.00432
				1573.34941	0.00429
				1572.86724	0.00425
				1572.38506	0.00423
				1571.90288	0.00425
				1571.4207	0.00426
				1570.93852	0.00422
				1570.45634	0.00415
				1569.97416	0.00409
				1569.49198	0.00407
				1569.00981	0.0041
				1568.52763	0.00418
				1568.04545	0.00431
				1567.56327	0.00445
				1567.08109	0.00455
				1566.59891	0.00461
				1566.11673	0.00463
				1565.63455	0.00465
				1565.15237	0.00467
				1564.6702	0.00471
				1564.18802	0.00477
				1563.70584	0.00486
				1563.22366	0.00497
				1562.74148	0.0051
				1562.2593	0.00522
				1561.77712	0.00533
				1561.29494	0.00534
				1560.81277	0.0053
				1560.33059	0.00527
				1559.84841	0.00528
				1559.36623	0.00529
				1558.88405	0.00534
				1558.40187	0.00547
				1557.91969	0.00565
				1557.43751	0.0058
				1556.95534	0.00598
				1556.47316	0.00622
				1555.99098	0.00642



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1555.5088	0.00652
				1555.02662	0.00657
				1554.54444	0.00663
				1554.06226	0.00673
				1553.58008	0.00687
				1553.0979	0.00704
				1552.61573	0.00725
				1552.13355	0.00742
				1551.65137	0.00752
				1551.16919	0.00757
				1550.68701	0.00761
				1550.20483	0.00767
				1549.72265	0.00776
				1549.24047	0.00788
				1548.7583	0.00803
				1548.27612	0.00818
				1547.79394	0.0083
				1547.31176	0.0084
				1546.82958	0.00846
				1546.3474	0.00847
				1545.86522	0.00848
				1545.38304	0.0085
				1544.90087	0.00854
				1544.41869	0.0086
				1543.93651	0.00869
				1543.45433	0.00874
				1542.97215	0.00873
				1542.48997	0.00869
				1542.00779	0.00867
				1541.52561	0.00867
				1541.04343	0.00867
				1540.56126	0.00866
				1540.07908	0.00861
				1539.5969	0.00852
				1539.11472	0.00844
				1538.63254	0.00843
				1538.15036	0.00847
				1537.66818	0.00851
				1537.186	0.00856
				1536.70383	0.00857
				1536.22165	0.00854

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1535.73947	0.0085
				1535.25729	0.00842
				1534.77511	0.00828
				1534.29293	0.0081
				1533.81075	0.00794
				1533.32857	0.00781
				1532.8464	0.00772
				1532.36422	0.00767
				1531.88204	0.00765
				1531.39986	0.0076
				1530.91768	0.00751
				1530.4355	0.00741
				1529.95332	0.00731
				1529.47114	0.00721
				1528.98896	0.0071
				1528.50679	0.00698
				1528.02461	0.00685
				1527.54243	0.00677
				1527.06025	0.0067
				1526.57807	0.00658
				1526.09589	0.00642
				1525.61371	0.00627
				1525.13153	0.00617
				1524.64936	0.00609
				1524.16718	0.00603
				1523.685	0.00599
				1523.20282	0.00595
				1522.72064	0.00585
				1522.23846	0.0057
				1521.75628	0.00556
				1521.2741	0.00544
				1520.79193	0.00536
				1520.30975	0.0053
				1519.82757	0.0053
				1519.34539	0.00537
				1518.86321	0.00542
				1518.38103	0.0054
				1517.89885	0.00532
				1517.41667	0.0052
				1516.9345	0.00511
				1516.45232	0.00506

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1515.97014	0.00505
				1515.48796	0.00507
				1515.00578	0.0051
				1514.5236	0.00512
				1514.04142	0.00513
				1513.55924	0.00511
				1513.07706	0.00509
				1512.59489	0.0051
				1512.11271	0.00513
				1511.63053	0.00518
				1511.14835	0.00526
				1510.66617	0.00538
				1510.18399	0.00549
				1509.70181	0.00556
				1509.21963	0.00566
				1508.73746	0.00577
				1508.25528	0.00586
				1507.7731	0.00595
				1507.29092	0.00607
				1506.80874	0.00621
				1506.32656	0.00639
				1505.84438	0.0066
				1505.3622	0.00682
				1504.88003	0.00702
				1504.39785	0.00712
				1503.91567	0.00717
				1503.43349	0.00718
				1502.95131	0.00711
				1502.46913	0.00699
				1501.98695	0.00686
				1501.50477	0.00673
				1501.02259	0.00662
				1500.54042	0.00653
				1500.05824	0.00643
				1499.57606	0.00632
				1499.09388	0.00621
				1498.6117	0.00615
				1498.12952	0.00612
				1497.64734	0.00611
				1497.16516	0.00613
				1496.68299	0.0062

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1496.20081	0.00631
				1495.71863	0.00646
				1495.23645	0.00669
				1494.75427	0.00701
				1494.27209	0.00738
				1493.78991	0.00778
				1493.30773	0.00821
				1492.82556	0.00866
				1492.34338	0.00913
				1491.8612	0.00959
				1491.37902	0.01002
				1490.89684	0.01043
				1490.41466	0.0108
				1489.93248	0.01116
				1489.4503	0.01149
				1488.96812	0.01175
				1488.48595	0.01184
				1488.00377	0.01178
				1487.52159	0.01159
				1487.03941	0.01126
				1486.55723	0.01086
				1486.07505	0.01043
				1485.59287	0.01001
				1485.11069	0.00956
				1484.62852	0.00908
				1484.14634	0.00861
				1483.66416	0.00819
				1483.18198	0.0078
				1482.6998	0.00745
				1482.21762	0.00713
				1481.73544	0.00684
				1481.25326	0.00656
				1480.77109	0.0063
				1480.28891	0.00608
				1479.80673	0.0059
				1479.32455	0.00573
				1478.84237	0.00558
				1478.36019	0.00545
				1477.87801	0.00532
				1477.39583	0.00514
				1476.91365	0.00496

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1476.43148	0.0048
				1475.9493	0.00468
				1475.46712	0.00461
				1474.98494	0.00453
				1474.50276	0.00447
				1474.02058	0.00441
				1473.5384	0.00433
				1473.05622	0.00424
				1472.57405	0.00417
				1472.09187	0.00415
				1471.60969	0.00416
				1471.12751	0.00416
				1470.64533	0.00416
				1470.16315	0.0042
				1469.68097	0.00424
				1469.19879	0.00426
				1468.71662	0.00428
				1468.23444	0.00429
				1467.75226	0.00429
				1467.27008	0.00428
				1466.7879	0.00429
				1466.30572	0.00428
				1465.82354	0.00424
				1465.34136	0.00421
				1464.85918	0.0042
				1464.37701	0.00422
				1463.89483	0.00425
				1463.41265	0.00431
				1462.93047	0.0044
				1462.44829	0.00446
				1461.96611	0.0045
				1461.48393	0.00455
				1461.00175	0.00461
				1460.51958	0.00464
				1460.0374	0.00465
				1459.55522	0.00463
				1459.07304	0.00462
				1458.59086	0.00464
				1458.10868	0.00466
				1457.6265	0.00467
				1457.14432	0.00471

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1456.66215	0.00477
				1456.17997	0.00484
				1455.69779	0.0049
				1455.21561	0.00499
				1454.73343	0.00509
				1454.25125	0.00515
				1453.76907	0.00518
				1453.28689	0.00521
				1452.80472	0.00523
				1452.32254	0.00525
				1451.84036	0.00526
				1451.35818	0.00528
				1450.876	0.0053
				1450.39382	0.00533
				1449.91164	0.00536
				1449.42946	0.00537
				1448.94728	0.00535
				1448.46511	0.00534
				1447.98293	0.00536
				1447.50075	0.0054
				1447.01857	0.00545
				1446.53639	0.00549
				1446.05421	0.00553
				1445.57203	0.00553
				1445.08985	0.00549
				1444.60768	0.00544
				1444.1255	0.00538
				1443.64332	0.00533
				1443.16114	0.00528
				1442.67896	0.00525
				1442.19678	0.00524
				1441.7146	0.00525
				1441.23242	0.00527
				1440.75025	0.00529
				1440.26807	0.00528
				1439.78589	0.00523
				1439.30371	0.00515
				1438.82153	0.0051
				1438.33935	0.00506
				1437.85717	0.00496
				1437.37499	0.00483

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1436.89281	0.00472
				1436.41064	0.00464
				1435.92846	0.0046
				1435.44628	0.0046
				1434.9641	0.00467
				1434.48192	0.00475
				1433.99974	0.00475
				1433.51756	0.00472
				1433.03538	0.0047
				1432.55321	0.00468
				1432.07103	0.00466
				1431.58885	0.00463
				1431.10667	0.00456
				1430.62449	0.00448
				1430.14231	0.00442
				1429.66013	0.00442
				1429.17795	0.00445
				1428.69578	0.0045
				1428.2136	0.00456
				1427.73142	0.00462
				1427.24924	0.00464
				1426.76706	0.00464
				1426.28488	0.00465
				1425.8027	0.00467
				1425.32052	0.00468
				1424.83834	0.00464
				1424.35617	0.00462
				1423.87399	0.00462
				1423.39181	0.00465
				1422.90963	0.0047
				1422.42745	0.00476
				1421.94527	0.00484
				1421.46309	0.00494
				1420.98091	0.005
				1420.49874	0.00498
				1420.01656	0.00493
				1419.53438	0.00489
				1419.0522	0.00485
				1418.57002	0.00484
				1418.08784	0.00487
				1417.60566	0.00497

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1417.12348	0.00506
				1416.64131	0.00511
				1416.15913	0.00516
				1415.67695	0.00522
				1415.19477	0.00529
				1414.71259	0.00534
				1414.23041	0.00535
				1413.74823	0.00534
				1413.26605	0.00529
				1412.78387	0.00523
				1412.3017	0.00517
				1411.81952	0.00513
				1411.33734	0.00511
				1410.85516	0.00509
				1410.37298	0.00506
				1409.8908	0.00501
				1409.40862	0.00493
				1408.92644	0.00484
				1408.44427	0.00474
				1407.96209	0.00465
				1407.47991	0.00457
				1406.99773	0.00453
				1406.51555	0.00449
				1406.03337	0.00444
				1405.55119	0.00438
				1405.06901	0.00432
				1404.58684	0.00425
				1404.10466	0.00418
				1403.62248	0.00413
				1403.1403	0.0041
				1402.65812	0.00407
				1402.17594	0.00401
				1401.69376	0.00395
				1401.21158	0.0039
				1400.72941	0.00385
				1400.24723	0.00378
				1399.76505	0.00371
				1399.28287	0.00364
				1398.80069	0.00357
				1398.31851	0.00351
				1397.83633	0.00345



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1397.35415	0.00342
				1396.87197	0.00339
				1396.3898	0.00339
				1395.90762	0.00339
				1395.42544	0.00337
				1394.94326	0.00334
				1394.46108	0.00331
				1393.9789	0.0033
				1393.49672	0.00331
				1393.01454	0.00333
				1392.53237	0.00337
				1392.05019	0.00338
				1391.56801	0.00335
				1391.08583	0.00332
				1390.60365	0.00329
				1390.12147	0.00328
				1389.63929	0.0033
				1389.15711	0.00331
				1388.67494	0.0033
				1388.19276	0.00327
				1387.71058	0.00324
				1387.2284	0.00324
				1386.74622	0.00325
				1386.26404	0.00328
				1385.78186	0.00332
				1385.29968	0.00334
				1384.8175	0.00333
				1384.33533	0.00331
				1383.85315	0.00329
				1383.37097	0.00328
				1382.88879	0.00327
				1382.40661	0.00327
				1381.92443	0.00326
				1381.44225	0.00325
				1380.96007	0.00323
				1380.4779	0.0032
				1379.99572	0.00318
				1379.51354	0.00315
				1379.03136	0.00311
				1378.54918	0.00308
				1378.067	0.00308

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1377.58482	0.00308
				1377.10264	0.00307
				1376.62047	0.00306
				1376.13829	0.00305
				1375.65611	0.00304
				1375.17393	0.00301
				1374.69175	0.00296
				1374.20957	0.00292
				1373.72739	0.0029
				1373.24521	0.00289
				1372.76303	0.00289
				1372.28086	0.00291
				1371.79868	0.00293
				1371.3165	0.00295
				1370.83432	0.00296
				1370.35214	0.00297
				1369.86996	0.00297
				1369.38778	0.00296
				1368.9056	0.00296
				1368.42343	0.00295
				1367.94125	0.00294
				1367.45907	0.00295
				1366.97689	0.00298
				1366.49471	0.00303
				1366.01253	0.00308
				1365.53035	0.00313
				1365.04817	0.00318
				1364.566	0.00319
				1364.08382	0.00314
				1363.60164	0.00307
				1363.11946	0.003
				1362.63728	0.00295
				1362.1551	0.00292
				1361.67292	0.00293
				1361.19074	0.00295
				1360.70856	0.00294
				1360.22639	0.0029
				1359.74421	0.00287
				1359.26203	0.00285
				1358.77985	0.00283
				1358.29767	0.00283

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1357.81549	0.00283
				1357.33331	0.00282
				1356.85113	0.00281
				1356.36896	0.00281
				1355.88678	0.00281
				1355.4046	0.00283
				1354.92242	0.00285
				1354.44024	0.00288
				1353.95806	0.00293
				1353.47588	0.00298
				1352.9937	0.00302
				1352.51153	0.00306
				1352.02935	0.00309
				1351.54717	0.00311
				1351.06499	0.00312
				1350.58281	0.00311
				1350.10063	0.00312
				1349.61845	0.00313
				1349.13627	0.00316
				1348.65409	0.00319
				1348.17192	0.00321
				1347.68974	0.00323
				1347.20756	0.00325
				1346.72538	0.00328
				1346.2432	0.00331
				1345.76102	0.00336
				1345.27884	0.00342
				1344.79666	0.00349
				1344.31449	0.00356
				1343.83231	0.00363
				1343.35013	0.00369
				1342.86795	0.00373
				1342.38577	0.00375
				1341.90359	0.00376
				1341.42141	0.00378
				1340.93923	0.0038
				1340.45706	0.00382
				1339.97488	0.00386
				1339.4927	0.00392
				1339.01052	0.00401
				1338.52834	0.0041

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1338.04616	0.00418
				1337.56398	0.00426
				1337.0818	0.00432
				1336.59963	0.00437
				1336.11745	0.00443
				1335.63527	0.00451
				1335.15309	0.00462
				1334.67091	0.00473
				1334.18873	0.00485
				1333.70655	0.00497
				1333.22437	0.00509
				1332.74219	0.00521
				1332.26002	0.00532
				1331.77784	0.00543
				1331.29566	0.00553
				1330.81348	0.00564
				1330.3313	0.00575
				1329.84912	0.00586
				1329.36694	0.00597
				1328.88476	0.00609
				1328.40259	0.0062
				1327.92041	0.0063
				1327.43823	0.00639
				1326.95605	0.00647
				1326.47387	0.00654
				1325.99169	0.00658
				1325.50951	0.0066
				1325.02733	0.00662
				1324.54516	0.00662
				1324.06298	0.00661
				1323.5808	0.00659
				1323.09862	0.00657
				1322.61644	0.00654
				1322.13426	0.00653
				1321.65208	0.00652
				1321.1699	0.0065
				1320.68772	0.00646
				1320.20555	0.00639
				1319.72337	0.0063
				1319.24119	0.00622
				1318.75901	0.00614

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1318.27683	0.00607
				1317.79465	0.00602
				1317.31247	0.00601
				1316.83029	0.00601
				1316.34812	0.00599
				1315.86594	0.00596
				1315.38376	0.00593
				1314.90158	0.00589
				1314.4194	0.00584
				1313.93722	0.00582
				1313.45504	0.00584
				1312.97286	0.0059
				1312.49069	0.00597
				1312.00851	0.00604
				1311.52633	0.0061
				1311.04415	0.00613
				1310.56197	0.00618
				1310.07979	0.00623
				1309.59761	0.00629
				1309.11543	0.00636
				1308.63325	0.00643
				1308.15108	0.00648
				1307.6689	0.00649
				1307.18672	0.00648
				1306.70454	0.00647
				1306.22236	0.00646
				1305.74018	0.00646
				1305.258	0.00644
				1304.77582	0.00641
				1304.29365	0.00637
				1303.81147	0.00634
				1303.32929	0.00633
				1302.84711	0.00634
				1302.36493	0.00637
				1301.88275	0.00642
				1301.40057	0.00645
				1300.91839	0.00649
				1300.43622	0.00653
				1299.95404	0.00657
				1299.47186	0.00662
				1298.98968	0.00666

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1298.5075	0.00671
				1298.02532	0.00678
				1297.54314	0.00688
				1297.06096	0.007
				1296.57878	0.00711
				1296.09661	0.00719
				1295.61443	0.00723
				1295.13225	0.00724
				1294.65007	0.00723
				1294.16789	0.00721
				1293.68571	0.00717
				1293.20353	0.00712
				1292.72135	0.00703
				1292.23918	0.00691
				1291.757	0.0068
				1291.27482	0.00669
				1290.79264	0.00659
				1290.31046	0.0065
				1289.82828	0.00641
				1289.3461	0.00633
				1288.86392	0.00625
				1288.38175	0.00616
				1287.89957	0.00608
				1287.41739	0.00601
				1286.93521	0.00595
				1286.45303	0.00588
				1285.97085	0.00582
				1285.48867	0.00579
				1285.00649	0.00577
				1284.52431	0.00573
				1284.04214	0.0057
				1283.55996	0.00569
				1283.07778	0.00567
				1282.5956	0.00564
				1282.11342	0.00562
				1281.63124	0.0056
				1281.14906	0.00557
				1280.66688	0.00552
				1280.18471	0.00547
				1279.70253	0.00542
				1279.22035	0.00538

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1278.73817	0.00534
				1278.25599	0.00532
				1277.77381	0.00532
				1277.29163	0.0053
				1276.80945	0.00529
				1276.32728	0.00529
				1275.8451	0.00528
				1275.36292	0.00527
				1274.88074	0.00526
				1274.39856	0.00525
				1273.91638	0.00525
				1273.4342	0.00526
				1272.95202	0.00526
				1272.46985	0.00526
				1271.98767	0.00528
				1271.50549	0.00533
				1271.02331	0.0054
				1270.54113	0.00546
				1270.05895	0.00553
				1269.57677	0.00559
				1269.09459	0.00564
				1268.61241	0.00571
				1268.13024	0.0058
				1267.64806	0.00591
				1267.16588	0.00601
				1266.6837	0.0061
				1266.20152	0.00621
				1265.71934	0.00632
				1265.23716	0.00643
				1264.75498	0.00656
				1264.27281	0.00671
				1263.79063	0.00689
				1263.30845	0.00705
				1262.82627	0.00721
				1262.34409	0.0074
				1261.86191	0.0076
				1261.37973	0.0078
				1260.89755	0.00803
				1260.41538	0.00829
				1259.9332	0.0086
				1259.45102	0.00892

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1258.96884	0.00924
				1258.48666	0.00957
				1258.00448	0.0099
				1257.5223	0.01025
				1257.04012	0.0106
				1256.55794	0.01095
				1256.07577	0.01129
				1255.59359	0.01161
				1255.11141	0.01191
				1254.62923	0.01221
				1254.14705	0.01251
				1253.66487	0.01284
				1253.18269	0.01318
				1252.70051	0.0135
				1252.21834	0.01379
				1251.73616	0.01408
				1251.25398	0.01438
				1250.7718	0.01465
				1250.28962	0.0149
				1249.80744	0.01514
				1249.32526	0.01536
				1248.84308	0.01554
				1248.36091	0.0157
				1247.87873	0.01586
				1247.39655	0.01604
				1246.91437	0.01619
				1246.43219	0.01633
				1245.95001	0.01643
				1245.46783	0.01647
				1244.98565	0.01649
				1244.50347	0.0165
				1244.0213	0.01651
				1243.53912	0.0165
				1243.05694	0.01647
				1242.57476	0.01641
				1242.09258	0.01629
				1241.6104	0.01614
				1241.12822	0.01598
				1240.64604	0.01581
				1240.16387	0.01562
				1239.68169	0.01541



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1239.19951	0.01517
				1238.71733	0.01491
				1238.23515	0.01464
				1237.75297	0.01436
				1237.27079	0.01406
				1236.78861	0.01378
				1236.30644	0.01349
				1235.82426	0.01319
				1235.34208	0.01288
				1234.8599	0.01256
				1234.37772	0.01225
				1233.89554	0.01192
				1233.41336	0.01157
				1232.93118	0.01123
				1232.449	0.01091
				1231.96683	0.01059
				1231.48465	0.01029
				1231.00247	0.01003
				1230.52029	0.00979
				1230.03811	0.00956
				1229.55593	0.00931
				1229.07375	0.00905
				1228.59157	0.00879
				1228.1094	0.00853
				1227.62722	0.00828
				1227.14504	0.00806
				1226.66286	0.00787
				1226.18068	0.00767
				1225.6985	0.00747
				1225.21632	0.00725
				1224.73414	0.00704
				1224.25197	0.00684
				1223.76979	0.00666
				1223.28761	0.0065
				1222.80543	0.00636
				1222.32325	0.00621
				1221.84107	0.00606
				1221.35889	0.00591
				1220.87671	0.00577
				1220.39453	0.00564
				1219.91236	0.00552

Virgin Membrane		Fouled by alginate in absence of Ca2+		Fouled by BSA in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
				1219.43018	0.0054
				1218.948	0.00529
				1218.46582	0.0052
				1217.98364	0.00511
				1217.50146	0.00502
				1217.01928	0.00491
				1216.5371	0.0048
				1216.05493	0.00469
				1215.57275	0.00462
				1215.09057	0.00457
				1214.60839	0.00453
				1214.12621	0.00449
				1213.64403	0.00442
				1213.16185	0.00435
				1212.67967	0.00429
				1212.1975	0.00426
				1211.71532	0.00425
				1211.23314	0.00425
				1210.75096	0.00424
				1210.26878	0.00422
				1209.7866	0.00421
				1209.30442	0.00422
				1208.82224	0.00425
				1208.34007	0.00429
				1207.85789	0.00433
				1207.37571	0.00436
				1206.89353	0.00438
				1206.41135	0.00439
				1205.92917	0.00439
				1205.44699	0.00438
				1204.96481	0.00437
				1204.48263	0.00434
				1204.00046	0.00431
				1203.51828	0.00429
				1203.0361	0.00427
				1202.55392	0.00422
				1202.07174	0.00416
				1201.58956	0.00411
				1201.10738	0.00408
				1200.6252	0.00404
				1200.14303	0.004

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1199.66085	0.00394
				1199.17867	0.00386
				1198.69649	0.00377
				1198.21431	0.0037
				1197.73213	0.00368
				1197.24995	0.00367
				1196.76777	0.00366
				1196.2856	0.00364
				1195.80342	0.00362
				1195.32124	0.0036
				1194.83906	0.00361
				1194.35688	0.00362
				1193.8747	0.00364
				1193.39252	0.00365
				1192.91034	0.00366
				1192.42816	0.00366
				1191.94599	0.00366
				1191.46381	0.00366
				1190.98163	0.00366
				1190.49945	0.00367
				1190.01727	0.00368
				1189.53509	0.00368
				1189.05291	0.0037
				1188.57073	0.00374
				1188.08856	0.00375
				1187.60638	0.00374
				1187.1242	0.00372
				1186.64202	0.0037
				1186.15984	0.00369
				1185.67766	0.0037
				1185.19548	0.00374
				1184.7133	0.0038
				1184.23113	0.00386
				1183.74895	0.00391
				1183.26677	0.00395
				1182.78459	0.00398
				1182.30241	0.004
				1181.82023	0.00405
				1181.33805	0.00412
				1180.85587	0.00421
				1180.37369	0.00431

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1179.89152	0.00444
				1179.40934	0.00458
				1178.92716	0.00472
				1178.44498	0.00487
				1177.9628	0.00505
				1177.48062	0.00525
				1176.99844	0.00546
				1176.51626	0.00569
				1176.03409	0.00595
				1175.55191	0.00622
				1175.06973	0.0065
				1174.58755	0.00678
				1174.10537	0.00705
				1173.62319	0.0073
				1173.14101	0.00755
				1172.65883	0.00782
				1172.17666	0.00807
				1171.69448	0.00831
				1171.2123	0.00851
				1170.73012	0.00866
				1170.24794	0.00875
				1169.76576	0.00877
				1169.28358	0.00873
				1168.8014	0.00864
				1168.31922	0.00851
				1167.83705	0.00835
				1167.35487	0.00816
				1166.87269	0.00792
				1166.39051	0.00764
				1165.90833	0.00737
				1165.42615	0.00713
				1164.94397	0.00693
				1164.46179	0.00678
				1163.97962	0.00669
				1163.49744	0.00662
				1163.01526	0.00655
				1162.53308	0.00645
				1162.0509	0.00636
				1161.56872	0.00627
				1161.08654	0.00618
				1160.60436	0.00612

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1160.12219	0.00612
				1159.64001	0.00621
				1159.15783	0.00641
				1158.67565	0.00672
				1158.19347	0.00713
				1157.71129	0.00761
				1157.22911	0.00818
				1156.74693	0.00882
				1156.26475	0.00949
				1155.78258	0.01013
				1155.3004	0.01074
				1154.81822	0.01131
				1154.33604	0.01181
				1153.85386	0.01224
				1153.37168	0.01262
				1152.8895	0.01297
				1152.40732	0.01323
				1151.92515	0.01336
				1151.44297	0.01333
				1150.96079	0.01317
				1150.47861	0.0129
				1149.99643	0.01258
				1149.51425	0.01222
				1149.03207	0.01185
				1148.54989	0.01149
				1148.06772	0.01112
				1147.58554	0.01074
				1147.10336	0.01034
				1146.62118	0.00994
				1146.139	0.00953
				1145.65682	0.00912
				1145.17464	0.00875
				1144.69246	0.00849
				1144.21029	0.00827
				1143.72811	0.00806
				1143.24593	0.00783
				1142.76375	0.0076
				1142.28157	0.00732
				1141.79939	0.00699
				1141.31721	0.00669
				1140.83503	0.00643

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1140.35285	0.00618
				1139.87068	0.00593
				1139.3885	0.00574
				1138.90632	0.00563
				1138.42414	0.00559
				1137.94196	0.00562
				1137.45978	0.0057
				1136.9776	0.00572
				1136.49542	0.00566
				1136.01325	0.00557
				1135.53107	0.0055
				1135.04889	0.00549
				1134.56671	0.00556
				1134.08453	0.00563
				1133.60235	0.00564
				1133.12017	0.00556
				1132.63799	0.00544
				1132.15582	0.00537
				1131.67364	0.00537
				1131.19146	0.00544
				1130.70928	0.00556
				1130.2271	0.00567
				1129.74492	0.00574
				1129.26274	0.00578
				1128.78056	0.00582
				1128.29838	0.00586
				1127.81621	0.00587
				1127.33403	0.00584
				1126.85185	0.00584
				1126.36967	0.0059
				1125.88749	0.00597
				1125.40531	0.00605
				1124.92313	0.00613
				1124.44095	0.00618
				1123.95878	0.00615
				1123.4766	0.00611
				1122.99442	0.00609
				1122.51224	0.00605
				1122.03006	0.00604
				1121.54788	0.00611
				1121.0657	0.00623

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1120.58352	0.00631
				1120.10135	0.00634
				1119.61917	0.00637
				1119.13699	0.00639
				1118.65481	0.00636
				1118.17263	0.00637
				1117.69045	0.00645
				1117.20827	0.0066
				1116.72609	0.00679
				1116.24391	0.00701
				1115.76174	0.00725
				1115.27956	0.00745
				1114.79738	0.00761
				1114.3152	0.00775
				1113.83302	0.00787
				1113.35084	0.00803
				1112.86866	0.00832
				1112.38648	0.00878
				1111.90431	0.00933
				1111.42213	0.00984
				1110.93995	0.01026
				1110.45777	0.01058
				1109.97559	0.0108
				1109.49341	0.01097
				1109.01123	0.01118
				1108.52905	0.01145
				1108.04688	0.01167
				1107.5647	0.01178
				1107.08252	0.0118
				1106.60034	0.0118
				1106.11816	0.01181
				1105.63598	0.01184
				1105.1538	0.01188
				1104.67162	0.01186
				1104.18944	0.01167
				1103.70727	0.01132
				1103.22509	0.01091
				1102.74291	0.01052
				1102.26073	0.01013
				1101.77855	0.00977
				1101.29637	0.00948

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1100.81419	0.00926
				1100.33201	0.00906
				1099.84984	0.00888
				1099.36766	0.00869
				1098.88548	0.00846
				1098.4033	0.00816
				1097.92112	0.00782
				1097.43894	0.00751
				1096.95676	0.00727
				1096.47458	0.00709
				1095.99241	0.00694
				1095.51023	0.00678
				1095.02805	0.00663
				1094.54587	0.00653
				1094.06369	0.00643
				1093.58151	0.00632
				1093.09933	0.0062
				1092.61715	0.00608
				1092.13497	0.00594
				1091.6528	0.00579
				1091.17062	0.00564
				1090.68844	0.00553
				1090.20626	0.00547
				1089.72408	0.00543
				1089.2419	0.00543
				1088.75972	0.00545
				1088.27754	0.00549
				1087.79537	0.00552
				1087.31319	0.00554
				1086.83101	0.00558
				1086.34883	0.00566
				1085.86665	0.00576
				1085.38447	0.00584
				1084.90229	0.00585
				1084.42011	0.00582
				1083.93794	0.0058
				1083.45576	0.00582
				1082.97358	0.00589
				1082.4914	0.006
				1082.00922	0.00607
				1081.52704	0.00606



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1081.04486	0.00599
				1080.56268	0.00591
				1080.08051	0.00581
				1079.59833	0.00572
				1079.11615	0.00566
				1078.63397	0.0056
				1078.15179	0.0055
				1077.66961	0.00541
				1077.18743	0.00536
				1076.70525	0.00539
				1076.22307	0.00545
				1075.7409	0.00551
				1075.25872	0.00552
				1074.77654	0.00546
				1074.29436	0.00536
				1073.81218	0.00526
				1073.33	0.00518
				1072.84782	0.00512
				1072.36564	0.00507
				1071.88347	0.00499
				1071.40129	0.00485
				1070.91911	0.00464
				1070.43693	0.00442
				1069.95475	0.00424
				1069.47257	0.0041
				1068.99039	0.00395
				1068.50821	0.00379
				1068.02604	0.00366
				1067.54386	0.00357
				1067.06168	0.00346
				1066.5795	0.00337
				1066.09732	0.00336
				1065.61514	0.00341
				1065.13296	0.00346
				1064.65078	0.00353
				1064.1686	0.00362
				1063.68643	0.00368
				1063.20425	0.00368
				1062.72207	0.00361
				1062.23989	0.00351
				1061.75771	0.00341

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1061.27553	0.00329
				1060.79335	0.00318
				1060.31117	0.0031
				1059.829	0.00307
				1059.34682	0.00308
				1058.86464	0.00308
				1058.38246	0.00304
				1057.90028	0.00297
				1057.4181	0.00291
				1056.93592	0.00286
				1056.45374	0.00285
				1055.97157	0.00288
				1055.48939	0.00295
				1055.00721	0.00301
				1054.52503	0.00304
				1054.04285	0.00307
				1053.56067	0.00308
				1053.07849	0.00303
				1052.59631	0.00294
				1052.11413	0.00284
				1051.63196	0.00274
				1051.14978	0.00266
				1050.6676	0.00262
				1050.18542	0.00262
				1049.70324	0.00263
				1049.22106	0.00263
				1048.73888	0.00262
				1048.2567	0.0026
				1047.77453	0.0026
				1047.29235	0.0026
				1046.81017	0.00262
				1046.32799	0.00266
				1045.84581	0.00271
				1045.36363	0.00273
				1044.88145	0.00273
				1044.39927	0.00274
				1043.9171	0.00276
				1043.43492	0.00278
				1042.95274	0.0028
				1042.47056	0.00282
				1041.98838	0.00282

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1041.5062	0.00277
				1041.02402	0.00269
				1040.54184	0.00262
				1040.05966	0.00257
				1039.57749	0.00254
				1039.09531	0.00252
				1038.61313	0.00254
				1038.13095	0.00256
				1037.64877	0.00256
				1037.16659	0.00252
				1036.68441	0.00247
				1036.20223	0.00245
				1035.72006	0.00245
				1035.23788	0.00245
				1034.7557	0.00247
				1034.27352	0.00252
				1033.79134	0.00258
				1033.30916	0.00261
				1032.82698	0.00261
				1032.3448	0.00257
				1031.86263	0.00253
				1031.38045	0.00247
				1030.89827	0.0024
				1030.41609	0.00235
				1029.93391	0.00236
				1029.45173	0.00241
				1028.96955	0.00248
				1028.48737	0.00256
				1028.0052	0.00264
				1027.52302	0.00268
				1027.04084	0.00264
				1026.55866	0.00255
				1026.07648	0.00246
				1025.5943	0.0024
				1025.11212	0.00238
				1024.62994	0.00237
				1024.14776	0.00235
				1023.66559	0.00232
				1023.18341	0.00232
				1022.70123	0.0024
				1022.21905	0.00255

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1021.73687	0.00272
				1021.25469	0.00287
				1020.77251	0.00299
				1020.29033	0.00304
				1019.80816	0.00307
				1019.32598	0.00312
				1018.8438	0.00321
				1018.36162	0.00338
				1017.87944	0.0036
				1017.39726	0.00386
				1016.91508	0.00409
				1016.4329	0.0043
				1015.95073	0.00453
				1015.46855	0.00477
				1014.98637	0.00497
				1014.50419	0.00507
				1014.02201	0.0051
				1013.53983	0.005
				1013.05765	0.00478
				1012.57547	0.00453
				1012.09329	0.00436
				1011.61112	0.00427
				1011.12894	0.00416
				1010.64676	0.004
				1010.16458	0.00383
				1009.6824	0.00366
				1009.20022	0.00352
				1008.71804	0.0034
				1008.23586	0.00333
				1007.75369	0.00326
				1007.27151	0.00316
				1006.78933	0.00307
				1006.30715	0.00299
				1005.82497	0.00293
				1005.34279	0.00285
				1004.86061	0.00275
				1004.37843	0.00266
				1003.89626	0.0026
				1003.41408	0.00259
				1002.9319	0.00266
				1002.44972	0.00279

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				1001.96754	0.00289
				1001.48536	0.00292
				1001.00318	0.00292
				1000.521	0.00295
				1000.03882	0.00298
				999.55665	0.00297
				999.07447	0.00297
				998.59229	0.00303
				998.11011	0.00319
				997.62793	0.00337
				997.14575	0.0035
				996.66357	0.00356
				996.18139	0.00354
				995.69922	0.00347
				995.21704	0.00338
				994.73486	0.00331
				994.25268	0.00331
				993.7705	0.00332
				993.28832	0.00328
				992.80614	0.00324
				992.32396	0.00329
				991.84179	0.00342
				991.35961	0.00352
				990.87743	0.00355
				990.39525	0.00356
				989.91307	0.00361
				989.43089	0.00371
				988.94871	0.00386
				988.46653	0.00406
				987.98435	0.00424
				987.50218	0.00433
				987.02	0.00434
				986.53782	0.00432
				986.05564	0.00427
				985.57346	0.00419
				985.09128	0.00414
				984.6091	0.00415
				984.12692	0.00419
				983.64475	0.00425
				983.16257	0.00434
				982.68039	0.00444

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				982.19821	0.00451
				981.71603	0.00451
				981.23385	0.00452
				980.75167	0.00461
				980.26949	0.00479
				979.78732	0.00504
				979.30514	0.0053
				978.82296	0.00548
				978.34078	0.00555
				977.8586	0.00557
				977.37642	0.00559
				976.89424	0.00566
				976.41206	0.00576
				975.92988	0.00584
				975.44771	0.00587
				974.96553	0.00585
				974.48335	0.00581
				974.00117	0.00578
				973.51899	0.00576
				973.03681	0.00576
				972.55463	0.00578
				972.07245	0.00584
				971.59028	0.00592
				971.1081	0.00596
				970.62592	0.00591
				970.14374	0.00587
				969.66156	0.00587
				969.17938	0.00592
				968.6972	0.00604
				968.21502	0.00619
				967.73285	0.00631
				967.25067	0.00637
				966.76849	0.00638
				966.28631	0.0063
				965.80413	0.00614
				965.32195	0.00605
				964.83977	0.00619
				964.35759	0.00651
				963.87542	0.00694
				963.39324	0.00747
				962.91106	0.00793

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				962.42888	0.00808
				961.9467	0.00791
				961.46452	0.00763
				960.98234	0.00736
				960.50016	0.00712
				960.01798	0.00693
				959.53581	0.00684
				959.05363	0.00682
				958.57145	0.00677
				958.08927	0.00664
				957.60709	0.0065
				957.12491	0.00636
				956.64273	0.0063
				956.16055	0.00639
				955.67838	0.00656
				955.1962	0.00667
				954.71402	0.00664
				954.23184	0.00657
				953.74966	0.00651
				953.26748	0.00645
				952.7853	0.00645
				952.30312	0.00655
				951.82095	0.00667
				951.33877	0.00668
				950.85659	0.0066
				950.37441	0.00659
				949.89223	0.00668
				949.41005	0.00684
				948.92787	0.007
				948.44569	0.00706
				947.96351	0.00698
				947.48134	0.00677
				946.99916	0.00656
				946.51698	0.00647
				946.0348	0.00655
				945.55262	0.00676
				945.07044	0.00698
				944.58826	0.00702
				944.10608	0.00681
				943.62391	0.00643
				943.14173	0.00604

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				942.65955	0.0057
				942.17737	0.00554
				941.69519	0.00566
				941.21301	0.00599
				940.73083	0.00632
				940.24865	0.00654
				939.76648	0.00662
				939.2843	0.00647
				938.80212	0.00614
				938.31994	0.00594
				937.83776	0.00605
				937.35558	0.00639
				936.8734	0.00676
				936.39122	0.00712
				935.90904	0.0074
				935.42687	0.00746
				934.94469	0.00735
				934.46251	0.00728
				933.98033	0.00733
				933.49815	0.00745
				933.01597	0.00758
				932.53379	0.00777
				932.05161	0.00793
				931.56944	0.00791
				931.08726	0.00773
				930.60508	0.00752
				930.1229	0.00733
				929.64072	0.00716
				929.15854	0.0071
				928.67636	0.0073
				928.19418	0.00763
				927.71201	0.00779
				927.22983	0.00777
				926.74765	0.00776
				926.26547	0.00773
				925.78329	0.00763
				925.30111	0.0076
				924.81893	0.00763
				924.33675	0.00764
				923.85457	0.00771
				923.3724	0.00804



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				922.89022	0.00856
				922.40804	0.00895
				921.92586	0.00915
				921.44368	0.00933
				920.9615	0.00951
				920.47932	0.00974
				919.99714	0.01009
				919.51497	0.01047
				919.03279	0.01065
				918.55061	0.0105
				918.06843	0.01012
				917.58625	0.00981
				917.10407	0.00983
				916.62189	0.01022
				916.13971	0.01083
				915.65754	0.01146
				915.17536	0.01204
				914.69318	0.0124
				914.211	0.01228
				913.72882	0.01164
				913.24664	0.01092
				912.76446	0.01076
				912.28228	0.01126
				911.8001	0.01198
				911.31793	0.01262
				910.83575	0.01312
				910.35357	0.01322
				909.87139	0.0129
				909.38921	0.01267
				908.90703	0.01295
				908.42485	0.01356
				907.94267	0.01414
				907.4605	0.01452
				906.97832	0.01465
				906.49614	0.0144
				906.01396	0.01371
				905.53178	0.01288
				905.0496	0.01224
				904.56742	0.01189
				904.08524	0.01183
				903.60307	0.01207

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				903.12089	0.01258
				902.63871	0.01319
				902.15653	0.01358
				901.67435	0.01364
				901.19217	0.01348
				900.70999	0.01314
				900.22781	0.01277
				899.74564	0.01263
				899.26346	0.01282
				898.78128	0.0132
				898.2991	0.01355
				897.81692	0.01382
				897.33474	0.01415
				896.85256	0.01453
				896.37038	0.01486
				895.8882	0.01509
				895.40603	0.01508
				894.92385	0.01475
				894.44167	0.01414
				893.95949	0.01355
				893.47731	0.01329
				892.99513	0.01333
				892.51295	0.01343
				892.03077	0.01349
				891.5486	0.01351
				891.06642	0.01353
				890.58424	0.01361
				890.10206	0.01379
				889.61988	0.01404
				889.1377	0.01419
				888.65552	0.01416
				888.17334	0.01405
				887.69117	0.01397
				887.20899	0.01399
				886.72681	0.01429
				886.24463	0.01489
				885.76245	0.0154
				885.28027	0.01544
				884.79809	0.01509
				884.31591	0.0146
				883.83373	0.01405

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				883.35156	0.01356
				882.86938	0.01351
				882.3872	0.01399
				881.90502	0.01462
				881.42284	0.01507
				880.94066	0.01535
				880.45848	0.01564
				879.9763	0.01604
				879.49413	0.01649
				879.01195	0.01683
				878.52977	0.01689
				878.04759	0.01662
				877.56541	0.01585
				877.08323	0.01481
				876.60105	0.01434
				876.11887	0.01489
				875.6367	0.01594
				875.15452	0.01683
				874.67234	0.01741
				874.19016	0.01763
				873.70798	0.01718
				873.2258	0.01629
				872.74362	0.01564
				872.26144	0.01537
				871.77926	0.01521
				871.29709	0.01515
				870.81491	0.01522
				870.33273	0.01518
				869.85055	0.01488
				869.36837	0.01446
				868.88619	0.01415
				868.40401	0.01396
				867.92183	0.0138
				867.43966	0.01366
				866.95748	0.01328
				866.4753	0.0125
				865.99312	0.01157
				865.51094	0.01099
				865.02876	0.01111
				864.54658	0.0119
				864.0644	0.01307

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				863.58223	0.01416
				863.10005	0.01492
				862.61787	0.01532
				862.13569	0.01539
				861.65351	0.0152
				861.17133	0.01496
				860.68915	0.01482
				860.20697	0.01471
				859.72479	0.01463
				859.24262	0.01473
				858.76044	0.01503
				858.27826	0.01527
				857.79608	0.01529
				857.3139	0.01519
				856.83172	0.01488
				856.34954	0.01433
				855.86736	0.0138
				855.38519	0.01341
				854.90301	0.01305
				854.42083	0.01258
				853.93865	0.01208
				853.45647	0.01167
				852.97429	0.0114
				852.49211	0.01129
				852.00993	0.01131
				851.52776	0.01125
				851.04558	0.01097
				850.5634	0.01053
				850.08122	0.01006
				849.59904	0.0097
				849.11686	0.00952
				848.63468	0.0096
				848.1525	0.00995
				847.67032	0.01037
				847.18815	0.01069
				846.70597	0.0108
				846.22379	0.0107
				845.74161	0.01046
				845.25943	0.01015
				844.77725	0.00985
				844.29507	0.00973

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				843.81289	0.00988
				843.33072	0.01021
				842.84854	0.01052
				842.36636	0.01065
				841.88418	0.01069
				841.402	0.01076
				840.91982	0.01089
				840.43764	0.0112
				839.95546	0.01164
				839.47329	0.01194
				838.99111	0.01192
				838.50893	0.01175
				838.02675	0.0117
				837.54457	0.01195
				837.06239	0.0126
				836.58021	0.01349
				836.09803	0.01406
				835.61586	0.01393
				835.13368	0.01336
				834.6515	0.01271
				834.16932	0.01209
				833.68714	0.01162
				833.20496	0.01155
				832.72278	0.01176
				832.2406	0.01185
				831.75842	0.01183
				831.27625	0.01186
				830.79407	0.01199
				830.31189	0.01227
				829.82971	0.01278
				829.34753	0.01345
				828.86535	0.01395
				828.38317	0.01408
				827.90099	0.01389
				827.41882	0.01346
				826.93664	0.01295
				826.45446	0.01264
				825.97228	0.01255
				825.4901	0.01251
				825.00792	0.01241
				824.52574	0.01241

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				824.04356	0.01261
				823.56139	0.0129
				823.07921	0.01314
				822.59703	0.01337
				822.11485	0.01354
				821.63267	0.01346
				821.15049	0.01318
				820.66831	0.01311
				820.18613	0.01351
				819.70395	0.01417
				819.22178	0.01469
				818.7396	0.01506
				818.25742	0.01534
				817.77524	0.01538
				817.29306	0.01517
				816.81088	0.01504
				816.3287	0.0151
				815.84652	0.01503
				815.36435	0.01474
				814.88217	0.01453
				814.39999	0.01451
				813.91781	0.01442
				813.43563	0.01432
				812.95345	0.01443
				812.47127	0.0146
				811.98909	0.01445
				811.50692	0.01403
				811.02474	0.01367
				810.54256	0.01342
				810.06038	0.01308
				809.5782	0.0128
				809.09602	0.01288
				808.61384	0.01315
				808.13166	0.01302
				807.64948	0.01225
				807.16731	0.01115
				806.68513	0.01019
				806.20295	0.0096
				805.72077	0.00942
				805.23859	0.00975
				804.75641	0.01042

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				804.27423	0.01099
				803.79205	0.0111
				803.30988	0.01084
				802.8277	0.01055
				802.34552	0.01026
				801.86334	0.00993
				801.38116	0.00973
				800.89898	0.00975
				800.4168	0.00994
				799.93462	0.01015
				799.45245	0.01025
				798.97027	0.01016
				798.48809	0.00993
				798.00591	0.00994
				797.52373	0.01049
				797.04155	0.01134
				796.55937	0.01226
				796.07719	0.0132
				795.59501	0.01394
				795.11284	0.0143
				794.63066	0.0144
				794.14848	0.01443
				793.6663	0.01435
				793.18412	0.01398
				792.70194	0.01345
				792.21976	0.01304
				791.73758	0.01281
				791.25541	0.01277
				790.77323	0.01295
				790.29105	0.01324
				789.80887	0.01355
				789.32669	0.01388
				788.84451	0.01418
				788.36233	0.01435
				787.88015	0.01428
				787.39798	0.01401
				786.9158	0.01372
				786.43362	0.0136
				785.95144	0.01377
				785.46926	0.01412
				784.98708	0.01447

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				784.5049	0.01468
				784.02272	0.01462
				783.54054	0.0143
				783.05837	0.01404
				782.57619	0.01407
				782.09401	0.01437
				781.61183	0.01484
				781.12965	0.01523
				780.64747	0.01539
				780.16529	0.01544
				779.68311	0.01552
				779.20094	0.0155
				778.71876	0.01514
				778.23658	0.01443
				777.7544	0.01366
				777.27222	0.01292
				776.79004	0.01235
				776.30786	0.01227
				775.82568	0.01271
				775.34351	0.01334
				774.86133	0.01392
				774.37915	0.01437
				773.89697	0.01465
				773.41479	0.01482
				772.93261	0.01501
				772.45043	0.01517
				771.96825	0.01524
				771.48608	0.01538
				771.0039	0.01552
				770.52172	0.01526
				770.03954	0.01437
				769.55736	0.01347
				769.07518	0.01322
				768.593	0.01354
				768.11082	0.0142
				767.62864	0.01511
				767.14647	0.01585
				766.66429	0.01589
				766.18211	0.01539
				765.69993	0.01498
				765.21775	0.01487



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				764.73557	0.01484
				764.25339	0.01468
				763.77121	0.0144
				763.28904	0.01415
				762.80686	0.01417
				762.32468	0.01475
				761.8425	0.01573
				761.36032	0.01669
				760.87814	0.01729
				760.39596	0.01733
				759.91378	0.01683
				759.43161	0.01621
				758.94943	0.0158
				758.46725	0.01577
				757.98507	0.01623
				757.50289	0.017
				757.02071	0.01755
				756.53853	0.01765
				756.05635	0.01756
				755.57417	0.0174
				755.092	0.01693
				754.60982	0.01637
				754.12764	0.0163
				753.64546	0.01669
				753.16328	0.01699
				752.6811	0.01721
				752.19892	0.01767
				751.71674	0.01818
				751.23457	0.01835
				750.75239	0.01825
				750.27021	0.01807
				749.78803	0.01785
				749.30585	0.01765
				748.82367	0.01753
				748.34149	0.01724
				747.85931	0.0167
				747.37714	0.01629
				746.89496	0.01627
				746.41278	0.01646
				745.9306	0.01673
				745.44842	0.01723

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				744.96624	0.01789
				744.48406	0.01822
				744.00188	0.01806
				743.5197	0.01802
				743.03753	0.01852
				742.55535	0.0193
				742.07317	0.01989
				741.59099	0.02028
				741.10881	0.02084
				740.62663	0.02158
				740.14445	0.02223
				739.66227	0.02271
				739.1801	0.02306
				738.69792	0.02315
				738.21574	0.02285
				737.73356	0.02217
				737.25138	0.02146
				736.7692	0.0211
				736.28702	0.02101
				735.80484	0.02085
				735.32267	0.02055
				734.84049	0.0202
				734.35831	0.01972
				733.87613	0.01911
				733.39395	0.01868
				732.91177	0.01861
				732.42959	0.01873
				731.94741	0.01906
				731.46523	0.01969
				730.98306	0.02034
				730.50088	0.02079
				730.0187	0.02122
				729.53652	0.02166
				729.05434	0.02182
				728.57216	0.02154
				728.08998	0.02103
				727.6078	0.02045
				727.12563	0.01977
				726.64345	0.01903
				726.16127	0.01845
				725.67909	0.0182

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				725.19691	0.0183
				724.71473	0.01852
				724.23255	0.01866
				723.75037	0.01869
				723.2682	0.01851
				722.78602	0.01797
				722.30384	0.01734
				721.82166	0.01696
				721.33948	0.0168
				720.8573	0.01675
				720.37512	0.01676
				719.89294	0.01668
				719.41076	0.01647
				718.92859	0.01623
				718.44641	0.01599
				717.96423	0.01571
				717.48205	0.01553
				716.99987	0.01553
				716.51769	0.01539
				716.03551	0.01491
				715.55333	0.01433
				715.07116	0.01378
				714.58898	0.01323
				714.1068	0.01283
				713.62462	0.0127
				713.14244	0.01261
				712.66026	0.01231
				712.17808	0.01182
				711.6959	0.01122
				711.21373	0.01063
				710.73155	0.01024
				710.24937	0.01001
				709.76719	0.00975
				709.28501	0.00944
				708.80283	0.00917
				708.32065	0.00895
				707.83847	0.00874
				707.3563	0.00855
				706.87412	0.00847
				706.39194	0.00849
				705.90976	0.0086

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				705.42758	0.00873
				704.9454	0.00885
				704.46322	0.009
				703.98104	0.0092
				703.49886	0.00934
				703.01669	0.00938
				702.53451	0.00946
				702.05233	0.00966
				701.57015	0.00993
				701.08797	0.01018
				700.60579	0.01042
				700.12361	0.01058
				699.64143	0.01058
				699.15926	0.01047
				698.67708	0.01044
				698.1949	0.01059
				697.71272	0.01094
				697.23054	0.01139
				696.74836	0.01179
				696.26618	0.01203
				695.784	0.01214
				695.30183	0.01223
				694.81965	0.01239
				694.33747	0.01262
				693.85529	0.01297
				693.37311	0.01341
				692.89093	0.01378
				692.40875	0.01396
				691.92657	0.01396
				691.44439	0.01389
				690.96222	0.01376
				690.48004	0.01357
				689.99786	0.01333
				689.51568	0.01313
				689.0335	0.013
				688.55132	0.01284
				688.06914	0.01267
				687.58696	0.01257
				687.10479	0.01264
				686.62261	0.01285
				686.14043	0.01312

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				685.65825	0.01336
				685.17607	0.01349
				684.69389	0.0134
				684.21171	0.01308
				683.72953	0.01259
				683.24736	0.01208
				682.76518	0.01166
				682.283	0.01123
				681.80082	0.01075
				681.31864	0.01027
				680.83646	0.00984
				680.35428	0.00949
				679.8721	0.00926
				679.38992	0.00916
				678.90775	0.00909
				678.42557	0.00897
				677.94339	0.00882
				677.46121	0.0086
				676.97903	0.00838
				676.49685	0.00828
				676.01467	0.00829
				675.53249	0.00834
				675.05032	0.0085
				674.56814	0.0089
				674.08596	0.00934
				673.60378	0.0096
				673.1216	0.00966
				672.63942	0.00958
				672.15724	0.00937
				671.67506	0.00914
				671.19289	0.00904
				670.71071	0.00911
				670.22853	0.00943
				669.74635	0.00928
				669.26417	0.00741
				668.78199	0.00556
				668.29981	0.00455
				667.81763	0.00458
				667.33545	0.00551
				666.85328	0.00705
				666.3711	0.00887

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				665.88892	0.00978
				665.40674	0.009
				664.92456	0.00844
				664.44238	0.00828
				663.9602	0.00849
				663.47802	0.0089
				662.99585	0.00932
				662.51367	0.00961
				662.03149	0.00976
				661.54931	0.00984
				661.06713	0.00986
				660.58495	0.00981
				660.10277	0.00973
				659.62059	0.00967
				659.13842	0.0095
				658.65624	0.00909
				658.17406	0.00853
				657.69188	0.00806
				657.2097	0.00777
				656.72752	0.00771
				656.24534	0.00795
				655.76316	0.00859
				655.28098	0.00946
				654.79881	0.01013
				654.31663	0.01031
				653.83445	0.0102
				653.35227	0.01008
				652.87009	0.00988
				652.38791	0.00948
				651.90573	0.00907
				651.42355	0.00892
				650.94138	0.00887
				650.4592	0.00874
				649.97702	0.00872
				649.49484	0.00889
				649.01266	0.00895
				648.53048	0.00873
				648.0483	0.00847
				647.56612	0.00846
				647.08395	0.00865
				646.60177	0.00877

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				646.11959	0.00882
				645.63741	0.00894
				645.15523	0.00913
				644.67305	0.00946
				644.19087	0.00995
				643.70869	0.01039
				643.22652	0.01049
				642.74434	0.01012
				642.26216	0.00956
				641.77998	0.00921
				641.2978	0.00918
				640.81562	0.00945
				640.33344	0.00991
				639.85126	0.01032
				639.36908	0.0106
				638.88691	0.01086
				638.40473	0.01116
				637.92255	0.01147
				637.44037	0.01166
				636.95819	0.01158
				636.47601	0.0113
				635.99383	0.01113
				635.51165	0.01129
				635.02948	0.01175
				634.5473	0.0124
				634.06512	0.01322
				633.58294	0.01414
				633.10076	0.01491
				632.61858	0.0153
				632.1364	0.01531
				631.65422	0.01496
				631.17205	0.01447
				630.68987	0.01449
				630.20769	0.01563
				629.72551	0.01779
				629.24333	0.02009
				628.76115	0.02156
				628.27897	0.02191
				627.79679	0.02144
				627.31461	0.0206
				626.83244	0.01988

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				626.35026	0.01968
				625.86808	0.01993
				625.3859	0.02021
				624.90372	0.02023
				624.42154	0.0202
				623.93936	0.02057
				623.45718	0.02114
				622.97501	0.02134
				622.49283	0.02103
				622.01065	0.02037
				621.52847	0.01961
				621.04629	0.01892
				620.56411	0.01843
				620.08193	0.01856
				619.59975	0.01973
				619.11758	0.02158
				618.6354	0.02287
				618.15322	0.02289
				617.67104	0.02212
				617.18886	0.02126
				616.70668	0.02041
				616.2245	0.01986
				615.74232	0.02036
				615.26014	0.02177
				614.77797	0.02283
				614.29579	0.0229
				613.81361	0.02247
				613.33143	0.02208
				612.84925	0.02163
				612.36707	0.02093
				611.88489	0.02034
				611.40271	0.02022
				610.92054	0.02008
				610.43836	0.01937
				609.95618	0.01861
				609.474	0.01836
				608.99182	0.01807
				608.50964	0.01773
				608.02746	0.01825
				607.54528	0.01965
				607.06311	0.02122



Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				606.58093	0.02273
				606.09875	0.02399
				605.61657	0.02412
				605.13439	0.02258
				604.65221	0.02035
				604.17003	0.01837
				603.68785	0.01662
				603.20567	0.01536
				602.7235	0.01511
				602.24132	0.01559
				601.75914	0.01646
				601.27696	0.01778
				600.79478	0.01931
				600.3126	0.02082
				599.83042	0.02214
				599.34824	0.0228
				598.86607	0.02261
				598.38389	0.0218
				597.90171	0.02101
				597.41953	0.02071
				596.93735	0.02071
				596.45517	0.02114
				595.97299	0.02234
				595.49081	0.02362
				595.00864	0.02385
				594.52646	0.02267
				594.04428	0.02114
				593.5621	0.02031
				593.07992	0.01978
				592.59774	0.01922
				592.11556	0.01909
				591.63338	0.01933
				591.15121	0.01916
				590.66903	0.01825
				590.18685	0.01728
				589.70467	0.01667
				589.22249	0.01617
				588.74031	0.01592
				588.25813	0.01616
				587.77595	0.01672
				587.29377	0.01742

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				586.8116	0.01798
				586.32942	0.01806
				585.84724	0.01759
				585.36506	0.01702
				584.88288	0.01683
				584.4007	0.01679
				583.91852	0.01637
				583.43634	0.01577
				582.95417	0.01555
				582.47199	0.01573
				581.98981	0.01609
				581.50763	0.01633
				581.02545	0.01576
				580.54327	0.01437
				580.06109	0.01328
				579.57891	0.01354
				579.09674	0.01524
				578.61456	0.01795
				578.13238	0.02116
				577.6502	0.02365
				577.16802	0.02403
				576.68584	0.0221
				576.20366	0.01889
				575.72148	0.01565
				575.2393	0.01332
				574.75713	0.01272
				574.27495	0.01429
				573.79277	0.01747
				573.31059	0.02059
				572.82841	0.02161
				572.34623	0.02002
				571.86405	0.01745
				571.38187	0.01536
				570.8997	0.01396
				570.41752	0.01382
				569.93534	0.01532
				569.45316	0.01735
				568.97098	0.01878
				568.4888	0.02019
				568.00662	0.02245
				567.52444	0.02464

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				567.04227	0.02535
				566.56009	0.02498
				566.07791	0.02456
				565.59573	0.02377
				565.11355	0.02216
				564.63137	0.02065
				564.14919	0.02021
				563.66701	0.02012
				563.18483	0.01936
				562.70266	0.01824
				562.22048	0.01777
				561.7383	0.01837
				561.25612	0.01971
				560.77394	0.02108
				560.29176	0.02181
				559.80958	0.02151
				559.3274	0.02037
				558.84523	0.01837
				558.36305	0.01557
				557.88087	0.0137
				557.39869	0.01422
				556.91651	0.01624
				556.43433	0.01834
				555.95215	0.01984
				555.46997	0.0201
				554.9878	0.01853
				554.50562	0.01577
				554.02344	0.01412
				553.54126	0.01494
				553.05908	0.01765
				552.5769	0.02109
				552.09472	0.0234
				551.61254	0.02298
				551.13036	0.02048
				550.64819	0.01777
				550.16601	0.01569
				549.68383	0.01379
				549.20165	0.01226
				548.71947	0.01221
				548.23729	0.01398
				547.75511	0.01721

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				547.27293	0.021
				546.79076	0.02384
				546.30858	0.02493
				545.8264	0.0238
				545.34422	0.02072
				544.86204	0.01763
				544.37986	0.01602
				543.89768	0.01524
				543.4155	0.01384
				542.93333	0.01241
				542.45115	0.01291
				541.96897	0.01485
				541.48679	0.0165
				541.00461	0.0182
				540.52243	0.02019
				540.04025	0.02086
				539.55807	0.01973
				539.07589	0.0187
				538.59372	0.01871
				538.11154	0.01831
				537.62936	0.01674
				537.14718	0.01489
				536.665	0.0131
				536.18282	0.01119
				535.70064	0.00984
				535.21846	0.0098
				534.73629	0.01057
				534.25411	0.01125
				533.77193	0.01145
				533.28975	0.01106
				532.80757	0.0101
				532.32539	0.00929
				531.84321	0.00954
				531.36103	0.01065
				530.87886	0.01179
				530.39668	0.01254
				529.9145	0.01285
				529.43232	0.01273
				528.95014	0.01215
				528.46796	0.01132
				527.98578	0.01065

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				527.5036	0.01066
				527.02143	0.01164
				526.53925	0.01319
				526.05707	0.01446
				525.57489	0.01442
				525.09271	0.01268
				524.61053	0.01027
				524.12835	0.00813
				523.64617	0.00617
				523.16399	0.00467
				522.68182	0.00433
				522.19964	0.00513
				521.71746	0.00674
				521.23528	0.00932
				520.7531	0.01281
				520.27092	0.01586
				519.78874	0.01655
				519.30656	0.01454
				518.82439	0.01139
				518.34221	0.0095
				517.86003	0.01019
				517.37785	0.01276
				516.89567	0.01537
				516.41349	0.01682
				515.93131	0.01732
				515.44913	0.01682
				514.96696	0.01524
				514.48478	0.01365
				514.0026	0.01238
				513.52042	0.01053
				513.03824	0.00793
				512.55606	0.00571
				512.07388	0.00519
				511.5917	0.00641
				511.10952	0.00816
				510.62735	0.00937
				510.14517	0.00963
				509.66299	0.00885
				509.18081	0.00764
				508.69863	0.00653
				508.21645	0.00534

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
				507.73427	0.00402
				507.25209	0.00265
				506.76992	0.0015
				506.28774	7.80E-04
				505.80556	3.00E-04
				505.32338	4.10E-04
				504.8412	0.0017
				504.35902	0.0036
				503.87684	0.0045
				503.39466	0.00407
				502.91249	0.00356
				502.43031	0.00359
				501.94813	0.00372
				501.46595	0.00364
				500.98377	0.00364
				500.50159	0.00364
				500.01941	0.00364
				499.53723	0.00364

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3998.22658	3.00E-05	3998.22658	7.00E-05	3998.22658	-5.00E-05
3997.26223	3.00E-05	3997.26223	5.00E-05	3997.26223	-5.00E-05
3996.29787	3.00E-05	3996.29787	2.00E-05	3996.29787	-5.00E-05
3995.33351	3.00E-05	3995.33351	0	3995.33351	-5.00E-05
3994.36915	3.00E-05	3994.36915	1.00E-05	3994.36915	-5.00E-05
3993.4048	2.00E-05	3993.4048	3.00E-05	3993.4048	-6.00E-05
3992.44044	2.00E-05	3992.44044	6.00E-05	3992.44044	-6.00E-05
3991.47608	3.00E-05	3991.47608	7.00E-05	3991.47608	-7.00E-05
3990.51172	4.00E-05	3990.51172	8.00E-05	3990.51172	-7.00E-05
3989.54737	4.00E-05	3989.54737	9.00E-05	3989.54737	-8.00E-05
3988.58301	5.00E-05	3988.58301	1.00E-04	3988.58301	-7.00E-05
3987.61865	5.00E-05	3987.61865	1.00E-04	3987.61865	-6.00E-05
3986.65429	5.00E-05	3986.65429	9.00E-05	3986.65429	-6.00E-05
3985.68994	5.00E-05	3985.68994	5.00E-05	3985.68994	-5.00E-05
3984.72558	5.00E-05	3984.72558	3.00E-05	3984.72558	-6.00E-05
3983.76122	4.00E-05	3983.76122	4.00E-05	3983.76122	-7.00E-05
3982.79686	4.00E-05	3982.79686	4.00E-05	3982.79686	-7.00E-05
3981.8325	4.00E-05	3981.8325	3.00E-05	3981.8325	-6.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3980.86815	4.00E-05	3980.86815	3.00E-05	3980.86815	-4.00E-05
3979.90379	4.00E-05	3979.90379	4.00E-05	3979.90379	-1.00E-05
3978.93943	4.00E-05	3978.93943	7.00E-05	3978.93943	1.00E-05
3977.97507	5.00E-05	3977.97507	9.00E-05	3977.97507	2.00E-05
3977.01072	5.00E-05	3977.01072	1.00E-04	3977.01072	2.00E-05
3976.04636	6.00E-05	3976.04636	9.00E-05	3976.04636	2.00E-05
3975.082	7.00E-05	3975.082	7.00E-05	3975.082	1.00E-05
3974.11764	7.00E-05	3974.11764	7.00E-05	3974.11764	2.00E-05
3973.15329	8.00E-05	3973.15329	8.00E-05	3973.15329	2.00E-05
3972.18893	9.00E-05	3972.18893	8.00E-05	3972.18893	2.00E-05
3971.22457	9.00E-05	3971.22457	8.00E-05	3971.22457	2.00E-05
3970.26021	9.00E-05	3970.26021	9.00E-05	3970.26021	3.00E-05
3969.29586	1.00E-04	3969.29586	1.30E-04	3969.29586	3.00E-05
3968.3315	1.10E-04	3968.3315	1.30E-04	3968.3315	4.00E-05
3967.36714	1.20E-04	3967.36714	1.10E-04	3967.36714	4.00E-05
3966.40278	1.20E-04	3966.40278	9.00E-05	3966.40278	5.00E-05
3965.43843	1.10E-04	3965.43843	8.00E-05	3965.43843	5.00E-05
3964.47407	8.00E-05	3964.47407	8.00E-05	3964.47407	4.00E-05
3963.50971	5.00E-05	3963.50971	9.00E-05	3963.50971	2.00E-05
3962.54535	2.00E-05	3962.54535	1.10E-04	3962.54535	1.00E-05
3961.581	2.00E-05	3961.581	1.10E-04	3961.581	1.00E-05
3960.61664	3.00E-05	3960.61664	1.10E-04	3960.61664	2.00E-05
3959.65228	6.00E-05	3959.65228	1.20E-04	3959.65228	4.00E-05
3958.68792	8.00E-05	3958.68792	1.30E-04	3958.68792	6.00E-05
3957.72357	9.00E-05	3957.72357	1.40E-04	3957.72357	7.00E-05
3956.75921	1.00E-04	3956.75921	1.40E-04	3956.75921	8.00E-05
3955.79485	1.00E-04	3955.79485	1.50E-04	3955.79485	8.00E-05
3954.83049	1.00E-04	3954.83049	1.40E-04	3954.83049	8.00E-05
3953.86613	9.00E-05	3953.86613	1.30E-04	3953.86613	8.00E-05
3952.90178	9.00E-05	3952.90178	1.20E-04	3952.90178	8.00E-05
3951.93742	9.00E-05	3951.93742	1.10E-04	3951.93742	9.00E-05
3950.97306	1.00E-04	3950.97306	9.00E-05	3950.97306	1.00E-04
3950.0087	1.10E-04	3950.0087	1.00E-04	3950.0087	1.00E-04
3949.04435	1.30E-04	3949.04435	1.20E-04	3949.04435	1.00E-04
3948.07999	1.40E-04	3948.07999	1.20E-04	3948.07999	1.00E-04
3947.11563	1.60E-04	3947.11563	1.20E-04	3947.11563	1.00E-04
3946.15127	1.60E-04	3946.15127	1.30E-04	3946.15127	9.00E-05
3945.18692	1.50E-04	3945.18692	1.20E-04	3945.18692	7.00E-05
3944.22256	1.50E-04	3944.22256	1.00E-04	3944.22256	6.00E-05
3943.2582	1.50E-04	3943.2582	8.00E-05	3943.2582	6.00E-05
3942.29384	1.50E-04	3942.29384	1.00E-04	3942.29384	6.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3941.32949	1.50E-04	3941.32949	1.20E-04	3941.32949	8.00E-05
3940.36513	1.50E-04	3940.36513	1.20E-04	3940.36513	1.00E-04
3939.40077	1.40E-04	3939.40077	1.20E-04	3939.40077	1.10E-04
3938.43641	1.30E-04	3938.43641	1.30E-04	3938.43641	1.10E-04
3937.47206	1.20E-04	3937.47206	1.40E-04	3937.47206	1.10E-04
3936.5077	1.20E-04	3936.5077	1.50E-04	3936.5077	1.10E-04
3935.54334	1.30E-04	3935.54334	1.40E-04	3935.54334	1.10E-04
3934.57898	1.40E-04	3934.57898	1.10E-04	3934.57898	1.00E-04
3933.61463	1.50E-04	3933.61463	9.00E-05	3933.61463	9.00E-05
3932.65027	1.50E-04	3932.65027	9.00E-05	3932.65027	9.00E-05
3931.68591	1.40E-04	3931.68591	1.00E-04	3931.68591	9.00E-05
3930.72155	1.20E-04	3930.72155	1.30E-04	3930.72155	8.00E-05
3929.75719	1.20E-04	3929.75719	1.30E-04	3929.75719	9.00E-05
3928.79284	1.30E-04	3928.79284	1.20E-04	3928.79284	1.00E-04
3927.82848	1.50E-04	3927.82848	1.30E-04	3927.82848	1.00E-04
3926.86412	1.60E-04	3926.86412	1.50E-04	3926.86412	1.00E-04
3925.89976	1.60E-04	3925.89976	1.40E-04	3925.89976	1.10E-04
3924.93541	1.60E-04	3924.93541	1.00E-04	3924.93541	1.30E-04
3923.97105	1.60E-04	3923.97105	9.00E-05	3923.97105	1.50E-04
3923.00669	1.40E-04	3923.00669	1.30E-04	3923.00669	1.70E-04
3922.04233	1.30E-04	3922.04233	1.70E-04	3922.04233	1.80E-04
3921.07798	1.30E-04	3921.07798	1.70E-04	3921.07798	1.90E-04
3920.11362	1.30E-04	3920.11362	1.50E-04	3920.11362	1.90E-04
3919.14926	1.10E-04	3919.14926	1.50E-04	3919.14926	1.70E-04
3918.1849	1.10E-04	3918.1849	1.40E-04	3918.1849	1.60E-04
3917.22055	1.20E-04	3917.22055	9.00E-05	3917.22055	1.60E-04
3916.25619	1.30E-04	3916.25619	1.00E-04	3916.25619	1.60E-04
3915.29183	1.50E-04	3915.29183	1.60E-04	3915.29183	1.70E-04
3914.32747	1.60E-04	3914.32747	2.00E-04	3914.32747	1.80E-04
3913.36312	1.70E-04	3913.36312	2.00E-04	3913.36312	2.10E-04
3912.39876	1.70E-04	3912.39876	1.80E-04	3912.39876	2.10E-04
3911.4344	1.70E-04	3911.4344	1.50E-04	3911.4344	2.00E-04
3910.47004	1.60E-04	3910.47004	1.30E-04	3910.47004	1.90E-04
3909.50569	1.60E-04	3909.50569	1.50E-04	3909.50569	1.80E-04
3908.54133	1.60E-04	3908.54133	1.80E-04	3908.54133	1.80E-04
3907.57697	1.70E-04	3907.57697	1.80E-04	3907.57697	1.80E-04
3906.61261	1.70E-04	3906.61261	1.60E-04	3906.61261	1.60E-04
3905.64825	1.60E-04	3905.64825	1.30E-04	3905.64825	1.50E-04
3904.6839	1.50E-04	3904.6839	9.00E-05	3904.6839	1.40E-04
3903.71954	1.50E-04	3903.71954	9.00E-05	3903.71954	1.60E-04
3902.75518	1.50E-04	3902.75518	1.20E-04	3902.75518	1.90E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3901.79082	1.40E-04	3901.79082	1.40E-04	3901.79082	2.20E-04
3900.82647	1.30E-04	3900.82647	1.70E-04	3900.82647	2.40E-04
3899.86211	1.40E-04	3899.86211	1.50E-04	3899.86211	2.50E-04
3898.89775	1.50E-04	3898.89775	1.20E-04	3898.89775	2.50E-04
3897.93339	1.70E-04	3897.93339	1.70E-04	3897.93339	2.60E-04
3896.96904	1.80E-04	3896.96904	2.30E-04	3896.96904	2.60E-04
3896.00468	2.00E-04	3896.00468	2.20E-04	3896.00468	2.80E-04
3895.04032	2.10E-04	3895.04032	2.00E-04	3895.04032	2.90E-04
3894.07596	1.80E-04	3894.07596	1.80E-04	3894.07596	2.70E-04
3893.11161	1.60E-04	3893.11161	1.50E-04	3893.11161	2.30E-04
3892.14725	1.70E-04	3892.14725	8.00E-05	3892.14725	2.20E-04
3891.18289	1.80E-04	3891.18289	3.00E-05	3891.18289	2.20E-04
3890.21853	2.10E-04	3890.21853	1.10E-04	3890.21853	2.50E-04
3889.25418	2.10E-04	3889.25418	2.10E-04	3889.25418	2.60E-04
3888.28982	1.90E-04	3888.28982	2.30E-04	3888.28982	2.60E-04
3887.32546	1.60E-04	3887.32546	2.00E-04	3887.32546	2.60E-04
3886.3611	1.40E-04	3886.3611	1.10E-04	3886.3611	2.60E-04
3885.39675	1.40E-04	3885.39675	8.00E-05	3885.39675	2.70E-04
3884.43239	1.60E-04	3884.43239	1.50E-04	3884.43239	3.00E-04
3883.46803	1.80E-04	3883.46803	1.80E-04	3883.46803	3.40E-04
3882.50367	1.80E-04	3882.50367	1.70E-04	3882.50367	3.40E-04
3881.53932	1.80E-04	3881.53932	1.60E-04	3881.53932	3.30E-04
3880.57496	1.70E-04	3880.57496	1.10E-04	3880.57496	2.90E-04
3879.6106	1.90E-04	3879.6106	1.00E-04	3879.6106	2.80E-04
3878.64624	2.20E-04	3878.64624	1.60E-04	3878.64624	3.00E-04
3877.68188	2.40E-04	3877.68188	2.00E-04	3877.68188	3.20E-04
3876.71753	2.40E-04	3876.71753	2.10E-04	3876.71753	3.30E-04
3875.75317	2.10E-04	3875.75317	1.90E-04	3875.75317	3.30E-04
3874.78881	1.90E-04	3874.78881	1.20E-04	3874.78881	3.40E-04
3873.82445	1.90E-04	3873.82445	9.00E-05	3873.82445	3.60E-04
3872.8601	1.80E-04	3872.8601	1.60E-04	3872.8601	3.40E-04
3871.89574	1.80E-04	3871.89574	1.80E-04	3871.89574	3.00E-04
3870.93138	2.00E-04	3870.93138	1.00E-04	3870.93138	2.80E-04
3869.96702	2.30E-04	3869.96702	2.00E-05	3869.96702	2.90E-04
3869.00267	2.50E-04	3869.00267	9.00E-05	3869.00267	3.20E-04
3868.03831	2.50E-04	3868.03831	2.00E-04	3868.03831	3.40E-04
3867.07395	2.40E-04	3867.07395	2.40E-04	3867.07395	3.70E-04
3866.10959	2.30E-04	3866.10959	2.20E-04	3866.10959	4.10E-04
3865.14524	2.00E-04	3865.14524	1.60E-04	3865.14524	4.00E-04
3864.18088	1.60E-04	3864.18088	1.90E-04	3864.18088	3.60E-04
3863.21652	1.60E-04	3863.21652	2.40E-04	3863.21652	3.60E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3862.25216	1.80E-04	3862.25216	2.10E-04	3862.25216	4.00E-04
3861.28781	2.00E-04	3861.28781	1.70E-04	3861.28781	4.30E-04
3860.32345	2.00E-04	3860.32345	1.80E-04	3860.32345	4.10E-04
3859.35909	1.90E-04	3859.35909	2.20E-04	3859.35909	3.70E-04
3858.39473	2.10E-04	3858.39473	2.20E-04	3858.39473	3.80E-04
3857.43038	2.00E-04	3857.43038	2.10E-04	3857.43038	3.60E-04
3856.46602	1.40E-04	3856.46602	2.20E-04	3856.46602	2.60E-04
3855.50166	1.10E-04	3855.50166	1.80E-04	3855.50166	1.90E-04
3854.5373	1.00E-04	3854.5373	1.00E-05	3854.5373	1.70E-04
3853.57294	1.30E-04	3853.57294	0	3853.57294	2.00E-04
3852.60859	1.80E-04	3852.60859	1.70E-04	3852.60859	2.50E-04
3851.64423	2.30E-04	3851.64423	2.30E-04	3851.64423	3.50E-04
3850.67987	2.90E-04	3850.67987	2.50E-04	3850.67987	4.60E-04
3849.71551	2.90E-04	3849.71551	2.60E-04	3849.71551	5.00E-04
3848.75116	2.60E-04	3848.75116	2.40E-04	3848.75116	4.70E-04
3847.7868	2.30E-04	3847.7868	2.30E-04	3847.7868	4.50E-04
3846.82244	2.10E-04	3846.82244	2.40E-04	3846.82244	4.10E-04
3845.85808	2.00E-04	3845.85808	2.20E-04	3845.85808	3.70E-04
3844.89373	2.10E-04	3844.89373	1.90E-04	3844.89373	3.60E-04
3843.92937	2.10E-04	3843.92937	1.50E-04	3843.92937	3.50E-04
3842.96501	2.10E-04	3842.96501	1.80E-04	3842.96501	3.50E-04
3842.00065	2.20E-04	3842.00065	1.90E-04	3842.00065	3.70E-04
3841.0363	2.30E-04	3841.0363	1.50E-04	3841.0363	3.60E-04
3840.07194	2.20E-04	3840.07194	1.60E-04	3840.07194	3.30E-04
3839.10758	2.20E-04	3839.10758	1.80E-04	3839.10758	3.20E-04
3838.14322	2.20E-04	3838.14322	1.20E-04	3838.14322	3.20E-04
3837.17887	2.20E-04	3837.17887	1.60E-04	3837.17887	3.40E-04
3836.21451	2.20E-04	3836.21451	2.70E-04	3836.21451	3.80E-04
3835.25015	2.20E-04	3835.25015	2.40E-04	3835.25015	4.20E-04
3834.28579	2.10E-04	3834.28579	1.90E-04	3834.28579	4.50E-04
3833.32144	2.00E-04	3833.32144	2.30E-04	3833.32144	4.20E-04
3832.35708	2.00E-04	3832.35708	2.20E-04	3832.35708	3.90E-04
3831.39272	2.20E-04	3831.39272	1.60E-04	3831.39272	4.00E-04
3830.42836	2.30E-04	3830.42836	1.60E-04	3830.42836	4.10E-04
3829.46401	2.20E-04	3829.46401	2.10E-04	3829.46401	4.00E-04
3828.49965	2.20E-04	3828.49965	2.40E-04	3828.49965	4.10E-04
3827.53529	2.10E-04	3827.53529	2.30E-04	3827.53529	4.30E-04
3826.57093	2.00E-04	3826.57093	2.20E-04	3826.57093	4.20E-04
3825.60657	1.90E-04	3825.60657	2.40E-04	3825.60657	4.30E-04
3824.64222	1.80E-04	3824.64222	2.50E-04	3824.64222	4.30E-04
3823.67786	1.70E-04	3823.67786	2.40E-04	3823.67786	3.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3822.7135	1.50E-04	3822.7135	1.90E-04	3822.7135	3.60E-04
3821.74914	1.50E-04	3821.74914	8.00E-05	3821.74914	3.40E-04
3820.78479	1.80E-04	3820.78479	7.00E-05	3820.78479	3.80E-04
3819.82043	2.10E-04	3819.82043	2.10E-04	3819.82043	4.20E-04
3818.85607	2.20E-04	3818.85607	3.10E-04	3818.85607	4.30E-04
3817.89171	2.10E-04	3817.89171	3.00E-04	3817.89171	4.20E-04
3816.92736	2.10E-04	3816.92736	1.70E-04	3816.92736	4.20E-04
3815.963	2.00E-04	3815.963	5.00E-05	3815.963	3.90E-04
3814.99864	2.00E-04	3814.99864	1.30E-04	3814.99864	3.90E-04
3814.03428	2.10E-04	3814.03428	2.40E-04	3814.03428	4.10E-04
3813.06993	2.20E-04	3813.06993	2.30E-04	3813.06993	4.50E-04
3812.10557	2.20E-04	3812.10557	1.90E-04	3812.10557	4.80E-04
3811.14121	1.90E-04	3811.14121	1.80E-04	3811.14121	4.60E-04
3810.17685	1.60E-04	3810.17685	1.90E-04	3810.17685	4.30E-04
3809.2125	1.30E-04	3809.2125	2.20E-04	3809.2125	3.90E-04
3808.24814	1.40E-04	3808.24814	1.70E-04	3808.24814	3.80E-04
3807.28378	1.60E-04	3807.28378	6.00E-05	3807.28378	4.00E-04
3806.31942	2.00E-04	3806.31942	9.00E-05	3806.31942	4.40E-04
3805.35507	2.20E-04	3805.35507	2.30E-04	3805.35507	4.60E-04
3804.39071	2.20E-04	3804.39071	2.80E-04	3804.39071	4.50E-04
3803.42635	1.90E-04	3803.42635	2.30E-04	3803.42635	4.10E-04
3802.46199	1.70E-04	3802.46199	1.20E-04	3802.46199	3.80E-04
3801.49763	1.60E-04	3801.49763	3.00E-05	3801.49763	3.60E-04
3800.53328	1.90E-04	3800.53328	1.00E-04	3800.53328	3.80E-04
3799.56892	2.20E-04	3799.56892	2.20E-04	3799.56892	4.20E-04
3798.60456	2.40E-04	3798.60456	2.20E-04	3798.60456	4.50E-04
3797.6402	2.50E-04	3797.6402	1.70E-04	3797.6402	4.60E-04
3796.67585	2.40E-04	3796.67585	1.40E-04	3796.67585	4.40E-04
3795.71149	2.20E-04	3795.71149	1.80E-04	3795.71149	4.20E-04
3794.74713	2.20E-04	3794.74713	2.20E-04	3794.74713	4.20E-04
3793.78277	2.20E-04	3793.78277	2.10E-04	3793.78277	4.40E-04
3792.81842	2.10E-04	3792.81842	2.10E-04	3792.81842	4.50E-04
3791.85406	2.00E-04	3791.85406	2.10E-04	3791.85406	4.40E-04
3790.8897	1.80E-04	3790.8897	2.10E-04	3790.8897	4.20E-04
3789.92534	1.90E-04	3789.92534	2.10E-04	3789.92534	4.20E-04
3788.96099	2.10E-04	3788.96099	2.20E-04	3788.96099	4.20E-04
3787.99663	2.20E-04	3787.99663	2.30E-04	3787.99663	4.20E-04
3787.03227	2.30E-04	3787.03227	2.10E-04	3787.03227	4.00E-04
3786.06791	2.20E-04	3786.06791	1.70E-04	3786.06791	4.00E-04
3785.10356	2.10E-04	3785.10356	1.50E-04	3785.10356	4.00E-04
3784.1392	1.90E-04	3784.1392	1.80E-04	3784.1392	4.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3783.17484	1.80E-04	3783.17484	2.30E-04	3783.17484	4.20E-04
3782.21048	1.60E-04	3782.21048	2.50E-04	3782.21048	4.00E-04
3781.24613	1.60E-04	3781.24613	2.50E-04	3781.24613	3.80E-04
3780.28177	1.70E-04	3780.28177	2.40E-04	3780.28177	3.80E-04
3779.31741	1.80E-04	3779.31741	2.40E-04	3779.31741	3.90E-04
3778.35305	2.00E-04	3778.35305	2.80E-04	3778.35305	4.20E-04
3777.38869	2.10E-04	3777.38869	3.00E-04	3777.38869	4.40E-04
3776.42434	2.30E-04	3776.42434	3.00E-04	3776.42434	4.60E-04
3775.45998	2.40E-04	3775.45998	2.90E-04	3775.45998	4.60E-04
3774.49562	2.40E-04	3774.49562	2.70E-04	3774.49562	4.40E-04
3773.53126	2.20E-04	3773.53126	2.50E-04	3773.53126	4.10E-04
3772.56691	2.00E-04	3772.56691	2.60E-04	3772.56691	3.80E-04
3771.60255	1.80E-04	3771.60255	2.50E-04	3771.60255	3.60E-04
3770.63819	1.90E-04	3770.63819	1.70E-04	3770.63819	3.70E-04
3769.67383	2.10E-04	3769.67383	1.10E-04	3769.67383	4.00E-04
3768.70948	2.20E-04	3768.70948	1.90E-04	3768.70948	4.10E-04
3767.74512	2.30E-04	3767.74512	2.70E-04	3767.74512	4.20E-04
3766.78076	2.30E-04	3766.78076	2.30E-04	3766.78076	4.30E-04
3765.8164	2.20E-04	3765.8164	1.60E-04	3765.8164	4.30E-04
3764.85205	2.00E-04	3764.85205	1.90E-04	3764.85205	4.10E-04
3763.88769	2.10E-04	3763.88769	2.50E-04	3763.88769	4.00E-04
3762.92333	2.20E-04	3762.92333	2.80E-04	3762.92333	4.00E-04
3761.95897	2.10E-04	3761.95897	2.80E-04	3761.95897	4.00E-04
3760.99462	2.00E-04	3760.99462	2.40E-04	3760.99462	3.90E-04
3760.03026	1.80E-04	3760.03026	1.70E-04	3760.03026	3.90E-04
3759.0659	1.70E-04	3759.0659	1.70E-04	3759.0659	3.90E-04
3758.10154	1.70E-04	3758.10154	2.30E-04	3758.10154	4.00E-04
3757.13719	1.90E-04	3757.13719	2.10E-04	3757.13719	4.40E-04
3756.17283	2.10E-04	3756.17283	1.80E-04	3756.17283	4.80E-04
3755.20847	1.90E-04	3755.20847	2.30E-04	3755.20847	4.60E-04
3754.24411	1.50E-04	3754.24411	2.60E-04	3754.24411	4.20E-04
3753.27976	1.40E-04	3753.27976	1.80E-04	3753.27976	4.40E-04
3752.3154	1.40E-04	3752.3154	7.00E-05	3752.3154	4.50E-04
3751.35104	1.30E-04	3751.35104	1.10E-04	3751.35104	4.20E-04
3750.38668	1.50E-04	3750.38668	1.50E-04	3750.38668	4.30E-04
3749.42232	2.20E-04	3749.42232	8.00E-05	3749.42232	5.00E-04
3748.45797	2.90E-04	3748.45797	1.50E-04	3748.45797	5.70E-04
3747.49361	2.60E-04	3747.49361	2.70E-04	3747.49361	4.90E-04
3746.52925	2.10E-04	3746.52925	2.70E-04	3746.52925	3.80E-04
3745.56489	2.10E-04	3745.56489	1.50E-04	3745.56489	3.80E-04
3744.60054	2.00E-04	3744.60054	0	3744.60054	4.00E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3743.63618	1.90E-04	3743.63618	1.40E-04	3743.63618	4.20E-04
3742.67182	2.20E-04	3742.67182	3.10E-04	3742.67182	4.70E-04
3741.70746	2.70E-04	3741.70746	2.90E-04	3741.70746	5.50E-04
3740.74311	2.90E-04	3740.74311	2.00E-04	3740.74311	5.90E-04
3739.77875	2.50E-04	3739.77875	1.80E-04	3739.77875	5.20E-04
3738.81439	1.90E-04	3738.81439	2.10E-04	3738.81439	4.20E-04
3737.85003	1.60E-04	3737.85003	2.10E-04	3737.85003	3.80E-04
3736.88568	1.50E-04	3736.88568	1.40E-04	3736.88568	3.90E-04
3735.92132	1.50E-04	3735.92132	4.00E-05	3735.92132	4.20E-04
3734.95696	1.50E-04	3734.95696	4.00E-05	3734.95696	4.40E-04
3733.9926	1.50E-04	3733.9926	1.50E-04	3733.9926	4.60E-04
3733.02825	1.70E-04	3733.02825	2.30E-04	3733.02825	4.90E-04
3732.06389	2.00E-04	3732.06389	2.20E-04	3732.06389	5.10E-04
3731.09953	2.20E-04	3731.09953	2.50E-04	3731.09953	5.20E-04
3730.13517	2.30E-04	3730.13517	2.80E-04	3730.13517	5.10E-04
3729.17082	2.30E-04	3729.17082	2.50E-04	3729.17082	5.00E-04
3728.20646	2.30E-04	3728.20646	2.00E-04	3728.20646	5.10E-04
3727.2421	2.20E-04	3727.2421	1.70E-04	3727.2421	5.00E-04
3726.27774	2.00E-04	3726.27774	1.70E-04	3726.27774	4.90E-04
3725.31338	1.90E-04	3725.31338	2.10E-04	3725.31338	4.80E-04
3724.34903	1.80E-04	3724.34903	2.40E-04	3724.34903	4.60E-04
3723.38467	1.90E-04	3723.38467	2.10E-04	3723.38467	4.70E-04
3722.42031	1.90E-04	3722.42031	1.50E-04	3722.42031	4.70E-04
3721.45595	1.90E-04	3721.45595	1.80E-04	3721.45595	4.70E-04
3720.4916	2.00E-04	3720.4916	2.60E-04	3720.4916	4.70E-04
3719.52724	2.20E-04	3719.52724	2.70E-04	3719.52724	5.00E-04
3718.56288	2.30E-04	3718.56288	2.40E-04	3718.56288	5.30E-04
3717.59852	2.20E-04	3717.59852	2.40E-04	3717.59852	5.40E-04
3716.63417	2.00E-04	3716.63417	2.30E-04	3716.63417	5.40E-04
3715.66981	1.90E-04	3715.66981	2.20E-04	3715.66981	5.40E-04
3714.70545	1.50E-04	3714.70545	2.20E-04	3714.70545	5.00E-04
3713.74109	1.30E-04	3713.74109	2.20E-04	3713.74109	4.70E-04
3712.77674	1.30E-04	3712.77674	1.60E-04	3712.77674	4.70E-04
3711.81238	1.50E-04	3711.81238	1.40E-04	3711.81238	4.80E-04
3710.84802	1.80E-04	3710.84802	2.30E-04	3710.84802	5.00E-04
3709.88366	2.20E-04	3709.88366	2.60E-04	3709.88366	5.30E-04
3708.91931	2.50E-04	3708.91931	2.30E-04	3708.91931	5.80E-04
3707.95495	2.60E-04	3707.95495	2.60E-04	3707.95495	5.80E-04
3706.99059	2.50E-04	3706.99059	2.70E-04	3706.99059	5.50E-04
3706.02623	2.30E-04	3706.02623	2.50E-04	3706.02623	5.30E-04
3705.06188	2.20E-04	3705.06188	2.40E-04	3705.06188	5.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3704.09752	2.00E-04	3704.09752	2.40E-04	3704.09752	4.80E-04
3703.13316	1.90E-04	3703.13316	2.30E-04	3703.13316	4.60E-04
3702.1688	2.00E-04	3702.1688	2.00E-04	3702.1688	4.70E-04
3701.20445	2.10E-04	3701.20445	2.10E-04	3701.20445	4.80E-04
3700.24009	2.20E-04	3700.24009	2.50E-04	3700.24009	5.00E-04
3699.27573	2.20E-04	3699.27573	2.50E-04	3699.27573	5.10E-04
3698.31137	2.30E-04	3698.31137	2.40E-04	3698.31137	5.20E-04
3697.34701	2.20E-04	3697.34701	2.50E-04	3697.34701	5.20E-04
3696.38266	2.00E-04	3696.38266	2.70E-04	3696.38266	5.10E-04
3695.4183	1.90E-04	3695.4183	2.90E-04	3695.4183	5.30E-04
3694.45394	1.80E-04	3694.45394	3.00E-04	3694.45394	5.30E-04
3693.48958	1.70E-04	3693.48958	2.80E-04	3693.48958	5.20E-04
3692.52523	1.80E-04	3692.52523	2.10E-04	3692.52523	5.40E-04
3691.56087	1.90E-04	3691.56087	1.30E-04	3691.56087	5.30E-04
3690.59651	1.90E-04	3690.59651	1.40E-04	3690.59651	5.00E-04
3689.63215	1.90E-04	3689.63215	1.80E-04	3689.63215	4.90E-04
3688.6678	2.10E-04	3688.6678	1.40E-04	3688.6678	5.10E-04
3687.70344	2.20E-04	3687.70344	1.80E-04	3687.70344	5.30E-04
3686.73908	2.20E-04	3686.73908	2.90E-04	3686.73908	5.40E-04
3685.77472	2.20E-04	3685.77472	3.10E-04	3685.77472	5.60E-04
3684.81037	2.30E-04	3684.81037	2.70E-04	3684.81037	5.80E-04
3683.84601	2.30E-04	3683.84601	2.60E-04	3683.84601	5.80E-04
3682.88165	2.20E-04	3682.88165	2.80E-04	3682.88165	5.40E-04
3681.91729	2.10E-04	3681.91729	2.80E-04	3681.91729	5.20E-04
3680.95294	2.20E-04	3680.95294	2.60E-04	3680.95294	5.30E-04
3679.98858	2.40E-04	3679.98858	2.30E-04	3679.98858	5.70E-04
3679.02422	2.40E-04	3679.02422	2.20E-04	3679.02422	5.70E-04
3678.05986	1.90E-04	3678.05986	2.20E-04	3678.05986	5.10E-04
3677.09551	1.40E-04	3677.09551	1.50E-04	3677.09551	4.60E-04
3676.13115	1.30E-04	3676.13115	0	3676.13115	4.60E-04
3675.16679	1.40E-04	3675.16679	0	3675.16679	5.00E-04
3674.20243	1.60E-04	3674.20243	2.00E-04	3674.20243	5.30E-04
3673.23807	1.90E-04	3673.23807	3.30E-04	3673.23807	5.50E-04
3672.27372	2.20E-04	3672.27372	3.20E-04	3672.27372	5.70E-04
3671.30936	2.20E-04	3671.30936	2.00E-04	3671.30936	5.50E-04
3670.345	2.00E-04	3670.345	1.30E-04	3670.345	5.10E-04
3669.38064	2.00E-04	3669.38064	2.00E-04	3669.38064	5.00E-04
3668.41629	2.30E-04	3668.41629	2.70E-04	3668.41629	5.40E-04
3667.45193	2.60E-04	3667.45193	3.00E-04	3667.45193	5.90E-04
3666.48757	2.70E-04	3666.48757	3.10E-04	3666.48757	6.10E-04
3665.52321	2.50E-04	3665.52321	3.00E-04	3665.52321	5.80E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3664.55886	2.30E-04	3664.55886	3.00E-04	3664.55886	5.70E-04
3663.5945	2.20E-04	3663.5945	3.10E-04	3663.5945	5.60E-04
3662.63014	2.20E-04	3662.63014	3.10E-04	3662.63014	5.60E-04
3661.66578	2.30E-04	3661.66578	3.00E-04	3661.66578	5.70E-04
3660.70143	2.40E-04	3660.70143	3.00E-04	3660.70143	5.90E-04
3659.73707	2.30E-04	3659.73707	3.10E-04	3659.73707	6.00E-04
3658.77271	2.10E-04	3658.77271	3.30E-04	3658.77271	5.90E-04
3657.80835	2.00E-04	3657.80835	3.20E-04	3657.80835	5.90E-04
3656.844	2.00E-04	3656.844	2.50E-04	3656.844	6.10E-04
3655.87964	2.20E-04	3655.87964	2.10E-04	3655.87964	6.30E-04
3654.91528	2.40E-04	3654.91528	2.70E-04	3654.91528	6.40E-04
3653.95092	2.50E-04	3653.95092	3.30E-04	3653.95092	6.20E-04
3652.98657	2.50E-04	3652.98657	3.30E-04	3652.98657	6.00E-04
3652.02221	2.30E-04	3652.02221	2.70E-04	3652.02221	5.60E-04
3651.05785	2.10E-04	3651.05785	1.80E-04	3651.05785	5.20E-04
3650.09349	2.10E-04	3650.09349	1.30E-04	3650.09349	5.10E-04
3649.12913	2.40E-04	3649.12913	1.50E-04	3649.12913	5.40E-04
3648.16478	2.90E-04	3648.16478	1.90E-04	3648.16478	6.00E-04
3647.20042	3.20E-04	3647.20042	1.90E-04	3647.20042	6.60E-04
3646.23606	3.40E-04	3646.23606	2.30E-04	3646.23606	6.90E-04
3645.2717	3.40E-04	3645.2717	2.90E-04	3645.2717	6.80E-04
3644.30735	3.30E-04	3644.30735	3.10E-04	3644.30735	6.60E-04
3643.34299	3.20E-04	3643.34299	2.90E-04	3643.34299	6.30E-04
3642.37863	3.10E-04	3642.37863	2.80E-04	3642.37863	6.10E-04
3641.41427	2.90E-04	3641.41427	2.90E-04	3641.41427	5.90E-04
3640.44992	2.80E-04	3640.44992	3.10E-04	3640.44992	6.00E-04
3639.48556	2.90E-04	3639.48556	3.20E-04	3639.48556	6.20E-04
3638.5212	3.00E-04	3638.5212	3.20E-04	3638.5212	6.30E-04
3637.55684	3.10E-04	3637.55684	3.30E-04	3637.55684	6.40E-04
3636.59249	3.00E-04	3636.59249	3.60E-04	3636.59249	6.30E-04
3635.62813	3.00E-04	3635.62813	3.70E-04	3635.62813	6.20E-04
3634.66377	3.00E-04	3634.66377	3.20E-04	3634.66377	6.10E-04
3633.69941	3.00E-04	3633.69941	2.90E-04	3633.69941	6.40E-04
3632.73506	2.90E-04	3632.73506	3.40E-04	3632.73506	6.50E-04
3631.7707	2.50E-04	3631.7707	3.90E-04	3631.7707	6.20E-04
3630.80634	2.20E-04	3630.80634	3.40E-04	3630.80634	5.70E-04
3629.84198	2.20E-04	3629.84198	2.10E-04	3629.84198	5.60E-04
3628.87763	2.30E-04	3628.87763	1.60E-04	3628.87763	5.60E-04
3627.91327	2.70E-04	3627.91327	2.60E-04	3627.91327	5.80E-04
3626.94891	3.10E-04	3626.94891	3.60E-04	3626.94891	6.30E-04
3625.98455	3.50E-04	3625.98455	3.50E-04	3625.98455	6.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3625.0202	3.60E-04	3625.0202	3.30E-04	3625.0202	7.20E-04
3624.05584	3.40E-04	3624.05584	3.40E-04	3624.05584	7.10E-04
3623.09148	3.20E-04	3623.09148	3.50E-04	3623.09148	6.80E-04
3622.12712	3.00E-04	3622.12712	3.40E-04	3622.12712	6.70E-04
3621.16276	3.00E-04	3621.16276	3.20E-04	3621.16276	6.70E-04
3620.19841	3.00E-04	3620.19841	3.10E-04	3620.19841	6.70E-04
3619.23405	3.10E-04	3619.23405	3.30E-04	3619.23405	6.80E-04
3618.26969	3.30E-04	3618.26969	3.50E-04	3618.26969	6.90E-04
3617.30533	3.60E-04	3617.30533	3.50E-04	3617.30533	7.10E-04
3616.34098	3.80E-04	3616.34098	3.50E-04	3616.34098	7.30E-04
3615.37662	3.80E-04	3615.37662	3.30E-04	3615.37662	7.20E-04
3614.41226	3.60E-04	3614.41226	3.10E-04	3614.41226	6.90E-04
3613.4479	3.50E-04	3613.4479	2.90E-04	3613.4479	6.90E-04
3612.48355	3.40E-04	3612.48355	2.90E-04	3612.48355	6.80E-04
3611.51919	3.40E-04	3611.51919	3.40E-04	3611.51919	6.60E-04
3610.55483	3.40E-04	3610.55483	3.50E-04	3610.55483	6.40E-04
3609.59047	3.50E-04	3609.59047	2.90E-04	3609.59047	6.20E-04
3608.62612	3.60E-04	3608.62612	2.90E-04	3608.62612	6.00E-04
3607.66176	3.70E-04	3607.66176	3.70E-04	3607.66176	6.00E-04
3606.6974	3.90E-04	3606.6974	4.10E-04	3606.6974	6.10E-04
3605.73304	4.10E-04	3605.73304	4.30E-04	3605.73304	6.60E-04
3604.76869	4.10E-04	3604.76869	4.20E-04	3604.76869	6.90E-04
3603.80433	4.10E-04	3603.80433	4.00E-04	3603.80433	7.00E-04
3602.83997	4.00E-04	3602.83997	3.80E-04	3602.83997	6.90E-04
3601.87561	4.10E-04	3601.87561	3.60E-04	3601.87561	6.80E-04
3600.91126	4.10E-04	3600.91126	3.50E-04	3600.91126	6.70E-04
3599.9469	4.10E-04	3599.9469	3.50E-04	3599.9469	6.70E-04
3598.98254	4.10E-04	3598.98254	3.70E-04	3598.98254	6.60E-04
3598.01818	4.00E-04	3598.01818	3.70E-04	3598.01818	6.50E-04
3597.05382	3.90E-04	3597.05382	3.50E-04	3597.05382	6.50E-04
3596.08947	4.00E-04	3596.08947	3.40E-04	3596.08947	6.50E-04
3595.12511	4.00E-04	3595.12511	3.40E-04	3595.12511	6.50E-04
3594.16075	4.10E-04	3594.16075	3.60E-04	3594.16075	6.50E-04
3593.19639	4.10E-04	3593.19639	3.90E-04	3593.19639	6.70E-04
3592.23204	4.10E-04	3592.23204	4.00E-04	3592.23204	6.80E-04
3591.26768	4.00E-04	3591.26768	4.10E-04	3591.26768	6.80E-04
3590.30332	4.00E-04	3590.30332	4.10E-04	3590.30332	6.70E-04
3589.33896	4.00E-04	3589.33896	3.70E-04	3589.33896	6.60E-04
3588.37461	4.20E-04	3588.37461	3.30E-04	3588.37461	6.50E-04
3587.41025	4.50E-04	3587.41025	3.30E-04	3587.41025	6.40E-04
3586.44589	4.70E-04	3586.44589	3.60E-04	3586.44589	6.40E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3585.48153	5.00E-04	3585.48153	4.00E-04	3585.48153	6.60E-04
3584.51718	5.10E-04	3584.51718	4.40E-04	3584.51718	6.70E-04
3583.55282	5.00E-04	3583.55282	4.40E-04	3583.55282	6.90E-04
3582.58846	4.80E-04	3582.58846	4.40E-04	3582.58846	6.90E-04
3581.6241	4.60E-04	3581.6241	4.40E-04	3581.6241	7.00E-04
3580.65975	4.40E-04	3580.65975	4.30E-04	3580.65975	7.00E-04
3579.69539	4.20E-04	3579.69539	4.20E-04	3579.69539	7.10E-04
3578.73103	4.20E-04	3578.73103	4.10E-04	3578.73103	7.10E-04
3577.76667	4.20E-04	3577.76667	4.00E-04	3577.76667	7.00E-04
3576.80232	4.30E-04	3576.80232	3.80E-04	3576.80232	6.80E-04
3575.83796	4.30E-04	3575.83796	3.80E-04	3575.83796	6.70E-04
3574.8736	4.40E-04	3574.8736	3.80E-04	3574.8736	6.50E-04
3573.90924	4.50E-04	3573.90924	4.00E-04	3573.90924	6.50E-04
3572.94489	4.70E-04	3572.94489	4.30E-04	3572.94489	6.60E-04
3571.98053	4.80E-04	3571.98053	4.60E-04	3571.98053	6.60E-04
3571.01617	4.70E-04	3571.01617	4.60E-04	3571.01617	6.60E-04
3570.05181	4.50E-04	3570.05181	4.30E-04	3570.05181	6.50E-04
3569.08745	4.30E-04	3569.08745	3.80E-04	3569.08745	6.40E-04
3568.1231	4.20E-04	3568.1231	3.30E-04	3568.1231	6.30E-04
3567.15874	4.40E-04	3567.15874	3.40E-04	3567.15874	6.30E-04
3566.19438	4.70E-04	3566.19438	3.80E-04	3566.19438	6.40E-04
3565.23002	5.10E-04	3565.23002	4.30E-04	3565.23002	6.60E-04
3564.26567	5.20E-04	3564.26567	4.60E-04	3564.26567	6.80E-04
3563.30131	5.20E-04	3563.30131	4.60E-04	3563.30131	7.00E-04
3562.33695	5.00E-04	3562.33695	4.50E-04	3562.33695	6.90E-04
3561.37259	4.90E-04	3561.37259	4.50E-04	3561.37259	6.80E-04
3560.40824	5.00E-04	3560.40824	4.30E-04	3560.40824	6.70E-04
3559.44388	5.10E-04	3559.44388	4.20E-04	3559.44388	6.70E-04
3558.47952	5.30E-04	3558.47952	4.50E-04	3558.47952	6.70E-04
3557.51516	5.50E-04	3557.51516	4.80E-04	3557.51516	6.70E-04
3556.55081	5.50E-04	3556.55081	5.00E-04	3556.55081	6.80E-04
3555.58645	5.50E-04	3555.58645	5.10E-04	3555.58645	6.90E-04
3554.62209	5.50E-04	3554.62209	5.30E-04	3554.62209	6.90E-04
3553.65773	5.40E-04	3553.65773	5.20E-04	3553.65773	6.90E-04
3552.69338	5.30E-04	3552.69338	4.70E-04	3552.69338	7.00E-04
3551.72902	5.20E-04	3551.72902	4.60E-04	3551.72902	7.00E-04
3550.76466	5.20E-04	3550.76466	4.90E-04	3550.76466	7.00E-04
3549.8003	5.40E-04	3549.8003	5.20E-04	3549.8003	6.90E-04
3548.83595	5.50E-04	3548.83595	5.30E-04	3548.83595	6.80E-04
3547.87159	5.60E-04	3547.87159	4.90E-04	3547.87159	6.70E-04
3546.90723	5.80E-04	3546.90723	4.60E-04	3546.90723	6.80E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3545.94287	5.90E-04	3545.94287	4.60E-04	3545.94287	6.90E-04
3544.97851	5.90E-04	3544.97851	4.70E-04	3544.97851	7.00E-04
3544.01416	5.80E-04	3544.01416	4.80E-04	3544.01416	7.20E-04
3543.0498	5.80E-04	3543.0498	4.90E-04	3543.0498	7.20E-04
3542.08544	5.80E-04	3542.08544	5.10E-04	3542.08544	7.30E-04
3541.12108	5.70E-04	3541.12108	5.20E-04	3541.12108	7.30E-04
3540.15673	5.60E-04	3540.15673	5.10E-04	3540.15673	7.40E-04
3539.19237	5.60E-04	3539.19237	4.90E-04	3539.19237	7.50E-04
3538.22801	5.70E-04	3538.22801	4.70E-04	3538.22801	7.50E-04
3537.26365	5.90E-04	3537.26365	4.80E-04	3537.26365	7.50E-04
3536.2993	6.00E-04	3536.2993	4.90E-04	3536.2993	7.40E-04
3535.33494	6.10E-04	3535.33494	4.90E-04	3535.33494	7.10E-04
3534.37058	6.30E-04	3534.37058	5.00E-04	3534.37058	6.80E-04
3533.40622	6.30E-04	3533.40622	5.20E-04	3533.40622	6.50E-04
3532.44187	6.20E-04	3532.44187	5.40E-04	3532.44187	6.40E-04
3531.47751	6.10E-04	3531.47751	5.30E-04	3531.47751	6.40E-04
3530.51315	5.90E-04	3530.51315	5.30E-04	3530.51315	6.70E-04
3529.54879	5.80E-04	3529.54879	5.30E-04	3529.54879	7.00E-04
3528.58444	5.80E-04	3528.58444	5.20E-04	3528.58444	7.40E-04
3527.62008	5.80E-04	3527.62008	5.30E-04	3527.62008	7.70E-04
3526.65572	6.00E-04	3526.65572	5.30E-04	3526.65572	7.80E-04
3525.69136	6.20E-04	3525.69136	5.20E-04	3525.69136	7.70E-04
3524.72701	6.40E-04	3524.72701	5.20E-04	3524.72701	7.40E-04
3523.76265	6.70E-04	3523.76265	5.30E-04	3523.76265	7.20E-04
3522.79829	6.80E-04	3522.79829	5.50E-04	3522.79829	6.90E-04
3521.83393	6.90E-04	3521.83393	5.90E-04	3521.83393	6.90E-04
3520.86958	6.90E-04	3520.86958	6.20E-04	3520.86958	7.00E-04
3519.90522	6.80E-04	3519.90522	6.00E-04	3519.90522	7.20E-04
3518.94086	6.80E-04	3518.94086	5.80E-04	3518.94086	7.30E-04
3517.9765	6.70E-04	3517.9765	5.60E-04	3517.9765	7.40E-04
3517.01214	6.80E-04	3517.01214	5.60E-04	3517.01214	7.40E-04
3516.04779	6.80E-04	3516.04779	5.80E-04	3516.04779	7.50E-04
3515.08343	6.90E-04	3515.08343	5.90E-04	3515.08343	7.50E-04
3514.11907	6.90E-04	3514.11907	5.80E-04	3514.11907	7.60E-04
3513.15471	6.90E-04	3513.15471	5.90E-04	3513.15471	7.60E-04
3512.19036	6.90E-04	3512.19036	6.20E-04	3512.19036	7.50E-04
3511.226	6.90E-04	3511.226	6.30E-04	3511.226	7.40E-04
3510.26164	6.90E-04	3510.26164	6.00E-04	3510.26164	7.40E-04
3509.29728	7.00E-04	3509.29728	5.90E-04	3509.29728	7.50E-04
3508.33293	7.00E-04	3508.33293	6.30E-04	3508.33293	7.50E-04
3507.36857	7.10E-04	3507.36857	6.70E-04	3507.36857	7.40E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3506.40421	7.20E-04	3506.40421	6.70E-04	3506.40421	7.40E-04
3505.43985	7.20E-04	3505.43985	6.30E-04	3505.43985	7.40E-04
3504.4755	7.30E-04	3504.4755	6.00E-04	3504.4755	7.40E-04
3503.51114	7.30E-04	3503.51114	6.00E-04	3503.51114	7.40E-04
3502.54678	7.30E-04	3502.54678	6.20E-04	3502.54678	7.50E-04
3501.58242	7.30E-04	3501.58242	6.30E-04	3501.58242	7.60E-04
3500.61807	7.40E-04	3500.61807	6.20E-04	3500.61807	7.60E-04
3499.65371	7.50E-04	3499.65371	6.20E-04	3499.65371	7.60E-04
3498.68935	7.60E-04	3498.68935	6.40E-04	3498.68935	7.60E-04
3497.72499	7.80E-04	3497.72499	6.50E-04	3497.72499	7.50E-04
3496.76064	7.90E-04	3496.76064	6.30E-04	3496.76064	7.40E-04
3495.79628	8.00E-04	3495.79628	6.10E-04	3495.79628	7.30E-04
3494.83192	8.00E-04	3494.83192	6.20E-04	3494.83192	7.30E-04
3493.86756	7.90E-04	3493.86756	6.60E-04	3493.86756	7.20E-04
3492.9032	7.90E-04	3492.9032	7.20E-04	3492.9032	7.20E-04
3491.93885	8.00E-04	3491.93885	7.50E-04	3491.93885	7.30E-04
3490.97449	8.00E-04	3490.97449	7.40E-04	3490.97449	7.30E-04
3490.01013	8.00E-04	3490.01013	7.40E-04	3490.01013	7.20E-04
3489.04577	8.00E-04	3489.04577	7.50E-04	3489.04577	7.30E-04
3488.08142	7.90E-04	3488.08142	7.40E-04	3488.08142	7.50E-04
3487.11706	7.90E-04	3487.11706	7.20E-04	3487.11706	7.50E-04
3486.1527	8.00E-04	3486.1527	7.00E-04	3486.1527	7.60E-04
3485.18834	8.10E-04	3485.18834	6.70E-04	3485.18834	7.60E-04
3484.22399	8.20E-04	3484.22399	6.60E-04	3484.22399	7.50E-04
3483.25963	8.20E-04	3483.25963	6.70E-04	3483.25963	7.40E-04
3482.29527	8.30E-04	3482.29527	6.90E-04	3482.29527	7.30E-04
3481.33091	8.40E-04	3481.33091	7.00E-04	3481.33091	7.40E-04
3480.36656	8.60E-04	3480.36656	7.00E-04	3480.36656	7.70E-04
3479.4022	8.70E-04	3479.4022	6.90E-04	3479.4022	7.90E-04
3478.43784	8.80E-04	3478.43784	6.90E-04	3478.43784	8.10E-04
3477.47348	8.80E-04	3477.47348	7.00E-04	3477.47348	8.20E-04
3476.50913	8.80E-04	3476.50913	7.30E-04	3476.50913	8.20E-04
3475.54477	8.80E-04	3475.54477	7.50E-04	3475.54477	8.10E-04
3474.58041	8.90E-04	3474.58041	7.40E-04	3474.58041	7.90E-04
3473.61605	8.90E-04	3473.61605	7.40E-04	3473.61605	7.70E-04
3472.6517	8.90E-04	3472.6517	7.30E-04	3472.6517	7.60E-04
3471.68734	9.00E-04	3471.68734	7.30E-04	3471.68734	7.50E-04
3470.72298	9.00E-04	3470.72298	7.60E-04	3470.72298	7.50E-04
3469.75862	9.10E-04	3469.75862	7.70E-04	3469.75862	7.50E-04
3468.79426	9.20E-04	3468.79426	7.60E-04	3468.79426	7.60E-04
3467.82991	9.30E-04	3467.82991	7.40E-04	3467.82991	7.60E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3466.86555	9.20E-04	3466.86555	7.30E-04	3466.86555	7.60E-04
3465.90119	9.10E-04	3465.90119	7.30E-04	3465.90119	7.70E-04
3464.93683	9.10E-04	3464.93683	7.40E-04	3464.93683	7.70E-04
3463.97248	9.20E-04	3463.97248	7.50E-04	3463.97248	7.80E-04
3463.00812	9.30E-04	3463.00812	7.40E-04	3463.00812	7.70E-04
3462.04376	9.40E-04	3462.04376	7.50E-04	3462.04376	7.70E-04
3461.0794	9.40E-04	3461.0794	7.80E-04	3461.0794	7.70E-04
3460.11505	9.30E-04	3460.11505	7.80E-04	3460.11505	7.70E-04
3459.15069	9.20E-04	3459.15069	7.50E-04	3459.15069	7.60E-04
3458.18633	9.10E-04	3458.18633	7.30E-04	3458.18633	7.70E-04
3457.22197	9.10E-04	3457.22197	7.20E-04	3457.22197	7.70E-04
3456.25762	9.20E-04	3456.25762	7.10E-04	3456.25762	7.80E-04
3455.29326	9.30E-04	3455.29326	7.10E-04	3455.29326	7.90E-04
3454.3289	9.30E-04	3454.3289	7.40E-04	3454.3289	7.90E-04
3453.36454	9.30E-04	3453.36454	7.60E-04	3453.36454	7.80E-04
3452.40019	9.30E-04	3452.40019	7.70E-04	3452.40019	7.70E-04
3451.43583	9.30E-04	3451.43583	8.00E-04	3451.43583	7.60E-04
3450.47147	9.50E-04	3450.47147	8.40E-04	3450.47147	7.70E-04
3449.50711	9.70E-04	3449.50711	8.70E-04	3449.50711	7.80E-04
3448.54276	9.90E-04	3448.54276	8.70E-04	3448.54276	7.90E-04
3447.5784	0.00101	3447.5784	8.70E-04	3447.5784	8.00E-04
3446.61404	0.00102	3446.61404	8.50E-04	3446.61404	7.90E-04
3445.64968	0.00101	3445.64968	8.10E-04	3445.64968	7.80E-04
3444.68533	1.00E-03	3444.68533	7.80E-04	3444.68533	7.80E-04
3443.72097	9.80E-04	3443.72097	7.90E-04	3443.72097	7.80E-04
3442.75661	9.70E-04	3442.75661	8.20E-04	3442.75661	8.00E-04
3441.79225	9.70E-04	3441.79225	8.20E-04	3441.79225	8.20E-04
3440.82789	9.90E-04	3440.82789	8.20E-04	3440.82789	8.40E-04
3439.86354	0.00102	3439.86354	8.00E-04	3439.86354	8.60E-04
3438.89918	0.00104	3438.89918	8.10E-04	3438.89918	8.70E-04
3437.93482	0.00106	3437.93482	8.40E-04	3437.93482	8.70E-04
3436.97046	0.00107	3436.97046	8.60E-04	3436.97046	8.60E-04
3436.00611	0.00106	3436.00611	8.60E-04	3436.00611	8.40E-04
3435.04175	0.00104	3435.04175	8.50E-04	3435.04175	8.30E-04
3434.07739	0.00103	3434.07739	8.50E-04	3434.07739	8.20E-04
3433.11303	0.00101	3433.11303	8.40E-04	3433.11303	8.20E-04
3432.14868	1.00E-03	3432.14868	8.40E-04	3432.14868	8.20E-04
3431.18432	1.00E-03	3431.18432	8.60E-04	3431.18432	8.20E-04
3430.21996	1.00E-03	3430.21996	8.80E-04	3430.21996	8.20E-04
3429.2556	0.00102	3429.2556	8.70E-04	3429.2556	8.20E-04
3428.29125	0.00104	3428.29125	8.40E-04	3428.29125	8.30E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3427.32689	0.00107	3427.32689	8.30E-04	3427.32689	8.50E-04
3426.36253	0.00109	3426.36253	8.60E-04	3426.36253	8.60E-04
3425.39817	0.00112	3425.39817	8.90E-04	3425.39817	8.60E-04
3424.43382	0.00112	3424.43382	8.90E-04	3424.43382	8.60E-04
3423.46946	0.00111	3423.46946	8.90E-04	3423.46946	8.60E-04
3422.5051	0.0011	3422.5051	8.90E-04	3422.5051	8.60E-04
3421.54074	0.00109	3421.54074	9.00E-04	3421.54074	8.70E-04
3420.57639	0.0011	3420.57639	9.00E-04	3420.57639	8.80E-04
3419.61203	0.00112	3419.61203	9.10E-04	3419.61203	8.90E-04
3418.64767	0.00114	3418.64767	9.10E-04	3418.64767	8.90E-04
3417.68331	0.00115	3417.68331	8.90E-04	3417.68331	8.90E-04
3416.71895	0.00115	3416.71895	8.80E-04	3416.71895	8.90E-04
3415.7546	0.00114	3415.7546	8.80E-04	3415.7546	8.90E-04
3414.79024	0.00113	3414.79024	8.90E-04	3414.79024	8.80E-04
3413.82588	0.00112	3413.82588	8.80E-04	3413.82588	8.80E-04
3412.86152	0.00112	3412.86152	8.70E-04	3412.86152	8.80E-04
3411.89717	0.00112	3411.89717	8.70E-04	3411.89717	8.80E-04
3410.93281	0.00113	3410.93281	9.00E-04	3410.93281	8.70E-04
3409.96845	0.00113	3409.96845	9.20E-04	3409.96845	8.70E-04
3409.00409	0.00114	3409.00409	9.20E-04	3409.00409	8.60E-04
3408.03974	0.00114	3408.03974	9.20E-04	3408.03974	8.50E-04
3407.07538	0.00114	3407.07538	9.60E-04	3407.07538	8.50E-04
3406.11102	0.00113	3406.11102	9.60E-04	3406.11102	8.70E-04
3405.14666	0.00112	3405.14666	9.20E-04	3405.14666	8.80E-04
3404.18231	0.00112	3404.18231	8.60E-04	3404.18231	8.90E-04
3403.21795	0.00114	3403.21795	8.70E-04	3403.21795	9.00E-04
3402.25359	0.00117	3402.25359	9.10E-04	3402.25359	9.10E-04
3401.28923	0.0012	3401.28923	9.40E-04	3401.28923	9.10E-04
3400.32488	0.00123	3400.32488	9.40E-04	3400.32488	9.10E-04
3399.36052	0.00124	3399.36052	9.30E-04	3399.36052	9.00E-04
3398.39616	0.00124	3398.39616	9.20E-04	3398.39616	9.00E-04
3397.4318	0.00124	3397.4318	9.30E-04	3397.4318	9.10E-04
3396.46745	0.00123	3396.46745	9.60E-04	3396.46745	9.20E-04
3395.50309	0.00123	3395.50309	9.90E-04	3395.50309	9.30E-04
3394.53873	0.00123	3394.53873	9.80E-04	3394.53873	9.40E-04
3393.57437	0.00125	3393.57437	9.60E-04	3393.57437	9.40E-04
3392.61002	0.00126	3392.61002	9.50E-04	3392.61002	9.50E-04
3391.64566	0.00127	3391.64566	9.60E-04	3391.64566	9.50E-04
3390.6813	0.00127	3390.6813	9.60E-04	3390.6813	9.50E-04
3389.71694	0.00127	3389.71694	9.60E-04	3389.71694	9.40E-04
3388.75258	0.00127	3388.75258	9.60E-04	3388.75258	9.40E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3387.78823	0.00126	3387.78823	9.40E-04	3387.78823	9.30E-04
3386.82387	0.00125	3386.82387	9.20E-04	3386.82387	9.30E-04
3385.85951	0.00124	3385.85951	9.30E-04	3385.85951	9.50E-04
3384.89515	0.00125	3384.89515	9.50E-04	3384.89515	9.80E-04
3383.9308	0.00125	3383.9308	9.60E-04	3383.9308	0.00101
3382.96644	0.00126	3382.96644	9.40E-04	3382.96644	0.00102
3382.00208	0.00126	3382.00208	9.20E-04	3382.00208	0.00103
3381.03772	0.00126	3381.03772	9.30E-04	3381.03772	0.00102
3380.07337	0.00125	3380.07337	9.60E-04	3380.07337	1.00E-03
3379.10901	0.00125	3379.10901	1.00E-03	3379.10901	9.80E-04
3378.14465	0.00126	3378.14465	0.00103	3378.14465	9.70E-04
3377.18029	0.00127	3377.18029	0.00105	3377.18029	9.70E-04
3376.21594	0.00128	3376.21594	0.00106	3376.21594	9.70E-04
3375.25158	0.0013	3375.25158	0.00106	3375.25158	9.70E-04
3374.28722	0.00131	3374.28722	0.00104	3374.28722	9.90E-04
3373.32286	0.00132	3373.32286	0.00101	3373.32286	1.00E-03
3372.35851	0.00133	3372.35851	0.00101	3372.35851	0.00101
3371.39415	0.00134	3371.39415	0.00102	3371.39415	0.00101
3370.42979	0.00134	3370.42979	1.00E-03	3370.42979	1.00E-03
3369.46543	0.00134	3369.46543	9.90E-04	3369.46543	9.90E-04
3368.50108	0.00134	3368.50108	0.00101	3368.50108	9.80E-04
3367.53672	0.00134	3367.53672	0.00103	3367.53672	9.70E-04
3366.57236	0.00134	3366.57236	0.00102	3366.57236	9.80E-04
3365.608	0.00134	3365.608	0.00101	3365.608	1.00E-03
3364.64364	0.00134	3364.64364	0.00101	3364.64364	0.00101
3363.67929	0.00133	3363.67929	9.90E-04	3363.67929	0.00101
3362.71493	0.00132	3362.71493	9.90E-04	3362.71493	0.00101
3361.75057	0.00131	3361.75057	0.00102	3361.75057	1.00E-03
3360.78621	0.00132	3360.78621	0.00105	3360.78621	1.00E-03
3359.82186	0.00133	3359.82186	0.00105	3359.82186	0.00101
3358.8575	0.00134	3358.8575	0.00104	3358.8575	0.00102
3357.89314	0.00135	3357.89314	0.00104	3357.89314	0.00104
3356.92878	0.00135	3356.92878	0.00104	3356.92878	0.00106
3355.96443	0.00135	3355.96443	0.00103	3355.96443	0.00106
3355.00007	0.00135	3355.00007	0.00102	3355.00007	0.00106
3354.03571	0.00136	3354.03571	0.00103	3354.03571	0.00105
3353.07135	0.00136	3353.07135	0.00106	3353.07135	0.00105
3352.107	0.00137	3352.107	0.00109	3352.107	0.00104
3351.14264	0.00137	3351.14264	0.0011	3351.14264	0.00104
3350.17828	0.00137	3350.17828	0.00112	3350.17828	0.00105
3349.21392	0.00137	3349.21392	0.00112	3349.21392	0.00105

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3348.24957	0.00137	3348.24957	0.0011	3348.24957	0.00106
3347.28521	0.00137	3347.28521	0.00107	3347.28521	0.00107
3346.32085	0.00137	3346.32085	0.00106	3346.32085	0.00109
3345.35649	0.00137	3345.35649	0.00106	3345.35649	0.0011
3344.39214	0.00137	3344.39214	0.00107	3344.39214	0.0011
3343.42778	0.00137	3343.42778	0.00108	3343.42778	0.00109
3342.46342	0.00138	3342.46342	0.00108	3342.46342	0.00108
3341.49906	0.00139	3341.49906	0.00105	3341.49906	0.00107
3340.5347	0.00142	3340.5347	0.00103	3340.5347	0.00106
3339.57035	0.00144	3339.57035	0.00105	3339.57035	0.00107
3338.60599	0.00145	3338.60599	0.00108	3338.60599	0.00108
3337.64163	0.00145	3337.64163	0.0011	3337.64163	0.00109
3336.67727	0.00144	3336.67727	0.0011	3336.67727	0.0011
3335.71292	0.00142	3335.71292	0.00112	3335.71292	0.0011
3334.74856	0.00141	3334.74856	0.00115	3334.74856	0.00112
3333.7842	0.0014	3333.7842	0.00115	3333.7842	0.00113
3332.81984	0.00141	3332.81984	0.00112	3332.81984	0.00115
3331.85549	0.00141	3331.85549	0.00109	3331.85549	0.00115
3330.89113	0.00141	3330.89113	0.00106	3330.89113	0.00114
3329.92677	0.00142	3329.92677	0.00107	3329.92677	0.00113
3328.96241	0.00142	3328.96241	0.00109	3328.96241	0.00112
3327.99806	0.00143	3327.99806	0.00111	3327.99806	0.00112
3327.0337	0.00144	3327.0337	0.00112	3327.0337	0.00112
3326.06934	0.00144	3326.06934	0.00113	3326.06934	0.00113
3325.10498	0.00145	3325.10498	0.0011	3325.10498	0.00114
3324.14063	0.00145	3324.14063	0.00107	3324.14063	0.00114
3323.17627	0.00145	3323.17627	0.00107	3323.17627	0.00114
3322.21191	0.00146	3322.21191	0.00109	3322.21191	0.00115
3321.24755	0.00147	3321.24755	0.0011	3321.24755	0.00116
3320.2832	0.00149	3320.2832	0.00112	3320.2832	0.00117
3319.31884	0.00149	3319.31884	0.00114	3319.31884	0.00118
3318.35448	0.00149	3318.35448	0.00113	3318.35448	0.00118
3317.39012	0.00148	3317.39012	0.00109	3317.39012	0.00117
3316.42577	0.00148	3316.42577	0.00107	3316.42577	0.00116
3315.46141	0.00148	3315.46141	0.00109	3315.46141	0.00116
3314.49705	0.00149	3314.49705	0.00112	3314.49705	0.00117
3313.53269	0.00151	3313.53269	0.00112	3313.53269	0.00117
3312.56833	0.00151	3312.56833	0.00112	3312.56833	0.00118
3311.60398	0.0015	3311.60398	0.00111	3311.60398	0.00117
3310.63962	0.00149	3310.63962	0.00111	3310.63962	0.00116
3309.67526	0.00148	3309.67526	0.00112	3309.67526	0.00115

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3308.7109	0.00148	3308.7109	0.00113	3308.7109	0.00116
3307.74655	0.00149	3307.74655	0.00113	3307.74655	0.00118
3306.78219	0.0015	3306.78219	0.00114	3306.78219	0.0012
3305.81783	0.00151	3305.81783	0.00113	3305.81783	0.00121
3304.85347	0.00152	3304.85347	0.00109	3304.85347	0.00121
3303.88912	0.00151	3303.88912	0.00107	3303.88912	0.0012
3302.92476	0.0015	3302.92476	0.00109	3302.92476	0.00121
3301.9604	0.00147	3301.9604	0.00112	3301.9604	0.00122
3300.99604	0.00145	3300.99604	0.00114	3300.99604	0.00124
3300.03169	0.00144	3300.03169	0.00115	3300.03169	0.00126
3299.06733	0.00145	3299.06733	0.00114	3299.06733	0.00126
3298.10297	0.00146	3298.10297	0.0011	3298.10297	0.00126
3297.13861	0.00148	3297.13861	0.00108	3297.13861	0.00126
3296.17426	0.00149	3296.17426	0.0011	3296.17426	0.00126
3295.2099	0.0015	3295.2099	0.00113	3295.2099	0.00126
3294.24554	0.0015	3294.24554	0.00116	3294.24554	0.00127
3293.28118	0.0015	3293.28118	0.00116	3293.28118	0.00127
3292.31683	0.0015	3292.31683	0.00114	3292.31683	0.00128
3291.35247	0.00149	3291.35247	0.00113	3291.35247	0.00127
3290.38811	0.00148	3290.38811	0.00111	3290.38811	0.00127
3289.42375	0.00148	3289.42375	0.0011	3289.42375	0.00126
3288.45939	0.00147	3288.45939	0.0011	3288.45939	0.00125
3287.49504	0.00148	3287.49504	0.00111	3287.49504	0.00124
3286.53068	0.00148	3286.53068	0.0011	3286.53068	0.00123
3285.56632	0.00149	3285.56632	0.00108	3285.56632	0.00122
3284.60196	0.00148	3284.60196	0.00106	3284.60196	0.00122
3283.63761	0.00147	3283.63761	0.00106	3283.63761	0.00122
3282.67325	0.00146	3282.67325	0.00106	3282.67325	0.00122
3281.70889	0.00146	3281.70889	0.00108	3281.70889	0.00122
3280.74453	0.00145	3280.74453	0.00109	3280.74453	0.00122
3279.78018	0.00145	3279.78018	0.0011	3279.78018	0.00123
3278.81582	0.00145	3278.81582	0.00111	3278.81582	0.00124
3277.85146	0.00145	3277.85146	0.00111	3277.85146	0.00125
3276.8871	0.00144	3276.8871	0.00111	3276.8871	0.00127
3275.92275	0.00143	3275.92275	0.00112	3275.92275	0.00128
3274.95839	0.00143	3274.95839	0.00111	3274.95839	0.00128
3273.99403	0.00142	3273.99403	0.00109	3273.99403	0.00128
3273.02967	0.00141	3273.02967	0.00107	3273.02967	0.00127
3272.06532	0.00141	3272.06532	0.00107	3272.06532	0.00125
3271.10096	0.0014	3271.10096	0.00107	3271.10096	0.00124
3270.1366	0.00141	3270.1366	0.00107	3270.1366	0.00122



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3269.17224	0.0014	3269.17224	0.00107	3269.17224	0.00121
3268.20789	0.0014	3268.20789	0.00108	3268.20789	0.00122
3267.24353	0.0014	3267.24353	0.00108	3267.24353	0.00122
3266.27917	0.00141	3266.27917	0.00108	3266.27917	0.00122
3265.31481	0.00142	3265.31481	0.00109	3265.31481	0.00122
3264.35046	0.00142	3264.35046	0.00109	3264.35046	0.00122
3263.3861	0.00143	3263.3861	0.00106	3263.3861	0.00122
3262.42174	0.00142	3262.42174	0.00103	3262.42174	0.00122
3261.45738	0.0014	3261.45738	0.00102	3261.45738	0.00123
3260.49302	0.00138	3260.49302	0.00102	3260.49302	0.00123
3259.52867	0.00136	3259.52867	0.00103	3259.52867	0.00123
3258.56431	0.00135	3258.56431	0.00103	3258.56431	0.00124
3257.59995	0.00135	3257.59995	0.00105	3257.59995	0.00124
3256.63559	0.00135	3256.63559	0.00108	3256.63559	0.00125
3255.67124	0.00135	3255.67124	0.00108	3255.67124	0.00125
3254.70688	0.00135	3254.70688	0.00107	3254.70688	0.00124
3253.74252	0.00135	3253.74252	0.00106	3253.74252	0.00122
3252.77816	0.00135	3252.77816	0.00105	3252.77816	0.0012
3251.81381	0.00135	3251.81381	0.00103	3251.81381	0.00119
3250.84945	0.00137	3250.84945	1.00E-03	3250.84945	0.00119
3249.88509	0.00138	3249.88509	0.00102	3249.88509	0.0012
3248.92073	0.00139	3248.92073	0.00104	3248.92073	0.0012
3247.95638	0.00138	3247.95638	0.00102	3247.95638	0.00121
3246.99202	0.00136	3246.99202	9.90E-04	3246.99202	0.00121
3246.02766	0.00133	3246.02766	9.80E-04	3246.02766	0.00121
3245.0633	0.00131	3245.0633	1.00E-03	3245.0633	0.00122
3244.09895	0.00129	3244.09895	0.00104	3244.09895	0.00123
3243.13459	0.00129	3243.13459	0.00104	3243.13459	0.00124
3242.17023	0.0013	3242.17023	0.00103	3242.17023	0.00123
3241.20587	0.00131	3241.20587	0.00103	3241.20587	0.00122
3240.24152	0.00131	3240.24152	0.00103	3240.24152	0.0012
3239.27716	0.0013	3239.27716	0.00102	3239.27716	0.00119
3238.3128	0.00129	3238.3128	1.00E-03	3238.3128	0.00119
3237.34844	0.00128	3237.34844	9.80E-04	3237.34844	0.00121
3236.38408	0.00127	3236.38408	9.90E-04	3236.38408	0.00123
3235.41973	0.00127	3235.41973	1.00E-03	3235.41973	0.00124
3234.45537	0.00126	3234.45537	1.00E-03	3234.45537	0.00124
3233.49101	0.00125	3233.49101	1.00E-03	3233.49101	0.00123
3232.52665	0.00124	3232.52665	0.00101	3232.52665	0.00121
3231.5623	0.00123	3231.5623	0.00102	3231.5623	0.0012
3230.59794	0.00122	3230.59794	0.00101	3230.59794	0.00119

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3229.63358	0.00122	3229.63358	9.70E-04	3229.63358	0.0012
3228.66922	0.00122	3228.66922	9.50E-04	3228.66922	0.00121
3227.70487	0.00122	3227.70487	9.60E-04	3227.70487	0.00123
3226.74051	0.00123	3226.74051	9.80E-04	3226.74051	0.00123
3225.77615	0.00123	3225.77615	9.70E-04	3225.77615	0.00121
3224.81179	0.00123	3224.81179	9.60E-04	3224.81179	0.00119
3223.84744	0.00122	3223.84744	9.50E-04	3223.84744	0.00117
3222.88308	0.00122	3222.88308	9.30E-04	3222.88308	0.00117
3221.91872	0.00122	3221.91872	9.10E-04	3221.91872	0.00117
3220.95436	0.00121	3220.95436	8.90E-04	3220.95436	0.00119
3219.99001	0.00121	3219.99001	8.90E-04	3219.99001	0.0012
3219.02565	0.0012	3219.02565	9.10E-04	3219.02565	0.00122
3218.06129	0.00119	3218.06129	9.20E-04	3218.06129	0.00122
3217.09693	0.00118	3217.09693	9.10E-04	3217.09693	0.00122
3216.13258	0.00118	3216.13258	9.00E-04	3216.13258	0.00121
3215.16822	0.00118	3215.16822	9.10E-04	3215.16822	0.0012
3214.20386	0.00119	3214.20386	9.20E-04	3214.20386	0.0012
3213.2395	0.00118	3213.2395	9.20E-04	3213.2395	0.0012
3212.27514	0.00117	3212.27514	9.10E-04	3212.27514	0.0012
3211.31079	0.00116	3211.31079	9.00E-04	3211.31079	0.00121
3210.34643	0.00115	3210.34643	8.90E-04	3210.34643	0.00121
3209.38207	0.00114	3209.38207	9.00E-04	3209.38207	0.00121
3208.41771	0.00114	3208.41771	9.10E-04	3208.41771	0.00121
3207.45336	0.00115	3207.45336	9.10E-04	3207.45336	0.00121
3206.489	0.00116	3206.489	9.00E-04	3206.489	0.00121
3205.52464	0.00116	3205.52464	9.10E-04	3205.52464	0.00121
3204.56028	0.00117	3204.56028	9.10E-04	3204.56028	0.00121
3203.59593	0.00116	3203.59593	9.20E-04	3203.59593	0.00122
3202.63157	0.00115	3202.63157	9.20E-04	3202.63157	0.00122
3201.66721	0.00114	3201.66721	9.10E-04	3201.66721	0.00122
3200.70285	0.00113	3200.70285	9.00E-04	3200.70285	0.00121
3199.7385	0.00113	3199.7385	9.00E-04	3199.7385	0.00121
3198.77414	0.00113	3198.77414	8.80E-04	3198.77414	0.00121
3197.80978	0.00113	3197.80978	8.60E-04	3197.80978	0.00121
3196.84542	0.00113	3196.84542	8.60E-04	3196.84542	0.00121
3195.88107	0.00112	3195.88107	8.70E-04	3195.88107	0.00121
3194.91671	0.00111	3194.91671	8.70E-04	3194.91671	0.0012
3193.95235	0.0011	3193.95235	8.70E-04	3193.95235	0.00119
3192.98799	0.00109	3192.98799	8.60E-04	3192.98799	0.00119
3192.02364	0.00108	3192.02364	8.50E-04	3192.02364	0.0012
3191.05928	0.00108	3191.05928	8.50E-04	3191.05928	0.00121

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3190.09492	0.00109	3190.09492	8.50E-04	3190.09492	0.00122
3189.13056	0.00109	3189.13056	8.40E-04	3189.13056	0.00122
3188.16621	0.0011	3188.16621	8.30E-04	3188.16621	0.00122
3187.20185	0.0011	3187.20185	8.30E-04	3187.20185	0.00122
3186.23749	0.00109	3186.23749	8.40E-04	3186.23749	0.00122
3185.27313	0.00108	3185.27313	8.30E-04	3185.27313	0.00122
3184.30877	0.00106	3184.30877	8.30E-04	3184.30877	0.00123
3183.34442	0.00105	3183.34442	8.30E-04	3183.34442	0.00124
3182.38006	0.00105	3182.38006	8.30E-04	3182.38006	0.00124
3181.4157	0.00104	3181.4157	8.20E-04	3181.4157	0.00124
3180.45134	0.00103	3180.45134	8.00E-04	3180.45134	0.00124
3179.48699	0.00102	3179.48699	7.70E-04	3179.48699	0.00123
3178.52263	0.00102	3178.52263	7.50E-04	3178.52263	0.00123
3177.55827	0.00102	3177.55827	7.60E-04	3177.55827	0.00122
3176.59391	0.00101	3176.59391	7.70E-04	3176.59391	0.00122
3175.62956	0.00101	3175.62956	7.80E-04	3175.62956	0.00121
3174.6652	9.90E-04	3174.6652	7.80E-04	3174.6652	0.00119
3173.70084	9.70E-04	3173.70084	7.80E-04	3173.70084	0.00118
3172.73648	9.60E-04	3172.73648	7.80E-04	3172.73648	0.00116
3171.77213	9.50E-04	3171.77213	7.80E-04	3171.77213	0.00116
3170.80777	9.60E-04	3170.80777	7.80E-04	3170.80777	0.00118
3169.84341	9.70E-04	3169.84341	7.80E-04	3169.84341	0.00119
3168.87905	9.70E-04	3168.87905	7.80E-04	3168.87905	0.00121
3167.9147	9.80E-04	3167.9147	7.90E-04	3167.9147	0.00121
3166.95034	9.80E-04	3166.95034	7.90E-04	3166.95034	0.00121
3165.98598	9.80E-04	3165.98598	7.80E-04	3165.98598	0.00121
3165.02162	9.70E-04	3165.02162	7.70E-04	3165.02162	0.00119
3164.05727	9.60E-04	3164.05727	7.80E-04	3164.05727	0.00118
3163.09291	9.50E-04	3163.09291	7.80E-04	3163.09291	0.00118
3162.12855	9.40E-04	3162.12855	7.80E-04	3162.12855	0.00118
3161.16419	9.40E-04	3161.16419	7.60E-04	3161.16419	0.00119
3160.19983	9.50E-04	3160.19983	7.60E-04	3160.19983	0.00119
3159.23548	9.50E-04	3159.23548	7.60E-04	3159.23548	0.0012
3158.27112	9.50E-04	3158.27112	7.60E-04	3158.27112	0.00122
3157.30676	9.50E-04	3157.30676	7.50E-04	3157.30676	0.00123
3156.3424	9.40E-04	3156.3424	7.50E-04	3156.3424	0.00123
3155.37805	9.40E-04	3155.37805	7.50E-04	3155.37805	0.00123
3154.41369	9.40E-04	3154.41369	7.40E-04	3154.41369	0.00122
3153.44933	9.50E-04	3153.44933	7.50E-04	3153.44933	0.00121
3152.48497	9.60E-04	3152.48497	7.60E-04	3152.48497	0.00119
3151.52062	9.60E-04	3151.52062	7.60E-04	3151.52062	0.00118

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3150.55626	9.60E-04	3150.55626	7.40E-04	3150.55626	0.00117
3149.5919	9.40E-04	3149.5919	7.20E-04	3149.5919	0.00117
3148.62754	9.20E-04	3148.62754	7.20E-04	3148.62754	0.00117
3147.66319	8.90E-04	3147.66319	7.30E-04	3147.66319	0.00118
3146.69883	8.70E-04	3146.69883	7.50E-04	3146.69883	0.00119
3145.73447	8.70E-04	3145.73447	7.40E-04	3145.73447	0.00121
3144.77011	8.70E-04	3144.77011	7.20E-04	3144.77011	0.00121
3143.80576	8.80E-04	3143.80576	7.10E-04	3143.80576	0.00121
3142.8414	8.80E-04	3142.8414	7.20E-04	3142.8414	0.00121
3141.87704	8.90E-04	3141.87704	7.40E-04	3141.87704	0.00121
3140.91268	8.90E-04	3140.91268	7.30E-04	3140.91268	0.00121
3139.94833	8.90E-04	3139.94833	7.10E-04	3139.94833	0.00121
3138.98397	8.90E-04	3138.98397	6.80E-04	3138.98397	0.00122
3138.01961	8.90E-04	3138.01961	6.90E-04	3138.01961	0.00122
3137.05525	8.90E-04	3137.05525	7.20E-04	3137.05525	0.00122
3136.0909	8.70E-04	3136.0909	7.40E-04	3136.0909	0.00121
3135.12654	8.60E-04	3135.12654	7.50E-04	3135.12654	0.0012
3134.16218	8.50E-04	3134.16218	7.60E-04	3134.16218	0.0012
3133.19782	8.60E-04	3133.19782	7.50E-04	3133.19782	0.00121
3132.23346	8.70E-04	3132.23346	7.30E-04	3132.23346	0.00121
3131.26911	8.80E-04	3131.26911	7.10E-04	3131.26911	0.00121
3130.30475	8.80E-04	3130.30475	7.10E-04	3130.30475	0.00121
3129.34039	8.80E-04	3129.34039	7.10E-04	3129.34039	0.0012
3128.37603	8.70E-04	3128.37603	7.10E-04	3128.37603	0.00119
3127.41168	8.50E-04	3127.41168	7.00E-04	3127.41168	0.00119
3126.44732	8.40E-04	3126.44732	6.90E-04	3126.44732	0.0012
3125.48296	8.40E-04	3125.48296	6.90E-04	3125.48296	0.00121
3124.5186	8.50E-04	3124.5186	6.80E-04	3124.5186	0.00121
3123.55425	8.50E-04	3123.55425	6.80E-04	3123.55425	0.00121
3122.58989	8.50E-04	3122.58989	6.90E-04	3122.58989	0.00121
3121.62553	8.60E-04	3121.62553	7.00E-04	3121.62553	0.00121
3120.66117	8.60E-04	3120.66117	7.00E-04	3120.66117	0.00121
3119.69682	8.60E-04	3119.69682	6.90E-04	3119.69682	0.00121
3118.73246	8.60E-04	3118.73246	6.80E-04	3118.73246	0.00121
3117.7681	8.60E-04	3117.7681	6.70E-04	3117.7681	0.0012
3116.80374	8.50E-04	3116.80374	6.70E-04	3116.80374	0.0012
3115.83939	8.50E-04	3115.83939	6.90E-04	3115.83939	0.0012
3114.87503	8.40E-04	3114.87503	7.00E-04	3114.87503	0.00121
3113.91067	8.40E-04	3113.91067	6.80E-04	3113.91067	0.00122
3112.94631	8.30E-04	3112.94631	6.60E-04	3112.94631	0.00122
3111.98196	8.20E-04	3111.98196	6.80E-04	3111.98196	0.00122

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3111.0176	8.10E-04	3111.0176	6.90E-04	3111.0176	0.00123
3110.05324	8.00E-04	3110.05324	6.80E-04	3110.05324	0.00122
3109.08888	8.00E-04	3109.08888	6.90E-04	3109.08888	0.00122
3108.12452	8.00E-04	3108.12452	7.10E-04	3108.12452	0.00122
3107.16017	8.00E-04	3107.16017	7.20E-04	3107.16017	0.00122
3106.19581	8.00E-04	3106.19581	7.00E-04	3106.19581	0.00121
3105.23145	8.00E-04	3105.23145	6.80E-04	3105.23145	0.00122
3104.26709	8.00E-04	3104.26709	6.70E-04	3104.26709	0.00122
3103.30274	8.00E-04	3103.30274	6.60E-04	3103.30274	0.00123
3102.33838	8.00E-04	3102.33838	6.80E-04	3102.33838	0.00123
3101.37402	8.10E-04	3101.37402	7.00E-04	3101.37402	0.00123
3100.40966	8.10E-04	3100.40966	7.20E-04	3100.40966	0.00121
3099.44531	8.10E-04	3099.44531	7.00E-04	3099.44531	0.0012
3098.48095	8.20E-04	3098.48095	6.80E-04	3098.48095	0.00118
3097.51659	8.10E-04	3097.51659	6.70E-04	3097.51659	0.00118
3096.55223	8.10E-04	3096.55223	6.70E-04	3096.55223	0.00118
3095.58788	8.10E-04	3095.58788	6.90E-04	3095.58788	0.00119
3094.62352	8.20E-04	3094.62352	7.00E-04	3094.62352	0.00121
3093.65916	8.30E-04	3093.65916	7.20E-04	3093.65916	0.00122
3092.6948	8.30E-04	3092.6948	7.20E-04	3092.6948	0.00123
3091.73045	8.40E-04	3091.73045	7.00E-04	3091.73045	0.00124
3090.76609	8.40E-04	3090.76609	6.80E-04	3090.76609	0.00124
3089.80173	8.40E-04	3089.80173	6.70E-04	3089.80173	0.00125
3088.83737	8.40E-04	3088.83737	6.70E-04	3088.83737	0.00125
3087.87302	8.40E-04	3087.87302	6.70E-04	3087.87302	0.00125
3086.90866	8.40E-04	3086.90866	6.70E-04	3086.90866	0.00125
3085.9443	8.40E-04	3085.9443	6.60E-04	3085.9443	0.00125
3084.97994	8.30E-04	3084.97994	6.50E-04	3084.97994	0.00125
3084.01559	8.20E-04	3084.01559	6.70E-04	3084.01559	0.00124
3083.05123	8.20E-04	3083.05123	7.00E-04	3083.05123	0.00124
3082.08687	8.20E-04	3082.08687	7.10E-04	3082.08687	0.00124
3081.12251	8.40E-04	3081.12251	6.90E-04	3081.12251	0.00124
3080.15815	8.60E-04	3080.15815	6.70E-04	3080.15815	0.00123
3079.1938	8.80E-04	3079.1938	6.60E-04	3079.1938	0.00123
3078.22944	8.90E-04	3078.22944	6.80E-04	3078.22944	0.00122
3077.26508	8.70E-04	3077.26508	6.90E-04	3077.26508	0.00121
3076.30072	8.50E-04	3076.30072	7.10E-04	3076.30072	0.00121
3075.33637	8.40E-04	3075.33637	7.00E-04	3075.33637	0.00121
3074.37201	8.30E-04	3074.37201	6.90E-04	3074.37201	0.0012
3073.40765	8.20E-04	3073.40765	6.70E-04	3073.40765	0.0012
3072.44329	8.20E-04	3072.44329	6.50E-04	3072.44329	0.00119

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3071.47894	8.20E-04	3071.47894	6.40E-04	3071.47894	0.00119
3070.51458	8.20E-04	3070.51458	6.50E-04	3070.51458	0.00119
3069.55022	8.10E-04	3069.55022	6.60E-04	3069.55022	0.0012
3068.58586	8.10E-04	3068.58586	6.60E-04	3068.58586	0.0012
3067.62151	8.20E-04	3067.62151	6.70E-04	3067.62151	0.0012
3066.65715	8.30E-04	3066.65715	6.80E-04	3066.65715	0.0012
3065.69279	8.40E-04	3065.69279	6.70E-04	3065.69279	0.00119
3064.72843	8.50E-04	3064.72843	6.70E-04	3064.72843	0.00118
3063.76408	8.40E-04	3063.76408	6.80E-04	3063.76408	0.00118
3062.79972	8.30E-04	3062.79972	7.20E-04	3062.79972	0.00119
3061.83536	8.10E-04	3061.83536	7.40E-04	3061.83536	0.0012
3060.871	8.00E-04	3060.871	7.30E-04	3060.871	0.00121
3059.90665	7.90E-04	3059.90665	7.00E-04	3059.90665	0.00121
3058.94229	7.80E-04	3058.94229	6.90E-04	3058.94229	0.0012
3057.97793	7.80E-04	3057.97793	6.70E-04	3057.97793	0.00119
3057.01357	7.80E-04	3057.01357	6.60E-04	3057.01357	0.00119
3056.04921	7.80E-04	3056.04921	6.80E-04	3056.04921	0.00118
3055.08486	7.80E-04	3055.08486	6.90E-04	3055.08486	0.00117
3054.1205	7.80E-04	3054.1205	6.90E-04	3054.1205	0.00116
3053.15614	7.90E-04	3053.15614	6.80E-04	3053.15614	0.00116
3052.19178	7.90E-04	3052.19178	6.60E-04	3052.19178	0.00117
3051.22743	7.80E-04	3051.22743	6.60E-04	3051.22743	0.00118
3050.26307	7.70E-04	3050.26307	6.60E-04	3050.26307	0.00118
3049.29871	7.50E-04	3049.29871	6.60E-04	3049.29871	0.00117
3048.33435	7.30E-04	3048.33435	6.50E-04	3048.33435	0.00116
3047.37	7.20E-04	3047.37	6.30E-04	3047.37	0.00116
3046.40564	7.10E-04	3046.40564	6.20E-04	3046.40564	0.00115
3045.44128	7.20E-04	3045.44128	6.30E-04	3045.44128	0.00116
3044.47692	7.30E-04	3044.47692	6.50E-04	3044.47692	0.00116
3043.51257	7.40E-04	3043.51257	6.50E-04	3043.51257	0.00117
3042.54821	7.50E-04	3042.54821	6.40E-04	3042.54821	0.00116
3041.58385	7.60E-04	3041.58385	6.50E-04	3041.58385	0.00113
3040.61949	7.60E-04	3040.61949	6.60E-04	3040.61949	0.0011
3039.65514	7.50E-04	3039.65514	6.70E-04	3039.65514	0.00108
3038.69078	7.40E-04	3038.69078	6.60E-04	3038.69078	0.00106
3037.72642	7.30E-04	3037.72642	6.50E-04	3037.72642	0.00105
3036.76206	7.20E-04	3036.76206	6.40E-04	3036.76206	0.00104
3035.79771	7.20E-04	3035.79771	6.50E-04	3035.79771	0.00104
3034.83335	7.20E-04	3034.83335	6.40E-04	3034.83335	0.00104
3033.86899	7.10E-04	3033.86899	6.40E-04	3033.86899	0.00103
3032.90463	7.10E-04	3032.90463	6.50E-04	3032.90463	0.00102

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3031.94027	7.20E-04	3031.94027	6.50E-04	3031.94027	0.00102
3030.97592	7.20E-04	3030.97592	6.40E-04	3030.97592	0.00102
3030.01156	7.30E-04	3030.01156	6.30E-04	3030.01156	0.00102
3029.0472	7.30E-04	3029.0472	6.30E-04	3029.0472	0.00101
3028.08284	7.30E-04	3028.08284	6.20E-04	3028.08284	0.00101
3027.11849	7.20E-04	3027.11849	6.20E-04	3027.11849	0.00101
3026.15413	7.00E-04	3026.15413	6.30E-04	3026.15413	0.00101
3025.18977	7.00E-04	3025.18977	6.40E-04	3025.18977	0.00102
3024.22541	6.90E-04	3024.22541	6.30E-04	3024.22541	0.00103
3023.26106	6.90E-04	3023.26106	6.20E-04	3023.26106	0.00104
3022.2967	6.90E-04	3022.2967	6.10E-04	3022.2967	0.00106
3021.33234	6.80E-04	3021.33234	6.10E-04	3021.33234	0.00107
3020.36798	6.70E-04	3020.36798	6.00E-04	3020.36798	0.00108
3019.40363	6.80E-04	3019.40363	6.00E-04	3019.40363	0.00104
3018.43927	6.80E-04	3018.43927	6.10E-04	3018.43927	9.00E-04
3017.47491	6.80E-04	3017.47491	6.10E-04	3017.47491	7.00E-04
3016.51055	6.90E-04	3016.51055	6.20E-04	3016.51055	5.40E-04
3015.5462	6.80E-04	3015.5462	6.30E-04	3015.5462	4.70E-04
3014.58184	6.70E-04	3014.58184	6.20E-04	3014.58184	5.00E-04
3013.61748	6.50E-04	3013.61748	5.90E-04	3013.61748	6.40E-04
3012.65312	6.50E-04	3012.65312	5.80E-04	3012.65312	8.30E-04
3011.68877	6.50E-04	3011.68877	5.80E-04	3011.68877	9.80E-04
3010.72441	6.50E-04	3010.72441	5.90E-04	3010.72441	0.00105
3009.76005	6.60E-04	3009.76005	5.80E-04	3009.76005	0.00104
3008.79569	6.60E-04	3008.79569	5.80E-04	3008.79569	1.00E-03
3007.83134	6.50E-04	3007.83134	5.80E-04	3007.83134	9.70E-04
3006.86698	6.40E-04	3006.86698	5.90E-04	3006.86698	9.60E-04
3005.90262	6.40E-04	3005.90262	6.00E-04	3005.90262	9.40E-04
3004.93826	6.40E-04	3004.93826	6.20E-04	3004.93826	9.30E-04
3003.9739	6.50E-04	3003.9739	6.10E-04	3003.9739	9.10E-04
3003.00955	6.60E-04	3003.00955	6.00E-04	3003.00955	9.00E-04
3002.04519	6.70E-04	3002.04519	6.00E-04	3002.04519	8.80E-04
3001.08083	6.70E-04	3001.08083	6.00E-04	3001.08083	8.60E-04
3000.11647	6.60E-04	3000.11647	6.10E-04	3000.11647	8.40E-04
2999.15212	6.60E-04	2999.15212	6.00E-04	2999.15212	8.40E-04
2998.18776	6.50E-04	2998.18776	6.00E-04	2998.18776	8.50E-04
2997.2234	6.40E-04	2997.2234	6.10E-04	2997.2234	8.60E-04
2996.25904	6.40E-04	2996.25904	6.20E-04	2996.25904	8.60E-04
2995.29469	6.40E-04	2995.29469	6.10E-04	2995.29469	8.70E-04
2994.33033	6.50E-04	2994.33033	5.90E-04	2994.33033	8.80E-04
2993.36597	6.50E-04	2993.36597	5.90E-04	2993.36597	8.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2992.40161	6.60E-04	2992.40161	5.90E-04	2992.40161	9.10E-04
2991.43726	6.70E-04	2991.43726	5.80E-04	2991.43726	9.20E-04
2990.4729	6.70E-04	2990.4729	5.80E-04	2990.4729	9.30E-04
2989.50854	6.70E-04	2989.50854	6.00E-04	2989.50854	9.40E-04
2988.54418	6.70E-04	2988.54418	6.30E-04	2988.54418	9.50E-04
2987.57983	6.60E-04	2987.57983	6.40E-04	2987.57983	9.70E-04
2986.61547	6.60E-04	2986.61547	6.40E-04	2986.61547	1.00E-03
2985.65111	6.70E-04	2985.65111	6.30E-04	2985.65111	0.00103
2984.68675	6.80E-04	2984.68675	6.30E-04	2984.68675	0.00106
2983.7224	6.80E-04	2983.7224	6.30E-04	2983.7224	0.00108
2982.75804	6.90E-04	2982.75804	6.20E-04	2982.75804	0.00108
2981.79368	6.90E-04	2981.79368	6.00E-04	2981.79368	0.00109
2980.82932	7.00E-04	2980.82932	6.00E-04	2980.82932	0.00109
2979.86496	7.00E-04	2979.86496	6.20E-04	2979.86496	0.00108
2978.90061	7.00E-04	2978.90061	6.40E-04	2978.90061	1.00E-03
2977.93625	7.10E-04	2977.93625	6.50E-04	2977.93625	7.90E-04
2976.97189	7.20E-04	2976.97189	6.50E-04	2976.97189	5.30E-04
2976.00753	7.30E-04	2976.00753	6.70E-04	2976.00753	3.30E-04
2975.04318	7.30E-04	2975.04318	7.00E-04	2975.04318	2.60E-04
2974.07882	7.40E-04	2974.07882	7.10E-04	2974.07882	3.40E-04
2973.11446	7.40E-04	2973.11446	7.00E-04	2973.11446	5.50E-04
2972.1501	7.40E-04	2972.1501	6.90E-04	2972.1501	8.40E-04
2971.18575	7.40E-04	2971.18575	6.80E-04	2971.18575	0.00107
2970.22139	7.40E-04	2970.22139	6.90E-04	2970.22139	0.00119
2969.25703	7.50E-04	2969.25703	7.10E-04	2969.25703	0.00122
2968.29267	7.50E-04	2968.29267	7.20E-04	2968.29267	0.00123
2967.32832	7.60E-04	2967.32832	7.10E-04	2967.32832	0.00125
2966.36396	7.60E-04	2966.36396	7.20E-04	2966.36396	0.00126
2965.3996	7.50E-04	2965.3996	7.30E-04	2965.3996	0.00127
2964.43524	7.50E-04	2964.43524	7.40E-04	2964.43524	0.00129
2963.47089	7.60E-04	2963.47089	7.50E-04	2963.47089	0.00131
2962.50653	7.90E-04	2962.50653	7.70E-04	2962.50653	0.00133
2961.54217	8.10E-04	2961.54217	7.80E-04	2961.54217	0.00136
2960.57781	8.20E-04	2960.57781	7.70E-04	2960.57781	0.00139
2959.61346	8.20E-04	2959.61346	7.50E-04	2959.61346	0.00141
2958.6491	8.10E-04	2958.6491	7.60E-04	2958.6491	0.00144
2957.68474	7.90E-04	2957.68474	7.70E-04	2957.68474	0.00146
2956.72038	7.80E-04	2956.72038	7.80E-04	2956.72038	0.00148
2955.75603	7.90E-04	2955.75603	7.70E-04	2955.75603	0.0015
2954.79167	8.00E-04	2954.79167	7.60E-04	2954.79167	0.00152
2953.82731	8.20E-04	2953.82731	7.70E-04	2953.82731	0.00153



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2952.86295	8.40E-04	2952.86295	7.90E-04	2952.86295	0.00155
2951.89859	8.50E-04	2951.89859	8.10E-04	2951.89859	0.00156
2950.93424	8.60E-04	2950.93424	8.30E-04	2950.93424	0.00157
2949.96988	8.80E-04	2949.96988	8.50E-04	2949.96988	0.00157
2949.00552	8.90E-04	2949.00552	8.50E-04	2949.00552	0.00157
2948.04116	9.10E-04	2948.04116	8.50E-04	2948.04116	0.00155
2947.07681	9.30E-04	2947.07681	8.50E-04	2947.07681	0.00153
2946.11245	9.50E-04	2946.11245	8.60E-04	2946.11245	0.0015
2945.14809	9.60E-04	2945.14809	8.80E-04	2945.14809	0.00146
2944.18373	9.70E-04	2944.18373	8.80E-04	2944.18373	0.00142
2943.21938	9.60E-04	2943.21938	8.70E-04	2943.21938	0.00139
2942.25502	9.60E-04	2942.25502	8.80E-04	2942.25502	0.00137
2941.29066	9.50E-04	2941.29066	8.80E-04	2941.29066	0.00135
2940.3263	9.40E-04	2940.3263	8.80E-04	2940.3263	0.00133
2939.36195	9.30E-04	2939.36195	8.90E-04	2939.36195	0.00132
2938.39759	9.20E-04	2938.39759	9.10E-04	2938.39759	0.00132
2937.43323	9.20E-04	2937.43323	9.00E-04	2937.43323	0.00132
2936.46887	9.20E-04	2936.46887	8.90E-04	2936.46887	0.00133
2935.50452	9.30E-04	2935.50452	8.90E-04	2935.50452	0.00136
2934.54016	9.40E-04	2934.54016	9.00E-04	2934.54016	0.00139
2933.5758	9.40E-04	2933.5758	8.80E-04	2933.5758	0.00142
2932.61144	9.40E-04	2932.61144	8.70E-04	2932.61144	0.00144
2931.64709	9.30E-04	2931.64709	8.80E-04	2931.64709	0.00147
2930.68273	9.10E-04	2930.68273	9.10E-04	2930.68273	0.0015
2929.71837	8.90E-04	2929.71837	9.30E-04	2929.71837	0.00152
2928.75401	8.80E-04	2928.75401	9.40E-04	2928.75401	0.00155
2927.78965	8.70E-04	2927.78965	9.40E-04	2927.78965	0.00158
2926.8253	8.70E-04	2926.8253	9.50E-04	2926.8253	0.0016
2925.86094	8.60E-04	2925.86094	9.50E-04	2925.86094	0.00163
2924.89658	8.60E-04	2924.89658	9.50E-04	2924.89658	0.00165
2923.93222	8.60E-04	2923.93222	9.40E-04	2923.93222	0.00168
2922.96787	8.60E-04	2922.96787	9.30E-04	2922.96787	0.0017
2922.00351	8.60E-04	2922.00351	9.30E-04	2922.00351	0.00172
2921.03915	8.60E-04	2921.03915	9.40E-04	2921.03915	0.00174
2920.07479	8.60E-04	2920.07479	9.60E-04	2920.07479	0.00175
2919.11044	8.70E-04	2919.11044	9.60E-04	2919.11044	0.00176
2918.14608	8.70E-04	2918.14608	9.40E-04	2918.14608	0.00176
2917.18172	8.60E-04	2917.18172	9.10E-04	2917.18172	0.00175
2916.21736	8.60E-04	2916.21736	9.10E-04	2916.21736	0.00175
2915.25301	8.50E-04	2915.25301	9.10E-04	2915.25301	0.00173
2914.28865	8.50E-04	2914.28865	9.00E-04	2914.28865	0.00171

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2913.32429	8.50E-04	2913.32429	8.90E-04	2913.32429	0.00168
2912.35993	8.50E-04	2912.35993	8.70E-04	2912.35993	0.00165
2911.39558	8.40E-04	2911.39558	8.50E-04	2911.39558	0.00161
2910.43122	8.30E-04	2910.43122	8.50E-04	2910.43122	0.00158
2909.46686	8.20E-04	2909.46686	8.50E-04	2909.46686	0.00155
2908.5025	8.10E-04	2908.5025	8.40E-04	2908.5025	0.00153
2907.53815	8.20E-04	2907.53815	8.30E-04	2907.53815	0.00151
2906.57379	8.20E-04	2906.57379	8.20E-04	2906.57379	0.00149
2905.60943	8.20E-04	2905.60943	8.00E-04	2905.60943	0.00148
2904.64507	8.20E-04	2904.64507	8.00E-04	2904.64507	0.00146
2903.68071	8.00E-04	2903.68071	7.80E-04	2903.68071	0.00144
2902.71636	7.90E-04	2902.71636	7.70E-04	2902.71636	0.00142
2901.752	7.80E-04	2901.752	7.70E-04	2901.752	0.0014
2900.78764	7.70E-04	2900.78764	7.70E-04	2900.78764	0.0014
2899.82328	7.70E-04	2899.82328	7.70E-04	2899.82328	0.00139
2898.85893	7.70E-04	2898.85893	7.70E-04	2898.85893	0.00138
2897.89457	7.70E-04	2897.89457	7.60E-04	2897.89457	0.00136
2896.93021	7.60E-04	2896.93021	7.30E-04	2896.93021	0.00134
2895.96585	7.50E-04	2895.96585	7.10E-04	2895.96585	0.00131
2895.0015	7.40E-04	2895.0015	7.00E-04	2895.0015	0.00129
2894.03714	7.30E-04	2894.03714	6.90E-04	2894.03714	0.00128
2893.07278	7.10E-04	2893.07278	6.80E-04	2893.07278	0.00128
2892.10842	7.00E-04	2892.10842	6.80E-04	2892.10842	0.00128
2891.14407	6.90E-04	2891.14407	6.80E-04	2891.14407	0.00128
2890.17971	6.70E-04	2890.17971	6.80E-04	2890.17971	0.00127
2889.21535	6.60E-04	2889.21535	6.80E-04	2889.21535	0.00126
2888.25099	6.60E-04	2888.25099	6.80E-04	2888.25099	0.00125
2887.28664	6.60E-04	2887.28664	6.70E-04	2887.28664	0.00125
2886.32228	6.60E-04	2886.32228	6.80E-04	2886.32228	0.00124
2885.35792	6.60E-04	2885.35792	6.80E-04	2885.35792	0.00124
2884.39356	6.60E-04	2884.39356	6.70E-04	2884.39356	0.00125
2883.42921	6.50E-04	2883.42921	6.60E-04	2883.42921	0.00125
2882.46485	6.40E-04	2882.46485	6.60E-04	2882.46485	0.00125
2881.50049	6.40E-04	2881.50049	6.60E-04	2881.50049	0.00126
2880.53613	6.40E-04	2880.53613	6.60E-04	2880.53613	0.00126
2879.57178	6.50E-04	2879.57178	6.70E-04	2879.57178	0.00127
2878.60742	6.60E-04	2878.60742	6.70E-04	2878.60742	0.00127
2877.64306	6.70E-04	2877.64306	6.80E-04	2877.64306	0.00127
2876.6787	6.60E-04	2876.6787	6.90E-04	2876.6787	0.00126
2875.71434	6.60E-04	2875.71434	6.90E-04	2875.71434	0.00125
2874.74999	6.50E-04	2874.74999	6.90E-04	2874.74999	0.00124

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2873.78563	6.50E-04	2873.78563	6.80E-04	2873.78563	0.00124
2872.82127	6.50E-04	2872.82127	6.80E-04	2872.82127	0.00125
2871.85691	6.60E-04	2871.85691	6.70E-04	2871.85691	0.00125
2870.89256	6.60E-04	2870.89256	6.70E-04	2870.89256	0.00125
2869.9282	6.70E-04	2869.9282	6.70E-04	2869.9282	0.00125
2868.96384	6.60E-04	2868.96384	6.70E-04	2868.96384	0.00125
2867.99948	6.60E-04	2867.99948	6.60E-04	2867.99948	0.00126
2867.03513	6.40E-04	2867.03513	6.60E-04	2867.03513	0.00126
2866.07077	6.30E-04	2866.07077	6.50E-04	2866.07077	0.00126
2865.10641	6.20E-04	2865.10641	6.50E-04	2865.10641	0.00125
2864.14205	6.20E-04	2864.14205	6.50E-04	2864.14205	0.00123
2863.1777	6.20E-04	2863.1777	6.50E-04	2863.1777	0.0012
2862.21334	6.20E-04	2862.21334	6.50E-04	2862.21334	0.00117
2861.24898	6.20E-04	2861.24898	6.40E-04	2861.24898	0.00115
2860.28462	6.20E-04	2860.28462	6.50E-04	2860.28462	0.00113
2859.32027	6.10E-04	2859.32027	6.60E-04	2859.32027	0.00111
2858.35591	6.10E-04	2858.35591	6.60E-04	2858.35591	0.00109
2857.39155	6.00E-04	2857.39155	6.50E-04	2857.39155	0.00108
2856.42719	6.00E-04	2856.42719	6.40E-04	2856.42719	0.00108
2855.46284	6.10E-04	2855.46284	6.20E-04	2855.46284	0.00109
2854.49848	6.10E-04	2854.49848	6.20E-04	2854.49848	0.0011
2853.53412	6.10E-04	2853.53412	6.30E-04	2853.53412	0.0011
2852.56976	6.00E-04	2852.56976	6.40E-04	2852.56976	0.0011
2851.6054	5.90E-04	2851.6054	6.40E-04	2851.6054	0.0011
2850.64105	5.80E-04	2850.64105	6.40E-04	2850.64105	0.0011
2849.67669	5.70E-04	2849.67669	6.40E-04	2849.67669	0.00111
2848.71233	5.80E-04	2848.71233	6.20E-04	2848.71233	0.00112
2847.74797	5.80E-04	2847.74797	6.10E-04	2847.74797	0.00113
2846.78362	5.90E-04	2846.78362	6.20E-04	2846.78362	0.00114
2845.81926	5.90E-04	2845.81926	6.30E-04	2845.81926	0.00115
2844.8549	5.90E-04	2844.8549	6.40E-04	2844.8549	0.00115
2843.89054	5.80E-04	2843.89054	6.30E-04	2843.89054	0.00116
2842.92619	5.70E-04	2842.92619	6.30E-04	2842.92619	0.00117
2841.96183	5.60E-04	2841.96183	6.20E-04	2841.96183	0.00119
2840.99747	5.50E-04	2840.99747	6.10E-04	2840.99747	0.00121
2840.03311	5.40E-04	2840.03311	6.00E-04	2840.03311	0.00122
2839.06876	5.40E-04	2839.06876	6.00E-04	2839.06876	0.00122
2838.1044	5.40E-04	2838.1044	5.90E-04	2838.1044	0.00122
2837.14004	5.40E-04	2837.14004	5.70E-04	2837.14004	0.0012
2836.17568	5.40E-04	2836.17568	5.60E-04	2836.17568	0.00119
2835.21133	5.30E-04	2835.21133	5.60E-04	2835.21133	0.00116

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2834.24697	5.20E-04	2834.24697	5.60E-04	2834.24697	0.00113
2833.28261	5.10E-04	2833.28261	5.40E-04	2833.28261	0.0011
2832.31825	5.00E-04	2832.31825	5.40E-04	2832.31825	0.00107
2831.3539	5.00E-04	2831.3539	5.50E-04	2831.3539	0.00105
2830.38954	5.00E-04	2830.38954	5.40E-04	2830.38954	0.00103
2829.42518	5.10E-04	2829.42518	5.20E-04	2829.42518	0.00102
2828.46082	5.20E-04	2828.46082	5.00E-04	2828.46082	0.00101
2827.49647	5.20E-04	2827.49647	5.00E-04	2827.49647	1.00E-03
2826.53211	5.20E-04	2826.53211	5.10E-04	2826.53211	9.90E-04
2825.56775	5.20E-04	2825.56775	5.30E-04	2825.56775	9.90E-04
2824.60339	5.20E-04	2824.60339	5.30E-04	2824.60339	9.80E-04
2823.63903	5.10E-04	2823.63903	5.20E-04	2823.63903	9.80E-04
2822.67468	5.00E-04	2822.67468	5.20E-04	2822.67468	9.80E-04
2821.71032	4.80E-04	2821.71032	5.10E-04	2821.71032	9.70E-04
2820.74596	4.80E-04	2820.74596	5.00E-04	2820.74596	9.70E-04
2819.7816	4.80E-04	2819.7816	5.00E-04	2819.7816	9.60E-04
2818.81725	4.80E-04	2818.81725	5.00E-04	2818.81725	9.50E-04
2817.85289	4.90E-04	2817.85289	5.00E-04	2817.85289	9.50E-04
2816.88853	4.80E-04	2816.88853	4.90E-04	2816.88853	9.50E-04
2815.92417	4.80E-04	2815.92417	4.80E-04	2815.92417	9.40E-04
2814.95982	4.70E-04	2814.95982	4.70E-04	2814.95982	9.40E-04
2813.99546	4.70E-04	2813.99546	4.90E-04	2813.99546	9.30E-04
2813.0311	4.60E-04	2813.0311	4.90E-04	2813.0311	9.30E-04
2812.06674	4.60E-04	2812.06674	4.80E-04	2812.06674	9.20E-04
2811.10239	4.60E-04	2811.10239	4.60E-04	2811.10239	9.20E-04
2810.13803	4.60E-04	2810.13803	4.50E-04	2810.13803	9.20E-04
2809.17367	4.50E-04	2809.17367	4.70E-04	2809.17367	9.20E-04
2808.20931	4.50E-04	2808.20931	4.90E-04	2808.20931	9.20E-04
2807.24496	4.50E-04	2807.24496	4.90E-04	2807.24496	9.10E-04
2806.2806	4.40E-04	2806.2806	4.60E-04	2806.2806	9.10E-04
2805.31624	4.40E-04	2805.31624	4.30E-04	2805.31624	9.20E-04
2804.35188	4.30E-04	2804.35188	4.40E-04	2804.35188	9.30E-04
2803.38753	4.30E-04	2803.38753	4.50E-04	2803.38753	9.40E-04
2802.42317	4.40E-04	2802.42317	4.40E-04	2802.42317	9.40E-04
2801.45881	4.50E-04	2801.45881	4.30E-04	2801.45881	9.40E-04
2800.49445	4.60E-04	2800.49445	4.50E-04	2800.49445	9.20E-04
2799.53009	4.60E-04	2799.53009	4.60E-04	2799.53009	9.10E-04
2798.56574	4.60E-04	2798.56574	4.50E-04	2798.56574	9.00E-04
2797.60138	4.60E-04	2797.60138	4.40E-04	2797.60138	9.00E-04
2796.63702	4.50E-04	2796.63702	4.40E-04	2796.63702	9.00E-04
2795.67266	4.50E-04	2795.67266	4.50E-04	2795.67266	9.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2794.70831	4.30E-04	2794.70831	4.40E-04	2794.70831	9.10E-04
2793.74395	4.20E-04	2793.74395	4.30E-04	2793.74395	9.10E-04
2792.77959	4.00E-04	2792.77959	4.20E-04	2792.77959	9.20E-04
2791.81523	3.90E-04	2791.81523	4.10E-04	2791.81523	9.20E-04
2790.85088	3.80E-04	2790.85088	4.10E-04	2790.85088	9.20E-04
2789.88652	3.90E-04	2789.88652	4.10E-04	2789.88652	9.20E-04
2788.92216	4.00E-04	2788.92216	4.20E-04	2788.92216	9.20E-04
2787.9578	4.10E-04	2787.9578	4.30E-04	2787.9578	9.10E-04
2786.99345	4.10E-04	2786.99345	4.40E-04	2786.99345	9.10E-04
2786.02909	4.00E-04	2786.02909	4.50E-04	2786.02909	9.10E-04
2785.06473	4.00E-04	2785.06473	4.50E-04	2785.06473	9.20E-04
2784.10037	4.00E-04	2784.10037	4.50E-04	2784.10037	9.20E-04
2783.13602	3.90E-04	2783.13602	4.40E-04	2783.13602	9.20E-04
2782.17166	3.80E-04	2782.17166	4.40E-04	2782.17166	9.20E-04
2781.2073	3.80E-04	2781.2073	4.40E-04	2781.2073	9.20E-04
2780.24294	3.70E-04	2780.24294	4.40E-04	2780.24294	9.20E-04
2779.27859	3.70E-04	2779.27859	4.30E-04	2779.27859	9.20E-04
2778.31423	3.80E-04	2778.31423	4.20E-04	2778.31423	9.20E-04
2777.34987	3.80E-04	2777.34987	4.10E-04	2777.34987	9.20E-04
2776.38551	3.90E-04	2776.38551	4.10E-04	2776.38551	9.20E-04
2775.42115	3.90E-04	2775.42115	4.10E-04	2775.42115	9.30E-04
2774.4568	3.90E-04	2774.4568	4.10E-04	2774.4568	9.40E-04
2773.49244	3.90E-04	2773.49244	4.10E-04	2773.49244	9.50E-04
2772.52808	3.80E-04	2772.52808	4.10E-04	2772.52808	9.50E-04
2771.56372	3.80E-04	2771.56372	4.20E-04	2771.56372	9.40E-04
2770.59937	3.70E-04	2770.59937	4.20E-04	2770.59937	9.20E-04
2769.63501	3.70E-04	2769.63501	4.20E-04	2769.63501	9.10E-04
2768.67065	3.60E-04	2768.67065	4.10E-04	2768.67065	9.10E-04
2767.70629	3.60E-04	2767.70629	4.10E-04	2767.70629	9.10E-04
2766.74194	3.60E-04	2766.74194	4.00E-04	2766.74194	9.10E-04
2765.77758	3.60E-04	2765.77758	4.00E-04	2765.77758	9.20E-04
2764.81322	3.60E-04	2764.81322	4.20E-04	2764.81322	9.20E-04
2763.84886	3.50E-04	2763.84886	4.40E-04	2763.84886	9.20E-04
2762.88451	3.50E-04	2762.88451	4.40E-04	2762.88451	9.20E-04
2761.92015	3.50E-04	2761.92015	4.20E-04	2761.92015	9.00E-04
2760.95579	3.50E-04	2760.95579	3.90E-04	2760.95579	9.00E-04
2759.99143	3.50E-04	2759.99143	3.70E-04	2759.99143	9.00E-04
2759.02708	3.60E-04	2759.02708	3.70E-04	2759.02708	8.90E-04
2758.06272	3.70E-04	2758.06272	3.80E-04	2758.06272	9.00E-04
2757.09836	3.70E-04	2757.09836	3.80E-04	2757.09836	9.00E-04
2756.134	3.70E-04	2756.134	3.80E-04	2756.134	9.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2755.16965	3.60E-04	2755.16965	3.80E-04	2755.16965	9.00E-04
2754.20529	3.40E-04	2754.20529	3.70E-04	2754.20529	9.00E-04
2753.24093	3.40E-04	2753.24093	3.80E-04	2753.24093	9.00E-04
2752.27657	3.40E-04	2752.27657	3.90E-04	2752.27657	9.00E-04
2751.31222	3.50E-04	2751.31222	3.90E-04	2751.31222	9.00E-04
2750.34786	3.50E-04	2750.34786	3.80E-04	2750.34786	8.90E-04
2749.3835	3.60E-04	2749.3835	3.70E-04	2749.3835	8.90E-04
2748.41914	3.70E-04	2748.41914	3.70E-04	2748.41914	8.80E-04
2747.45478	3.70E-04	2747.45478	3.80E-04	2747.45478	8.70E-04
2746.49043	3.70E-04	2746.49043	3.80E-04	2746.49043	8.70E-04
2745.52607	3.70E-04	2745.52607	3.70E-04	2745.52607	8.60E-04
2744.56171	3.60E-04	2744.56171	3.60E-04	2744.56171	8.70E-04
2743.59735	3.50E-04	2743.59735	3.70E-04	2743.59735	8.70E-04
2742.633	3.50E-04	2742.633	3.80E-04	2742.633	8.70E-04
2741.66864	3.40E-04	2741.66864	4.00E-04	2741.66864	8.80E-04
2740.70428	3.40E-04	2740.70428	4.10E-04	2740.70428	8.80E-04
2739.73992	3.40E-04	2739.73992	3.90E-04	2739.73992	8.80E-04
2738.77557	3.40E-04	2738.77557	3.60E-04	2738.77557	8.70E-04
2737.81121	3.30E-04	2737.81121	3.40E-04	2737.81121	8.70E-04
2736.84685	3.40E-04	2736.84685	3.30E-04	2736.84685	8.70E-04
2735.88249	3.40E-04	2735.88249	3.30E-04	2735.88249	8.70E-04
2734.91814	3.40E-04	2734.91814	3.40E-04	2734.91814	8.60E-04
2733.95378	3.40E-04	2733.95378	3.60E-04	2733.95378	8.60E-04
2732.98942	3.40E-04	2732.98942	3.60E-04	2732.98942	8.60E-04
2732.02506	3.30E-04	2732.02506	3.60E-04	2732.02506	8.70E-04
2731.06071	3.30E-04	2731.06071	3.60E-04	2731.06071	8.70E-04
2730.09635	3.20E-04	2730.09635	3.70E-04	2730.09635	8.70E-04
2729.13199	3.20E-04	2729.13199	3.80E-04	2729.13199	8.80E-04
2728.16763	3.30E-04	2728.16763	3.80E-04	2728.16763	8.80E-04
2727.20328	3.30E-04	2727.20328	3.70E-04	2727.20328	8.80E-04
2726.23892	3.40E-04	2726.23892	3.60E-04	2726.23892	8.70E-04
2725.27456	3.50E-04	2725.27456	3.50E-04	2725.27456	8.60E-04
2724.3102	3.50E-04	2724.3102	3.60E-04	2724.3102	8.50E-04
2723.34584	3.40E-04	2723.34584	3.60E-04	2723.34584	8.40E-04
2722.38149	3.30E-04	2722.38149	3.50E-04	2722.38149	8.30E-04
2721.41713	3.30E-04	2721.41713	3.50E-04	2721.41713	8.40E-04
2720.45277	3.20E-04	2720.45277	3.60E-04	2720.45277	8.40E-04
2719.48841	3.10E-04	2719.48841	3.80E-04	2719.48841	8.50E-04
2718.52406	3.00E-04	2718.52406	3.90E-04	2718.52406	8.50E-04
2717.5597	3.00E-04	2717.5597	3.80E-04	2717.5597	8.50E-04
2716.59534	3.00E-04	2716.59534	3.60E-04	2716.59534	8.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2715.63098	3.00E-04	2715.63098	3.50E-04	2715.63098	8.50E-04
2714.66663	3.00E-04	2714.66663	3.50E-04	2714.66663	8.50E-04
2713.70227	3.10E-04	2713.70227	3.40E-04	2713.70227	8.40E-04
2712.73791	3.20E-04	2712.73791	3.40E-04	2712.73791	8.40E-04
2711.77355	3.20E-04	2711.77355	3.50E-04	2711.77355	8.30E-04
2710.8092	3.20E-04	2710.8092	3.50E-04	2710.8092	8.30E-04
2709.84484	3.10E-04	2709.84484	3.60E-04	2709.84484	8.40E-04
2708.88048	3.10E-04	2708.88048	3.70E-04	2708.88048	8.40E-04
2707.91612	3.10E-04	2707.91612	3.70E-04	2707.91612	8.40E-04
2706.95177	3.10E-04	2706.95177	3.40E-04	2706.95177	8.40E-04
2705.98741	3.10E-04	2705.98741	3.30E-04	2705.98741	8.40E-04
2705.02305	3.20E-04	2705.02305	3.30E-04	2705.02305	8.40E-04
2704.05869	3.20E-04	2704.05869	3.40E-04	2704.05869	8.40E-04
2703.09434	3.20E-04	2703.09434	3.50E-04	2703.09434	8.30E-04
2702.12998	3.20E-04	2702.12998	3.50E-04	2702.12998	8.30E-04
2701.16562	3.20E-04	2701.16562	3.50E-04	2701.16562	8.20E-04
2700.20126	3.10E-04	2700.20126	3.60E-04	2700.20126	8.20E-04
2699.23691	3.10E-04	2699.23691	3.70E-04	2699.23691	8.10E-04
2698.27255	3.00E-04	2698.27255	3.70E-04	2698.27255	8.20E-04
2697.30819	2.90E-04	2697.30819	3.60E-04	2697.30819	8.20E-04
2696.34383	2.90E-04	2696.34383	3.50E-04	2696.34383	8.20E-04
2695.37947	3.00E-04	2695.37947	3.50E-04	2695.37947	8.10E-04
2694.41512	3.10E-04	2694.41512	3.40E-04	2694.41512	8.00E-04
2693.45076	3.10E-04	2693.45076	3.30E-04	2693.45076	7.90E-04
2692.4864	3.00E-04	2692.4864	3.20E-04	2692.4864	7.70E-04
2691.52204	3.00E-04	2691.52204	3.20E-04	2691.52204	7.70E-04
2690.55769	3.00E-04	2690.55769	3.30E-04	2690.55769	7.70E-04
2689.59333	3.00E-04	2689.59333	3.50E-04	2689.59333	7.70E-04
2688.62897	2.90E-04	2688.62897	3.50E-04	2688.62897	7.70E-04
2687.66461	2.90E-04	2687.66461	3.50E-04	2687.66461	7.70E-04
2686.70026	2.80E-04	2686.70026	3.40E-04	2686.70026	7.80E-04
2685.7359	2.70E-04	2685.7359	3.50E-04	2685.7359	7.90E-04
2684.77154	2.70E-04	2684.77154	3.60E-04	2684.77154	7.90E-04
2683.80718	2.80E-04	2683.80718	3.60E-04	2683.80718	8.00E-04
2682.84283	3.00E-04	2682.84283	3.60E-04	2682.84283	8.00E-04
2681.87847	3.10E-04	2681.87847	3.50E-04	2681.87847	7.90E-04
2680.91411	3.20E-04	2680.91411	3.30E-04	2680.91411	7.90E-04
2679.94975	3.20E-04	2679.94975	3.30E-04	2679.94975	7.80E-04
2678.9854	3.10E-04	2678.9854	3.30E-04	2678.9854	7.80E-04
2678.02104	2.90E-04	2678.02104	3.30E-04	2678.02104	7.80E-04
2677.05668	2.80E-04	2677.05668	3.40E-04	2677.05668	7.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2676.09232	2.80E-04	2676.09232	3.40E-04	2676.09232	7.90E-04
2675.12797	2.80E-04	2675.12797	3.30E-04	2675.12797	8.00E-04
2674.16361	2.80E-04	2674.16361	3.20E-04	2674.16361	7.90E-04
2673.19925	2.90E-04	2673.19925	3.20E-04	2673.19925	7.90E-04
2672.23489	2.90E-04	2672.23489	3.20E-04	2672.23489	7.90E-04
2671.27053	2.90E-04	2671.27053	3.30E-04	2671.27053	7.80E-04
2670.30618	2.90E-04	2670.30618	3.40E-04	2670.30618	7.70E-04
2669.34182	2.90E-04	2669.34182	3.50E-04	2669.34182	7.60E-04
2668.37746	2.90E-04	2668.37746	3.60E-04	2668.37746	7.50E-04
2667.4131	2.90E-04	2667.4131	3.60E-04	2667.4131	7.50E-04
2666.44875	2.90E-04	2666.44875	3.40E-04	2666.44875	7.50E-04
2665.48439	2.80E-04	2665.48439	3.20E-04	2665.48439	7.50E-04
2664.52003	2.80E-04	2664.52003	3.20E-04	2664.52003	7.50E-04
2663.55567	2.80E-04	2663.55567	3.30E-04	2663.55567	7.60E-04
2662.59132	2.90E-04	2662.59132	3.40E-04	2662.59132	7.70E-04
2661.62696	2.90E-04	2661.62696	3.50E-04	2661.62696	7.70E-04
2660.6626	2.90E-04	2660.6626	3.30E-04	2660.6626	7.70E-04
2659.69824	2.90E-04	2659.69824	3.10E-04	2659.69824	7.70E-04
2658.73389	2.80E-04	2658.73389	3.10E-04	2658.73389	7.70E-04
2657.76953	2.70E-04	2657.76953	3.20E-04	2657.76953	7.70E-04
2656.80517	2.70E-04	2656.80517	3.20E-04	2656.80517	7.70E-04
2655.84081	2.70E-04	2655.84081	3.10E-04	2655.84081	7.70E-04
2654.87646	2.70E-04	2654.87646	3.10E-04	2654.87646	7.70E-04
2653.9121	2.70E-04	2653.9121	3.10E-04	2653.9121	7.70E-04
2652.94774	2.80E-04	2652.94774	3.10E-04	2652.94774	7.70E-04
2651.98338	2.80E-04	2651.98338	3.20E-04	2651.98338	7.70E-04
2651.01903	2.70E-04	2651.01903	3.20E-04	2651.01903	7.70E-04
2650.05467	2.60E-04	2650.05467	3.10E-04	2650.05467	7.70E-04
2649.09031	2.60E-04	2649.09031	2.90E-04	2649.09031	7.60E-04
2648.12595	2.50E-04	2648.12595	2.90E-04	2648.12595	7.50E-04
2647.1616	2.50E-04	2647.1616	2.90E-04	2647.1616	7.50E-04
2646.19724	2.50E-04	2646.19724	3.00E-04	2646.19724	7.50E-04
2645.23288	2.50E-04	2645.23288	3.10E-04	2645.23288	7.60E-04
2644.26852	2.60E-04	2644.26852	3.10E-04	2644.26852	7.60E-04
2643.30416	2.60E-04	2643.30416	3.10E-04	2643.30416	7.60E-04
2642.33981	2.60E-04	2642.33981	3.20E-04	2642.33981	7.50E-04
2641.37545	2.60E-04	2641.37545	3.20E-04	2641.37545	7.50E-04
2640.41109	2.60E-04	2640.41109	3.30E-04	2640.41109	7.50E-04
2639.44673	2.60E-04	2639.44673	3.20E-04	2639.44673	7.50E-04
2638.48238	2.60E-04	2638.48238	3.10E-04	2638.48238	7.50E-04
2637.51802	2.50E-04	2637.51802	3.00E-04	2637.51802	7.50E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2636.55366	2.50E-04	2636.55366	2.90E-04	2636.55366	7.50E-04
2635.5893	2.40E-04	2635.5893	2.80E-04	2635.5893	7.50E-04
2634.62495	2.40E-04	2634.62495	2.90E-04	2634.62495	7.50E-04
2633.66059	2.50E-04	2633.66059	3.00E-04	2633.66059	7.50E-04
2632.69623	2.50E-04	2632.69623	3.10E-04	2632.69623	7.50E-04
2631.73187	2.50E-04	2631.73187	3.10E-04	2631.73187	7.50E-04
2630.76752	2.50E-04	2630.76752	3.10E-04	2630.76752	7.40E-04
2629.80316	2.50E-04	2629.80316	3.10E-04	2629.80316	7.30E-04
2628.8388	2.50E-04	2628.8388	3.20E-04	2628.8388	7.40E-04
2627.87444	2.50E-04	2627.87444	3.20E-04	2627.87444	7.40E-04
2626.91009	2.50E-04	2626.91009	3.10E-04	2626.91009	7.50E-04
2625.94573	2.40E-04	2625.94573	3.00E-04	2625.94573	7.50E-04
2624.98137	2.40E-04	2624.98137	3.00E-04	2624.98137	7.50E-04
2624.01701	2.40E-04	2624.01701	3.00E-04	2624.01701	7.50E-04
2623.05266	2.40E-04	2623.05266	2.90E-04	2623.05266	7.40E-04
2622.0883	2.40E-04	2622.0883	2.80E-04	2622.0883	7.30E-04
2621.12394	2.40E-04	2621.12394	2.70E-04	2621.12394	7.30E-04
2620.15958	2.40E-04	2620.15958	2.80E-04	2620.15958	7.20E-04
2619.19522	2.40E-04	2619.19522	2.90E-04	2619.19522	7.20E-04
2618.23087	2.30E-04	2618.23087	2.90E-04	2618.23087	7.30E-04
2617.26651	2.30E-04	2617.26651	2.80E-04	2617.26651	7.30E-04
2616.30215	2.40E-04	2616.30215	2.80E-04	2616.30215	7.30E-04
2615.33779	2.40E-04	2615.33779	2.70E-04	2615.33779	7.30E-04
2614.37344	2.40E-04	2614.37344	2.90E-04	2614.37344	7.20E-04
2613.40908	2.40E-04	2613.40908	3.00E-04	2613.40908	7.20E-04
2612.44472	2.40E-04	2612.44472	3.00E-04	2612.44472	7.20E-04
2611.48036	2.40E-04	2611.48036	3.00E-04	2611.48036	7.10E-04
2610.51601	2.50E-04	2610.51601	3.00E-04	2610.51601	7.10E-04
2609.55165	2.50E-04	2609.55165	3.10E-04	2609.55165	7.20E-04
2608.58729	2.50E-04	2608.58729	3.10E-04	2608.58729	7.10E-04
2607.62293	2.40E-04	2607.62293	3.00E-04	2607.62293	7.10E-04
2606.65858	2.30E-04	2606.65858	3.00E-04	2606.65858	7.10E-04
2605.69422	2.20E-04	2605.69422	3.00E-04	2605.69422	7.00E-04
2604.72986	2.10E-04	2604.72986	3.00E-04	2604.72986	7.00E-04
2603.7655	2.00E-04	2603.7655	2.90E-04	2603.7655	6.90E-04
2602.80115	2.10E-04	2602.80115	3.00E-04	2602.80115	6.90E-04
2601.83679	2.20E-04	2601.83679	3.00E-04	2601.83679	6.90E-04
2600.87243	2.30E-04	2600.87243	2.90E-04	2600.87243	6.90E-04
2599.90807	2.40E-04	2599.90807	2.90E-04	2599.90807	6.80E-04
2598.94372	2.40E-04	2598.94372	2.90E-04	2598.94372	6.80E-04
2597.97936	2.40E-04	2597.97936	3.00E-04	2597.97936	6.80E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2597.015	2.40E-04	2597.015	2.90E-04	2597.015	6.80E-04
2596.05064	2.40E-04	2596.05064	2.90E-04	2596.05064	6.90E-04
2595.08628	2.30E-04	2595.08628	2.90E-04	2595.08628	6.90E-04
2594.12193	2.30E-04	2594.12193	2.90E-04	2594.12193	6.90E-04
2593.15757	2.20E-04	2593.15757	2.90E-04	2593.15757	6.90E-04
2592.19321	2.10E-04	2592.19321	2.90E-04	2592.19321	6.70E-04
2591.22885	2.00E-04	2591.22885	2.90E-04	2591.22885	6.60E-04
2590.2645	2.00E-04	2590.2645	2.90E-04	2590.2645	6.50E-04
2589.30014	1.90E-04	2589.30014	2.90E-04	2589.30014	6.40E-04
2588.33578	1.90E-04	2588.33578	2.90E-04	2588.33578	6.50E-04
2587.37142	1.80E-04	2587.37142	3.00E-04	2587.37142	6.60E-04
2586.40707	1.90E-04	2586.40707	3.00E-04	2586.40707	6.70E-04
2585.44271	1.90E-04	2585.44271	2.90E-04	2585.44271	6.70E-04
2584.47835	1.80E-04	2584.47835	2.70E-04	2584.47835	6.70E-04
2583.51399	1.80E-04	2583.51399	2.60E-04	2583.51399	6.70E-04
2582.54964	1.80E-04	2582.54964	2.60E-04	2582.54964	6.60E-04
2581.58528	1.80E-04	2581.58528	2.50E-04	2581.58528	6.60E-04
2580.62092	1.70E-04	2580.62092	2.50E-04	2580.62092	6.60E-04
2579.65656	1.70E-04	2579.65656	2.60E-04	2579.65656	6.60E-04
2578.69221	1.80E-04	2578.69221	2.70E-04	2578.69221	6.60E-04
2577.72785	1.90E-04	2577.72785	2.70E-04	2577.72785	6.60E-04
2576.76349	2.00E-04	2576.76349	2.70E-04	2576.76349	6.60E-04
2575.79913	2.10E-04	2575.79913	2.60E-04	2575.79913	6.60E-04
2574.83478	2.10E-04	2574.83478	2.50E-04	2574.83478	6.50E-04
2573.87042	2.10E-04	2573.87042	2.50E-04	2573.87042	6.50E-04
2572.90606	2.10E-04	2572.90606	2.60E-04	2572.90606	6.40E-04
2571.9417	2.00E-04	2571.9417	2.60E-04	2571.9417	6.40E-04
2570.97735	2.00E-04	2570.97735	2.60E-04	2570.97735	6.40E-04
2570.01299	2.00E-04	2570.01299	2.50E-04	2570.01299	6.40E-04
2569.04863	1.90E-04	2569.04863	2.50E-04	2569.04863	6.40E-04
2568.08427	1.90E-04	2568.08427	2.40E-04	2568.08427	6.40E-04
2567.11991	1.80E-04	2567.11991	2.40E-04	2567.11991	6.30E-04
2566.15556	1.70E-04	2566.15556	2.40E-04	2566.15556	6.30E-04
2565.1912	1.70E-04	2565.1912	2.50E-04	2565.1912	6.20E-04
2564.22684	1.70E-04	2564.22684	2.60E-04	2564.22684	6.20E-04
2563.26248	1.80E-04	2563.26248	2.50E-04	2563.26248	6.20E-04
2562.29813	1.90E-04	2562.29813	2.40E-04	2562.29813	6.20E-04
2561.33377	2.00E-04	2561.33377	2.40E-04	2561.33377	6.20E-04
2560.36941	2.00E-04	2560.36941	2.50E-04	2560.36941	6.20E-04
2559.40505	1.90E-04	2559.40505	2.60E-04	2559.40505	6.10E-04
2558.4407	1.90E-04	2558.4407	2.50E-04	2558.4407	6.00E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2557.47634	1.80E-04	2557.47634	2.40E-04	2557.47634	6.00E-04
2556.51198	1.80E-04	2556.51198	2.30E-04	2556.51198	5.90E-04
2555.54762	1.80E-04	2555.54762	2.50E-04	2555.54762	5.90E-04
2554.58327	1.80E-04	2554.58327	2.60E-04	2554.58327	6.00E-04
2553.61891	1.80E-04	2553.61891	2.60E-04	2553.61891	6.00E-04
2552.65455	1.80E-04	2552.65455	2.60E-04	2552.65455	6.10E-04
2551.69019	1.90E-04	2551.69019	2.70E-04	2551.69019	6.20E-04
2550.72584	2.00E-04	2550.72584	2.70E-04	2550.72584	6.20E-04
2549.76148	2.00E-04	2549.76148	2.60E-04	2549.76148	6.10E-04
2548.79712	2.00E-04	2548.79712	2.50E-04	2548.79712	6.00E-04
2547.83276	2.00E-04	2547.83276	2.40E-04	2547.83276	5.90E-04
2546.86841	2.00E-04	2546.86841	2.20E-04	2546.86841	5.80E-04
2545.90405	1.90E-04	2545.90405	2.10E-04	2545.90405	5.90E-04
2544.93969	1.80E-04	2544.93969	2.30E-04	2544.93969	5.90E-04
2543.97533	1.80E-04	2543.97533	2.60E-04	2543.97533	5.80E-04
2543.01097	1.80E-04	2543.01097	2.70E-04	2543.01097	5.80E-04
2542.04662	1.80E-04	2542.04662	2.50E-04	2542.04662	5.80E-04
2541.08226	1.80E-04	2541.08226	2.40E-04	2541.08226	5.80E-04
2540.1179	1.80E-04	2540.1179	2.40E-04	2540.1179	5.90E-04
2539.15354	1.80E-04	2539.15354	2.50E-04	2539.15354	6.00E-04
2538.18919	1.70E-04	2538.18919	2.50E-04	2538.18919	6.00E-04
2537.22483	1.70E-04	2537.22483	2.40E-04	2537.22483	6.00E-04
2536.26047	1.70E-04	2536.26047	2.40E-04	2536.26047	6.00E-04
2535.29611	1.60E-04	2535.29611	2.50E-04	2535.29611	5.90E-04
2534.33176	1.60E-04	2534.33176	2.60E-04	2534.33176	5.90E-04
2533.3674	1.50E-04	2533.3674	2.60E-04	2533.3674	5.90E-04
2532.40304	1.50E-04	2532.40304	2.60E-04	2532.40304	5.90E-04
2531.43868	1.50E-04	2531.43868	2.70E-04	2531.43868	5.90E-04
2530.47433	1.60E-04	2530.47433	2.70E-04	2530.47433	5.80E-04
2529.50997	1.60E-04	2529.50997	2.60E-04	2529.50997	5.80E-04
2528.54561	1.60E-04	2528.54561	2.40E-04	2528.54561	5.70E-04
2527.58125	1.60E-04	2527.58125	2.30E-04	2527.58125	5.80E-04
2526.6169	1.60E-04	2526.6169	2.30E-04	2526.6169	5.80E-04
2525.65254	1.50E-04	2525.65254	2.30E-04	2525.65254	5.80E-04
2524.68818	1.50E-04	2524.68818	2.30E-04	2524.68818	5.80E-04
2523.72382	1.40E-04	2523.72382	2.40E-04	2523.72382	5.80E-04
2522.75947	1.30E-04	2522.75947	2.50E-04	2522.75947	5.80E-04
2521.79511	1.40E-04	2521.79511	2.50E-04	2521.79511	5.80E-04
2520.83075	1.40E-04	2520.83075	2.50E-04	2520.83075	5.80E-04
2519.86639	1.50E-04	2519.86639	2.40E-04	2519.86639	5.80E-04
2518.90204	1.60E-04	2518.90204	2.50E-04	2518.90204	5.80E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2517.93768	1.60E-04	2517.93768	2.50E-04	2517.93768	5.80E-04
2516.97332	1.60E-04	2516.97332	2.50E-04	2516.97332	5.70E-04
2516.00896	1.60E-04	2516.00896	2.50E-04	2516.00896	5.70E-04
2515.0446	1.60E-04	2515.0446	2.40E-04	2515.0446	5.70E-04
2514.08025	1.60E-04	2514.08025	2.20E-04	2514.08025	5.70E-04
2513.11589	1.60E-04	2513.11589	2.10E-04	2513.11589	5.60E-04
2512.15153	1.60E-04	2512.15153	2.20E-04	2512.15153	5.60E-04
2511.18717	1.60E-04	2511.18717	2.40E-04	2511.18717	5.60E-04
2510.22282	1.50E-04	2510.22282	2.40E-04	2510.22282	5.60E-04
2509.25846	1.50E-04	2509.25846	2.30E-04	2509.25846	5.60E-04
2508.2941	1.50E-04	2508.2941	2.30E-04	2508.2941	5.50E-04
2507.32974	1.40E-04	2507.32974	2.30E-04	2507.32974	5.50E-04
2506.36539	1.40E-04	2506.36539	2.40E-04	2506.36539	5.50E-04
2505.40103	1.40E-04	2505.40103	2.50E-04	2505.40103	5.50E-04
2504.43667	1.40E-04	2504.43667	2.40E-04	2504.43667	5.50E-04
2503.47231	1.40E-04	2503.47231	2.30E-04	2503.47231	5.60E-04
2502.50796	1.40E-04	2502.50796	2.20E-04	2502.50796	5.70E-04
2501.5436	1.40E-04	2501.5436	2.20E-04	2501.5436	5.80E-04
2500.57924	1.40E-04	2500.57924	2.20E-04	2500.57924	5.80E-04
2499.61488	1.40E-04	2499.61488	2.20E-04	2499.61488	5.80E-04
2498.65053	1.30E-04	2498.65053	2.40E-04	2498.65053	5.80E-04
2497.68617	1.30E-04	2497.68617	2.40E-04	2497.68617	5.70E-04
2496.72181	1.30E-04	2496.72181	2.40E-04	2496.72181	5.70E-04
2495.75745	1.30E-04	2495.75745	2.30E-04	2495.75745	5.60E-04
2494.7931	1.30E-04	2494.7931	2.30E-04	2494.7931	5.60E-04
2493.82874	1.30E-04	2493.82874	2.30E-04	2493.82874	5.70E-04
2492.86438	1.30E-04	2492.86438	2.30E-04	2492.86438	5.70E-04
2491.90002	1.30E-04	2491.90002	2.20E-04	2491.90002	5.80E-04
2490.93566	1.30E-04	2490.93566	2.10E-04	2490.93566	5.80E-04
2489.97131	1.30E-04	2489.97131	2.20E-04	2489.97131	5.70E-04
2489.00695	1.30E-04	2489.00695	2.30E-04	2489.00695	5.60E-04
2488.04259	1.30E-04	2488.04259	2.20E-04	2488.04259	5.60E-04
2487.07823	1.30E-04	2487.07823	2.30E-04	2487.07823	5.50E-04
2486.11388	1.30E-04	2486.11388	2.40E-04	2486.11388	5.50E-04
2485.14952	1.20E-04	2485.14952	2.40E-04	2485.14952	5.50E-04
2484.18516	1.20E-04	2484.18516	2.30E-04	2484.18516	5.40E-04
2483.2208	1.10E-04	2483.2208	2.40E-04	2483.2208	5.40E-04
2482.25645	1.10E-04	2482.25645	2.40E-04	2482.25645	5.40E-04
2481.29209	1.10E-04	2481.29209	2.30E-04	2481.29209	5.40E-04
2480.32773	1.10E-04	2480.32773	2.20E-04	2480.32773	5.40E-04
2479.36337	1.20E-04	2479.36337	2.20E-04	2479.36337	5.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2478.39902	1.20E-04	2478.39902	2.30E-04	2478.39902	5.50E-04
2477.43466	1.20E-04	2477.43466	2.40E-04	2477.43466	5.50E-04
2476.4703	1.20E-04	2476.4703	2.50E-04	2476.4703	5.50E-04
2475.50594	1.10E-04	2475.50594	2.40E-04	2475.50594	5.40E-04
2474.54159	1.10E-04	2474.54159	2.30E-04	2474.54159	5.40E-04
2473.57723	1.10E-04	2473.57723	2.10E-04	2473.57723	5.40E-04
2472.61287	1.20E-04	2472.61287	2.00E-04	2472.61287	5.30E-04
2471.64851	1.20E-04	2471.64851	2.10E-04	2471.64851	5.30E-04
2470.68416	1.30E-04	2470.68416	2.20E-04	2470.68416	5.20E-04
2469.7198	1.40E-04	2469.7198	2.40E-04	2469.7198	5.20E-04
2468.75544	1.40E-04	2468.75544	2.50E-04	2468.75544	5.20E-04
2467.79108	1.30E-04	2467.79108	2.50E-04	2467.79108	5.30E-04
2466.82672	1.20E-04	2466.82672	2.50E-04	2466.82672	5.30E-04
2465.86237	1.20E-04	2465.86237	2.50E-04	2465.86237	5.40E-04
2464.89801	1.20E-04	2464.89801	2.50E-04	2464.89801	5.50E-04
2463.93365	1.20E-04	2463.93365	2.40E-04	2463.93365	5.50E-04
2462.96929	1.20E-04	2462.96929	2.30E-04	2462.96929	5.50E-04
2462.00494	1.20E-04	2462.00494	2.20E-04	2462.00494	5.40E-04
2461.04058	1.10E-04	2461.04058	2.30E-04	2461.04058	5.30E-04
2460.07622	1.10E-04	2460.07622	2.30E-04	2460.07622	5.20E-04
2459.11186	1.10E-04	2459.11186	2.40E-04	2459.11186	5.20E-04
2458.14751	1.10E-04	2458.14751	2.50E-04	2458.14751	5.20E-04
2457.18315	1.20E-04	2457.18315	2.50E-04	2457.18315	5.30E-04
2456.21879	1.20E-04	2456.21879	2.50E-04	2456.21879	5.30E-04
2455.25443	1.20E-04	2455.25443	2.40E-04	2455.25443	5.30E-04
2454.29008	1.10E-04	2454.29008	2.40E-04	2454.29008	5.30E-04
2453.32572	1.10E-04	2453.32572	2.40E-04	2453.32572	5.20E-04
2452.36136	1.10E-04	2452.36136	2.50E-04	2452.36136	5.20E-04
2451.397	1.00E-04	2451.397	2.60E-04	2451.397	5.10E-04
2450.43265	1.00E-04	2450.43265	2.60E-04	2450.43265	5.10E-04
2449.46829	9.00E-05	2449.46829	2.70E-04	2449.46829	5.10E-04
2448.50393	9.00E-05	2448.50393	2.70E-04	2448.50393	5.10E-04
2447.53957	9.00E-05	2447.53957	2.60E-04	2447.53957	5.10E-04
2446.57522	9.00E-05	2446.57522	2.50E-04	2446.57522	5.20E-04
2445.61086	1.00E-04	2445.61086	2.50E-04	2445.61086	5.20E-04
2444.6465	1.00E-04	2444.6465	2.60E-04	2444.6465	5.20E-04
2443.68214	1.10E-04	2443.68214	2.70E-04	2443.68214	5.20E-04
2442.71779	1.10E-04	2442.71779	2.60E-04	2442.71779	5.20E-04
2441.75343	1.10E-04	2441.75343	2.40E-04	2441.75343	5.10E-04
2440.78907	1.00E-04	2440.78907	2.20E-04	2440.78907	5.10E-04
2439.82471	1.00E-04	2439.82471	2.20E-04	2439.82471	5.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2438.86035	9.00E-05	2438.86035	2.30E-04	2438.86035	5.10E-04
2437.896	9.00E-05	2437.896	2.40E-04	2437.896	5.00E-04
2436.93164	9.00E-05	2436.93164	2.30E-04	2436.93164	5.00E-04
2435.96728	9.00E-05	2435.96728	2.20E-04	2435.96728	4.90E-04
2435.00292	9.00E-05	2435.00292	2.20E-04	2435.00292	4.90E-04
2434.03857	1.00E-04	2434.03857	2.30E-04	2434.03857	4.90E-04
2433.07421	1.00E-04	2433.07421	2.30E-04	2433.07421	4.90E-04
2432.10985	1.00E-04	2432.10985	2.20E-04	2432.10985	4.90E-04
2431.14549	1.10E-04	2431.14549	2.20E-04	2431.14549	4.80E-04
2430.18114	1.10E-04	2430.18114	2.30E-04	2430.18114	4.80E-04
2429.21678	1.10E-04	2429.21678	2.40E-04	2429.21678	4.80E-04
2428.25242	1.00E-04	2428.25242	2.30E-04	2428.25242	4.80E-04
2427.28806	1.00E-04	2427.28806	2.20E-04	2427.28806	4.70E-04
2426.32371	9.00E-05	2426.32371	2.20E-04	2426.32371	4.60E-04
2425.35935	9.00E-05	2425.35935	2.20E-04	2425.35935	4.60E-04
2424.39499	9.00E-05	2424.39499	2.20E-04	2424.39499	4.60E-04
2423.43063	9.00E-05	2423.43063	2.20E-04	2423.43063	4.60E-04
2422.46628	1.00E-04	2422.46628	2.20E-04	2422.46628	4.70E-04
2421.50192	1.00E-04	2421.50192	2.20E-04	2421.50192	4.70E-04
2420.53756	9.00E-05	2420.53756	2.20E-04	2420.53756	4.70E-04
2419.5732	9.00E-05	2419.5732	2.30E-04	2419.5732	4.70E-04
2418.60885	9.00E-05	2418.60885	2.40E-04	2418.60885	4.60E-04
2417.64449	9.00E-05	2417.64449	2.40E-04	2417.64449	4.50E-04
2416.68013	9.00E-05	2416.68013	2.40E-04	2416.68013	4.60E-04
2415.71577	8.00E-05	2415.71577	2.40E-04	2415.71577	4.60E-04
2414.75141	7.00E-05	2414.75141	2.50E-04	2414.75141	4.50E-04
2413.78706	7.00E-05	2413.78706	2.50E-04	2413.78706	4.50E-04
2412.8227	7.00E-05	2412.8227	2.50E-04	2412.8227	4.50E-04
2411.85834	8.00E-05	2411.85834	2.50E-04	2411.85834	4.50E-04
2410.89398	9.00E-05	2410.89398	2.40E-04	2410.89398	4.60E-04
2409.92963	9.00E-05	2409.92963	2.20E-04	2409.92963	4.70E-04
2408.96527	9.00E-05	2408.96527	2.10E-04	2408.96527	4.70E-04
2408.00091	9.00E-05	2408.00091	2.10E-04	2408.00091	4.70E-04
2407.03655	1.00E-04	2407.03655	2.20E-04	2407.03655	4.70E-04
2406.0722	1.00E-04	2406.0722	2.20E-04	2406.0722	4.60E-04
2405.10784	1.00E-04	2405.10784	2.20E-04	2405.10784	4.60E-04
2404.14348	9.00E-05	2404.14348	2.30E-04	2404.14348	4.60E-04
2403.17912	9.00E-05	2403.17912	2.30E-04	2403.17912	4.60E-04
2402.21477	9.00E-05	2402.21477	2.30E-04	2402.21477	4.60E-04
2401.25041	9.00E-05	2401.25041	2.30E-04	2401.25041	4.60E-04
2400.28605	9.00E-05	2400.28605	2.20E-04	2400.28605	4.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2399.32169	1.00E-04	2399.32169	2.20E-04	2399.32169	4.40E-04
2398.35734	1.00E-04	2398.35734	2.20E-04	2398.35734	4.40E-04
2397.39298	1.10E-04	2397.39298	2.10E-04	2397.39298	4.40E-04
2396.42862	1.10E-04	2396.42862	2.10E-04	2396.42862	4.40E-04
2395.46426	1.00E-04	2395.46426	2.00E-04	2395.46426	4.40E-04
2394.49991	9.00E-05	2394.49991	2.00E-04	2394.49991	4.40E-04
2393.53555	9.00E-05	2393.53555	2.10E-04	2393.53555	4.50E-04
2392.57119	8.00E-05	2392.57119	2.10E-04	2392.57119	4.50E-04
2391.60683	9.00E-05	2391.60683	2.20E-04	2391.60683	4.60E-04
2390.64248	1.00E-04	2390.64248	2.10E-04	2390.64248	4.70E-04
2389.67812	1.00E-04	2389.67812	2.00E-04	2389.67812	4.70E-04
2388.71376	1.00E-04	2388.71376	2.00E-04	2388.71376	4.70E-04
2387.7494	1.00E-04	2387.7494	2.10E-04	2387.7494	4.60E-04
2386.78504	9.00E-05	2386.78504	2.10E-04	2386.78504	4.50E-04
2385.82069	7.00E-05	2385.82069	2.10E-04	2385.82069	4.40E-04
2384.85633	6.00E-05	2384.85633	2.10E-04	2384.85633	4.30E-04
2383.89197	6.00E-05	2383.89197	2.10E-04	2383.89197	4.30E-04
2382.92761	6.00E-05	2382.92761	2.20E-04	2382.92761	4.30E-04
2381.96326	7.00E-05	2381.96326	2.10E-04	2381.96326	4.20E-04
2380.9989	8.00E-05	2380.9989	1.80E-04	2380.9989	4.20E-04
2380.03454	9.00E-05	2380.03454	1.70E-04	2380.03454	4.20E-04
2379.07018	1.10E-04	2379.07018	1.90E-04	2379.07018	4.10E-04
2378.10583	1.20E-04	2378.10583	2.00E-04	2378.10583	4.10E-04
2377.14147	1.40E-04	2377.14147	1.90E-04	2377.14147	4.10E-04
2376.17711	1.70E-04	2376.17711	1.80E-04	2376.17711	4.10E-04
2375.21275	1.90E-04	2375.21275	1.80E-04	2375.21275	4.10E-04
2374.2484	1.90E-04	2374.2484	1.70E-04	2374.2484	4.30E-04
2373.28404	2.00E-04	2373.28404	1.50E-04	2373.28404	4.50E-04
2372.31968	2.20E-04	2372.31968	1.60E-04	2372.31968	4.50E-04
2371.35532	2.60E-04	2371.35532	1.70E-04	2371.35532	4.40E-04
2370.39097	3.10E-04	2370.39097	1.60E-04	2370.39097	4.30E-04
2369.42661	3.40E-04	2369.42661	1.30E-04	2369.42661	4.30E-04
2368.46225	3.60E-04	2368.46225	1.40E-04	2368.46225	4.20E-04
2367.49789	3.50E-04	2367.49789	1.30E-04	2367.49789	4.30E-04
2366.53354	3.10E-04	2366.53354	7.00E-05	2366.53354	4.60E-04
2365.56918	2.70E-04	2365.56918	3.00E-05	2365.56918	4.90E-04
2364.60482	2.70E-04	2364.60482	1.00E-04	2364.60482	4.80E-04
2363.64046	3.30E-04	2363.64046	2.50E-04	2363.64046	4.40E-04
2362.6761	4.00E-04	2362.6761	3.10E-04	2362.6761	3.80E-04
2361.71175	4.50E-04	2361.71175	2.20E-04	2361.71175	3.30E-04
2360.74739	4.70E-04	2360.74739	6.00E-05	2360.74739	3.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2359.78303	4.80E-04	2359.78303	0	2359.78303	3.50E-04
2358.81867	4.80E-04	2358.81867	4.00E-05	2358.81867	4.20E-04
2357.85432	4.70E-04	2357.85432	8.00E-05	2357.85432	5.00E-04
2356.88996	4.80E-04	2356.88996	1.50E-04	2356.88996	5.60E-04
2355.9256	4.90E-04	2355.9256	2.30E-04	2355.9256	5.80E-04
2354.96124	4.70E-04	2354.96124	2.40E-04	2354.96124	5.70E-04
2353.99689	4.10E-04	2353.99689	2.10E-04	2353.99689	5.50E-04
2353.03253	3.40E-04	2353.03253	1.90E-04	2353.03253	5.30E-04
2352.06817	2.80E-04	2352.06817	1.80E-04	2352.06817	5.20E-04
2351.10381	2.50E-04	2351.10381	1.80E-04	2351.10381	5.20E-04
2350.13946	2.30E-04	2350.13946	2.00E-04	2350.13946	5.10E-04
2349.1751	2.10E-04	2349.1751	2.20E-04	2349.1751	4.80E-04
2348.21074	1.90E-04	2348.21074	2.00E-04	2348.21074	4.50E-04
2347.24638	1.90E-04	2347.24638	1.50E-04	2347.24638	4.20E-04
2346.28203	2.00E-04	2346.28203	1.00E-04	2346.28203	4.00E-04
2345.31767	2.40E-04	2345.31767	1.20E-04	2345.31767	3.90E-04
2344.35331	3.00E-04	2344.35331	1.60E-04	2344.35331	4.00E-04
2343.38895	3.40E-04	2343.38895	1.20E-04	2343.38895	4.20E-04
2342.4246	3.50E-04	2342.4246	6.00E-05	2342.4246	4.40E-04
2341.46024	3.40E-04	2341.46024	7.00E-05	2341.46024	4.50E-04
2340.49588	3.20E-04	2340.49588	1.30E-04	2340.49588	4.70E-04
2339.53152	2.90E-04	2339.53152	1.90E-04	2339.53152	4.90E-04
2338.56716	2.70E-04	2338.56716	2.10E-04	2338.56716	5.00E-04
2337.60281	2.50E-04	2337.60281	2.10E-04	2337.60281	5.10E-04
2336.63845	2.40E-04	2336.63845	1.90E-04	2336.63845	5.10E-04
2335.67409	2.40E-04	2335.67409	1.90E-04	2335.67409	5.20E-04
2334.70973	2.40E-04	2334.70973	2.00E-04	2334.70973	5.20E-04
2333.74538	2.50E-04	2333.74538	2.10E-04	2333.74538	5.20E-04
2332.78102	2.60E-04	2332.78102	2.00E-04	2332.78102	5.00E-04
2331.81666	2.60E-04	2331.81666	1.80E-04	2331.81666	4.80E-04
2330.8523	2.50E-04	2330.8523	1.40E-04	2330.8523	4.60E-04
2329.88795	2.50E-04	2329.88795	1.10E-04	2329.88795	4.40E-04
2328.92359	2.50E-04	2328.92359	1.30E-04	2328.92359	4.30E-04
2327.95923	2.50E-04	2327.95923	1.90E-04	2327.95923	4.30E-04
2326.99487	2.50E-04	2326.99487	2.30E-04	2326.99487	4.20E-04
2326.03052	2.60E-04	2326.03052	2.30E-04	2326.03052	4.20E-04
2325.06616	2.50E-04	2325.06616	1.80E-04	2325.06616	4.10E-04
2324.1018	2.40E-04	2324.1018	1.50E-04	2324.1018	4.00E-04
2323.13744	2.20E-04	2323.13744	1.60E-04	2323.13744	4.00E-04
2322.17309	2.10E-04	2322.17309	1.70E-04	2322.17309	4.20E-04
2321.20873	2.00E-04	2321.20873	1.70E-04	2321.20873	4.30E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2320.24437	1.90E-04	2320.24437	1.70E-04	2320.24437	4.30E-04
2319.28001	1.90E-04	2319.28001	1.60E-04	2319.28001	4.30E-04
2318.31566	2.00E-04	2318.31566	1.60E-04	2318.31566	4.20E-04
2317.3513	2.00E-04	2317.3513	1.70E-04	2317.3513	4.10E-04
2316.38694	1.90E-04	2316.38694	1.80E-04	2316.38694	3.90E-04
2315.42258	1.70E-04	2315.42258	1.50E-04	2315.42258	3.80E-04
2314.45823	1.60E-04	2314.45823	1.30E-04	2314.45823	3.70E-04
2313.49387	1.50E-04	2313.49387	1.30E-04	2313.49387	3.50E-04
2312.52951	1.50E-04	2312.52951	1.40E-04	2312.52951	3.40E-04
2311.56515	1.40E-04	2311.56515	1.30E-04	2311.56515	3.40E-04
2310.60079	1.30E-04	2310.60079	1.30E-04	2310.60079	3.40E-04
2309.63644	1.30E-04	2309.63644	1.30E-04	2309.63644	3.50E-04
2308.67208	1.20E-04	2308.67208	1.30E-04	2308.67208	3.60E-04
2307.70772	1.00E-04	2307.70772	1.30E-04	2307.70772	3.80E-04
2306.74336	9.00E-05	2306.74336	1.30E-04	2306.74336	3.90E-04
2305.77901	8.00E-05	2305.77901	1.30E-04	2305.77901	4.00E-04
2304.81465	7.00E-05	2304.81465	1.20E-04	2304.81465	4.00E-04
2303.85029	7.00E-05	2303.85029	1.20E-04	2303.85029	3.90E-04
2302.88593	8.00E-05	2302.88593	1.30E-04	2302.88593	3.90E-04
2301.92158	9.00E-05	2301.92158	1.30E-04	2301.92158	3.80E-04
2300.95722	9.00E-05	2300.95722	1.30E-04	2300.95722	3.60E-04
2299.99286	9.00E-05	2299.99286	1.20E-04	2299.99286	3.50E-04
2299.0285	9.00E-05	2299.0285	1.20E-04	2299.0285	3.50E-04
2298.06415	8.00E-05	2298.06415	1.30E-04	2298.06415	3.50E-04
2297.09979	7.00E-05	2297.09979	1.40E-04	2297.09979	3.50E-04
2296.13543	6.00E-05	2296.13543	1.50E-04	2296.13543	3.50E-04
2295.17107	5.00E-05	2295.17107	1.60E-04	2295.17107	3.50E-04
2294.20672	5.00E-05	2294.20672	1.60E-04	2294.20672	3.50E-04
2293.24236	6.00E-05	2293.24236	1.50E-04	2293.24236	3.50E-04
2292.278	6.00E-05	2292.278	1.40E-04	2292.278	3.40E-04
2291.31364	6.00E-05	2291.31364	1.30E-04	2291.31364	3.40E-04
2290.34929	7.00E-05	2290.34929	1.40E-04	2290.34929	3.40E-04
2289.38493	6.00E-05	2289.38493	1.40E-04	2289.38493	3.40E-04
2288.42057	5.00E-05	2288.42057	1.60E-04	2288.42057	3.30E-04
2287.45621	5.00E-05	2287.45621	1.80E-04	2287.45621	3.30E-04
2286.49185	4.00E-05	2286.49185	1.90E-04	2286.49185	3.30E-04
2285.5275	3.00E-05	2285.5275	1.90E-04	2285.5275	3.40E-04
2284.56314	3.00E-05	2284.56314	1.80E-04	2284.56314	3.40E-04
2283.59878	4.00E-05	2283.59878	1.80E-04	2283.59878	3.40E-04
2282.63442	4.00E-05	2282.63442	1.80E-04	2282.63442	3.40E-04
2281.67007	4.00E-05	2281.67007	1.70E-04	2281.67007	3.40E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2280.70571	5.00E-05	2280.70571	1.70E-04	2280.70571	3.30E-04
2279.74135	5.00E-05	2279.74135	1.80E-04	2279.74135	3.20E-04
2278.77699	6.00E-05	2278.77699	1.90E-04	2278.77699	3.20E-04
2277.81264	6.00E-05	2277.81264	1.90E-04	2277.81264	3.20E-04
2276.84828	6.00E-05	2276.84828	1.90E-04	2276.84828	3.20E-04
2275.88392	6.00E-05	2275.88392	1.90E-04	2275.88392	3.20E-04
2274.91956	6.00E-05	2274.91956	1.80E-04	2274.91956	3.30E-04
2273.95521	7.00E-05	2273.95521	1.70E-04	2273.95521	3.30E-04
2272.99085	7.00E-05	2272.99085	1.70E-04	2272.99085	3.30E-04
2272.02649	6.00E-05	2272.02649	1.70E-04	2272.02649	3.30E-04
2271.06213	6.00E-05	2271.06213	1.70E-04	2271.06213	3.20E-04
2270.09778	6.00E-05	2270.09778	1.80E-04	2270.09778	3.20E-04
2269.13342	6.00E-05	2269.13342	1.80E-04	2269.13342	3.10E-04
2268.16906	6.00E-05	2268.16906	1.90E-04	2268.16906	3.10E-04
2267.2047	6.00E-05	2267.2047	1.80E-04	2267.2047	3.10E-04
2266.24035	7.00E-05	2266.24035	1.70E-04	2266.24035	3.10E-04
2265.27599	7.00E-05	2265.27599	1.60E-04	2265.27599	3.20E-04
2264.31163	7.00E-05	2264.31163	1.70E-04	2264.31163	3.20E-04
2263.34727	6.00E-05	2263.34727	1.70E-04	2263.34727	3.20E-04
2262.38292	6.00E-05	2262.38292	1.60E-04	2262.38292	3.20E-04
2261.41856	5.00E-05	2261.41856	1.60E-04	2261.41856	3.20E-04
2260.4542	5.00E-05	2260.4542	1.60E-04	2260.4542	3.20E-04
2259.48984	4.00E-05	2259.48984	1.70E-04	2259.48984	3.10E-04
2258.52548	4.00E-05	2258.52548	1.70E-04	2258.52548	3.00E-04
2257.56113	3.00E-05	2257.56113	1.80E-04	2257.56113	3.00E-04
2256.59677	3.00E-05	2256.59677	1.80E-04	2256.59677	3.10E-04
2255.63241	3.00E-05	2255.63241	1.70E-04	2255.63241	3.10E-04
2254.66805	3.00E-05	2254.66805	1.60E-04	2254.66805	3.10E-04
2253.7037	4.00E-05	2253.7037	1.60E-04	2253.7037	3.20E-04
2252.73934	4.00E-05	2252.73934	1.60E-04	2252.73934	3.10E-04
2251.77498	5.00E-05	2251.77498	1.70E-04	2251.77498	3.10E-04
2250.81062	5.00E-05	2250.81062	1.70E-04	2250.81062	3.10E-04
2249.84627	4.00E-05	2249.84627	1.60E-04	2249.84627	3.10E-04
2248.88191	4.00E-05	2248.88191	1.60E-04	2248.88191	3.10E-04
2247.91755	3.00E-05	2247.91755	1.70E-04	2247.91755	3.10E-04
2246.95319	3.00E-05	2246.95319	1.80E-04	2246.95319	3.20E-04
2245.98884	3.00E-05	2245.98884	1.80E-04	2245.98884	3.20E-04
2245.02448	4.00E-05	2245.02448	1.70E-04	2245.02448	3.10E-04
2244.06012	4.00E-05	2244.06012	1.60E-04	2244.06012	3.10E-04
2243.09576	4.00E-05	2243.09576	1.60E-04	2243.09576	3.10E-04
2242.13141	4.00E-05	2242.13141	1.70E-04	2242.13141	3.10E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2241.16705	4.00E-05	2241.16705	1.70E-04	2241.16705	3.10E-04
2240.20269	4.00E-05	2240.20269	1.80E-04	2240.20269	3.20E-04
2239.23833	4.00E-05	2239.23833	1.80E-04	2239.23833	3.30E-04
2238.27398	4.00E-05	2238.27398	1.70E-04	2238.27398	3.30E-04
2237.30962	4.00E-05	2237.30962	1.60E-04	2237.30962	3.40E-04
2236.34526	5.00E-05	2236.34526	1.70E-04	2236.34526	3.40E-04
2235.3809	5.00E-05	2235.3809	1.80E-04	2235.3809	3.30E-04
2234.41654	5.00E-05	2234.41654	1.80E-04	2234.41654	3.30E-04
2233.45219	5.00E-05	2233.45219	1.60E-04	2233.45219	3.30E-04
2232.48783	5.00E-05	2232.48783	1.50E-04	2232.48783	3.20E-04
2231.52347	5.00E-05	2231.52347	1.60E-04	2231.52347	3.10E-04
2230.55911	5.00E-05	2230.55911	1.70E-04	2230.55911	3.10E-04
2229.59476	5.00E-05	2229.59476	1.70E-04	2229.59476	3.10E-04
2228.6304	5.00E-05	2228.6304	1.70E-04	2228.6304	3.00E-04
2227.66604	5.00E-05	2227.66604	1.60E-04	2227.66604	3.10E-04
2226.70168	5.00E-05	2226.70168	1.60E-04	2226.70168	3.10E-04
2225.73733	4.00E-05	2225.73733	1.60E-04	2225.73733	3.10E-04
2224.77297	3.00E-05	2224.77297	1.60E-04	2224.77297	3.10E-04
2223.80861	3.00E-05	2223.80861	1.60E-04	2223.80861	3.10E-04
2222.84425	2.00E-05	2222.84425	1.60E-04	2222.84425	3.10E-04
2221.8799	2.00E-05	2221.8799	1.60E-04	2221.8799	3.10E-04
2220.91554	3.00E-05	2220.91554	1.60E-04	2220.91554	3.20E-04
2219.95118	3.00E-05	2219.95118	1.70E-04	2219.95118	3.20E-04
2218.98682	4.00E-05	2218.98682	1.70E-04	2218.98682	3.20E-04
2218.02247	3.00E-05	2218.02247	1.70E-04	2218.02247	3.10E-04
2217.05811	4.00E-05	2217.05811	1.50E-04	2217.05811	3.00E-04
2216.09375	4.00E-05	2216.09375	1.30E-04	2216.09375	3.00E-04
2215.12939	5.00E-05	2215.12939	1.20E-04	2215.12939	3.00E-04
2214.16504	5.00E-05	2214.16504	1.10E-04	2214.16504	3.00E-04
2213.20068	5.00E-05	2213.20068	1.20E-04	2213.20068	3.10E-04
2212.23632	5.00E-05	2212.23632	1.40E-04	2212.23632	3.10E-04
2211.27196	4.00E-05	2211.27196	1.50E-04	2211.27196	3.20E-04
2210.30761	3.00E-05	2210.30761	1.50E-04	2210.30761	3.20E-04
2209.34325	3.00E-05	2209.34325	1.60E-04	2209.34325	3.10E-04
2208.37889	4.00E-05	2208.37889	1.60E-04	2208.37889	3.10E-04
2207.41453	5.00E-05	2207.41453	1.70E-04	2207.41453	3.00E-04
2206.45017	5.00E-05	2206.45017	1.70E-04	2206.45017	3.00E-04
2205.48582	5.00E-05	2205.48582	1.60E-04	2205.48582	3.00E-04
2204.52146	5.00E-05	2204.52146	1.40E-04	2204.52146	3.00E-04
2203.5571	4.00E-05	2203.5571	1.40E-04	2203.5571	3.10E-04
2202.59274	4.00E-05	2202.59274	1.40E-04	2202.59274	3.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2201.62839	4.00E-05	2201.62839	1.30E-04	2201.62839	3.10E-04
2200.66403	4.00E-05	2200.66403	1.30E-04	2200.66403	3.10E-04
2199.69967	4.00E-05	2199.69967	1.40E-04	2199.69967	3.10E-04
2198.73531	4.00E-05	2198.73531	1.60E-04	2198.73531	3.10E-04
2197.77096	5.00E-05	2197.77096	1.60E-04	2197.77096	3.10E-04
2196.8066	5.00E-05	2196.8066	1.60E-04	2196.8066	3.20E-04
2195.84224	5.00E-05	2195.84224	1.60E-04	2195.84224	3.10E-04
2194.87788	5.00E-05	2194.87788	1.50E-04	2194.87788	3.10E-04
2193.91353	4.00E-05	2193.91353	1.40E-04	2193.91353	3.10E-04
2192.94917	3.00E-05	2192.94917	1.40E-04	2192.94917	3.00E-04
2191.98481	2.00E-05	2191.98481	1.60E-04	2191.98481	3.00E-04
2191.02045	2.00E-05	2191.02045	1.60E-04	2191.02045	2.90E-04
2190.0561	3.00E-05	2190.0561	1.50E-04	2190.0561	2.90E-04
2189.09174	3.00E-05	2189.09174	1.50E-04	2189.09174	2.90E-04
2188.12738	4.00E-05	2188.12738	1.50E-04	2188.12738	2.90E-04
2187.16302	4.00E-05	2187.16302	1.50E-04	2187.16302	2.90E-04
2186.19867	4.00E-05	2186.19867	1.50E-04	2186.19867	2.90E-04
2185.23431	4.00E-05	2185.23431	1.50E-04	2185.23431	2.80E-04
2184.26995	4.00E-05	2184.26995	1.40E-04	2184.26995	2.80E-04
2183.30559	4.00E-05	2183.30559	1.30E-04	2183.30559	2.80E-04
2182.34123	5.00E-05	2182.34123	1.30E-04	2182.34123	2.80E-04
2181.37688	5.00E-05	2181.37688	1.40E-04	2181.37688	2.80E-04
2180.41252	6.00E-05	2180.41252	1.50E-04	2180.41252	2.70E-04
2179.44816	6.00E-05	2179.44816	1.40E-04	2179.44816	2.70E-04
2178.4838	6.00E-05	2178.4838	1.40E-04	2178.4838	2.60E-04
2177.51945	5.00E-05	2177.51945	1.40E-04	2177.51945	2.50E-04
2176.55509	5.00E-05	2176.55509	1.50E-04	2176.55509	2.50E-04
2175.59073	4.00E-05	2175.59073	1.40E-04	2175.59073	2.50E-04
2174.62637	3.00E-05	2174.62637	1.20E-04	2174.62637	2.60E-04
2173.66202	4.00E-05	2173.66202	1.20E-04	2173.66202	2.70E-04
2172.69766	5.00E-05	2172.69766	1.20E-04	2172.69766	2.80E-04
2171.7333	5.00E-05	2171.7333	1.30E-04	2171.7333	2.80E-04
2170.76894	6.00E-05	2170.76894	1.30E-04	2170.76894	2.80E-04
2169.80459	5.00E-05	2169.80459	1.40E-04	2169.80459	2.80E-04
2168.84023	4.00E-05	2168.84023	1.50E-04	2168.84023	2.70E-04
2167.87587	3.00E-05	2167.87587	1.50E-04	2167.87587	2.70E-04
2166.91151	3.00E-05	2166.91151	1.40E-04	2166.91151	2.60E-04
2165.94716	3.00E-05	2165.94716	1.40E-04	2165.94716	2.60E-04
2164.9828	4.00E-05	2164.9828	1.40E-04	2164.9828	2.60E-04
2164.01844	5.00E-05	2164.01844	1.40E-04	2164.01844	2.60E-04
2163.05408	5.00E-05	2163.05408	1.40E-04	2163.05408	2.60E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2162.08973	5.00E-05	2162.08973	1.30E-04	2162.08973	2.60E-04
2161.12537	5.00E-05	2161.12537	1.20E-04	2161.12537	2.60E-04
2160.16101	5.00E-05	2160.16101	1.10E-04	2160.16101	2.60E-04
2159.19665	5.00E-05	2159.19665	1.10E-04	2159.19665	2.60E-04
2158.23229	6.00E-05	2158.23229	1.20E-04	2158.23229	2.60E-04
2157.26794	5.00E-05	2157.26794	1.40E-04	2157.26794	2.60E-04
2156.30358	5.00E-05	2156.30358	1.50E-04	2156.30358	2.60E-04
2155.33922	5.00E-05	2155.33922	1.50E-04	2155.33922	2.60E-04
2154.37486	4.00E-05	2154.37486	1.40E-04	2154.37486	2.60E-04
2153.41051	4.00E-05	2153.41051	1.40E-04	2153.41051	2.60E-04
2152.44615	4.00E-05	2152.44615	1.40E-04	2152.44615	2.60E-04
2151.48179	4.00E-05	2151.48179	1.20E-04	2151.48179	2.60E-04
2150.51743	5.00E-05	2150.51743	1.10E-04	2150.51743	2.60E-04
2149.55308	5.00E-05	2149.55308	1.10E-04	2149.55308	2.60E-04
2148.58872	6.00E-05	2148.58872	1.20E-04	2148.58872	2.60E-04
2147.62436	6.00E-05	2147.62436	1.20E-04	2147.62436	2.60E-04
2146.66	6.00E-05	2146.66	1.30E-04	2146.66	2.50E-04
2145.69565	6.00E-05	2145.69565	1.40E-04	2145.69565	2.50E-04
2144.73129	6.00E-05	2144.73129	1.40E-04	2144.73129	2.50E-04
2143.76693	5.00E-05	2143.76693	1.30E-04	2143.76693	2.50E-04
2142.80257	5.00E-05	2142.80257	1.30E-04	2142.80257	2.40E-04
2141.83822	5.00E-05	2141.83822	1.40E-04	2141.83822	2.40E-04
2140.87386	5.00E-05	2140.87386	1.50E-04	2140.87386	2.30E-04
2139.9095	5.00E-05	2139.9095	1.60E-04	2139.9095	2.30E-04
2138.94514	5.00E-05	2138.94514	1.50E-04	2138.94514	2.20E-04
2137.98079	5.00E-05	2137.98079	1.40E-04	2137.98079	2.20E-04
2137.01643	4.00E-05	2137.01643	1.30E-04	2137.01643	2.20E-04
2136.05207	4.00E-05	2136.05207	1.30E-04	2136.05207	2.20E-04
2135.08771	4.00E-05	2135.08771	1.30E-04	2135.08771	2.30E-04
2134.12336	4.00E-05	2134.12336	1.30E-04	2134.12336	2.30E-04
2133.159	5.00E-05	2133.159	1.30E-04	2133.159	2.30E-04
2132.19464	5.00E-05	2132.19464	1.40E-04	2132.19464	2.20E-04
2131.23028	6.00E-05	2131.23028	1.40E-04	2131.23028	2.20E-04
2130.26592	6.00E-05	2130.26592	1.40E-04	2130.26592	2.20E-04
2129.30157	5.00E-05	2129.30157	1.30E-04	2129.30157	2.10E-04
2128.33721	5.00E-05	2128.33721	1.30E-04	2128.33721	2.20E-04
2127.37285	4.00E-05	2127.37285	1.30E-04	2127.37285	2.20E-04
2126.40849	3.00E-05	2126.40849	1.30E-04	2126.40849	2.10E-04
2125.44414	3.00E-05	2125.44414	1.30E-04	2125.44414	2.10E-04
2124.47978	3.00E-05	2124.47978	1.30E-04	2124.47978	2.10E-04
2123.51542	4.00E-05	2123.51542	1.30E-04	2123.51542	2.20E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2122.55106	4.00E-05	2122.55106	1.40E-04	2122.55106	2.30E-04
2121.58671	5.00E-05	2121.58671	1.50E-04	2121.58671	2.30E-04
2120.62235	6.00E-05	2120.62235	1.30E-04	2120.62235	2.30E-04
2119.65799	6.00E-05	2119.65799	1.20E-04	2119.65799	2.30E-04
2118.69363	6.00E-05	2118.69363	1.20E-04	2118.69363	2.20E-04
2117.72928	6.00E-05	2117.72928	1.30E-04	2117.72928	2.10E-04
2116.76492	6.00E-05	2116.76492	1.30E-04	2116.76492	2.00E-04
2115.80056	5.00E-05	2115.80056	1.20E-04	2115.80056	2.00E-04
2114.8362	5.00E-05	2114.8362	1.20E-04	2114.8362	2.10E-04
2113.87185	4.00E-05	2113.87185	1.10E-04	2113.87185	2.20E-04
2112.90749	4.00E-05	2112.90749	1.00E-04	2112.90749	2.20E-04
2111.94313	4.00E-05	2111.94313	1.00E-04	2111.94313	2.20E-04
2110.97877	5.00E-05	2110.97877	1.20E-04	2110.97877	2.10E-04
2110.01442	5.00E-05	2110.01442	1.30E-04	2110.01442	2.10E-04
2109.05006	5.00E-05	2109.05006	1.30E-04	2109.05006	2.00E-04
2108.0857	6.00E-05	2108.0857	1.20E-04	2108.0857	2.00E-04
2107.12134	6.00E-05	2107.12134	1.20E-04	2107.12134	1.90E-04
2106.15698	5.00E-05	2106.15698	1.10E-04	2106.15698	1.90E-04
2105.19263	5.00E-05	2105.19263	1.20E-04	2105.19263	1.90E-04
2104.22827	5.00E-05	2104.22827	1.20E-04	2104.22827	1.90E-04
2103.26391	5.00E-05	2103.26391	1.30E-04	2103.26391	2.00E-04
2102.29955	5.00E-05	2102.29955	1.30E-04	2102.29955	2.10E-04
2101.3352	5.00E-05	2101.3352	1.20E-04	2101.3352	2.10E-04
2100.37084	5.00E-05	2100.37084	1.20E-04	2100.37084	2.10E-04
2099.40648	5.00E-05	2099.40648	1.20E-04	2099.40648	2.10E-04
2098.44212	4.00E-05	2098.44212	1.20E-04	2098.44212	2.00E-04
2097.47777	4.00E-05	2097.47777	1.20E-04	2097.47777	1.90E-04
2096.51341	4.00E-05	2096.51341	1.20E-04	2096.51341	1.80E-04
2095.54905	4.00E-05	2095.54905	1.20E-04	2095.54905	1.80E-04
2094.58469	5.00E-05	2094.58469	1.10E-04	2094.58469	1.80E-04
2093.62034	6.00E-05	2093.62034	1.10E-04	2093.62034	1.80E-04
2092.65598	7.00E-05	2092.65598	1.20E-04	2092.65598	1.80E-04
2091.69162	7.00E-05	2091.69162	1.30E-04	2091.69162	1.70E-04
2090.72726	8.00E-05	2090.72726	1.30E-04	2090.72726	1.70E-04
2089.76291	8.00E-05	2089.76291	1.30E-04	2089.76291	1.70E-04
2088.79855	7.00E-05	2088.79855	1.30E-04	2088.79855	1.70E-04
2087.83419	7.00E-05	2087.83419	1.30E-04	2087.83419	1.70E-04
2086.86983	6.00E-05	2086.86983	1.30E-04	2086.86983	1.70E-04
2085.90548	6.00E-05	2085.90548	1.40E-04	2085.90548	1.70E-04
2084.94112	6.00E-05	2084.94112	1.50E-04	2084.94112	1.70E-04
2083.97676	7.00E-05	2083.97676	1.60E-04	2083.97676	1.60E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2083.0124	7.00E-05	2083.0124	1.50E-04	2083.0124	1.50E-04
2082.04805	7.00E-05	2082.04805	1.40E-04	2082.04805	1.50E-04
2081.08369	6.00E-05	2081.08369	1.30E-04	2081.08369	1.50E-04
2080.11933	5.00E-05	2080.11933	1.20E-04	2080.11933	1.50E-04
2079.15497	4.00E-05	2079.15497	1.10E-04	2079.15497	1.60E-04
2078.19061	4.00E-05	2078.19061	1.10E-04	2078.19061	1.60E-04
2077.22626	4.00E-05	2077.22626	1.10E-04	2077.22626	1.60E-04
2076.2619	4.00E-05	2076.2619	1.10E-04	2076.2619	1.50E-04
2075.29754	4.00E-05	2075.29754	1.20E-04	2075.29754	1.50E-04
2074.33318	5.00E-05	2074.33318	1.30E-04	2074.33318	1.50E-04
2073.36883	5.00E-05	2073.36883	1.30E-04	2073.36883	1.50E-04
2072.40447	5.00E-05	2072.40447	1.40E-04	2072.40447	1.50E-04
2071.44011	5.00E-05	2071.44011	1.30E-04	2071.44011	1.60E-04
2070.47575	6.00E-05	2070.47575	1.20E-04	2070.47575	1.60E-04
2069.5114	6.00E-05	2069.5114	1.10E-04	2069.5114	1.60E-04
2068.54704	6.00E-05	2068.54704	1.00E-04	2068.54704	1.60E-04
2067.58268	6.00E-05	2067.58268	1.10E-04	2067.58268	1.50E-04
2066.61832	6.00E-05	2066.61832	1.20E-04	2066.61832	1.50E-04
2065.65397	5.00E-05	2065.65397	1.20E-04	2065.65397	1.40E-04
2064.68961	5.00E-05	2064.68961	1.30E-04	2064.68961	1.40E-04
2063.72525	5.00E-05	2063.72525	1.30E-04	2063.72525	1.40E-04
2062.76089	6.00E-05	2062.76089	1.20E-04	2062.76089	1.40E-04
2061.79654	6.00E-05	2061.79654	1.10E-04	2061.79654	1.30E-04
2060.83218	6.00E-05	2060.83218	1.10E-04	2060.83218	1.30E-04
2059.86782	6.00E-05	2059.86782	1.10E-04	2059.86782	1.40E-04
2058.90346	6.00E-05	2058.90346	1.10E-04	2058.90346	1.40E-04
2057.93911	5.00E-05	2057.93911	1.10E-04	2057.93911	1.50E-04
2056.97475	5.00E-05	2056.97475	1.20E-04	2056.97475	1.60E-04
2056.01039	5.00E-05	2056.01039	1.20E-04	2056.01039	1.60E-04
2055.04603	5.00E-05	2055.04603	1.00E-04	2055.04603	1.50E-04
2054.08167	5.00E-05	2054.08167	9.00E-05	2054.08167	1.50E-04
2053.11732	6.00E-05	2053.11732	9.00E-05	2053.11732	1.40E-04
2052.15296	6.00E-05	2052.15296	1.00E-04	2052.15296	1.40E-04
2051.1886	6.00E-05	2051.1886	1.00E-04	2051.1886	1.40E-04
2050.22424	7.00E-05	2050.22424	1.00E-04	2050.22424	1.50E-04
2049.25989	7.00E-05	2049.25989	9.00E-05	2049.25989	1.50E-04
2048.29553	7.00E-05	2048.29553	1.00E-04	2048.29553	1.60E-04
2047.33117	7.00E-05	2047.33117	1.10E-04	2047.33117	1.60E-04
2046.36681	8.00E-05	2046.36681	1.20E-04	2046.36681	1.60E-04
2045.40246	7.00E-05	2045.40246	1.20E-04	2045.40246	1.60E-04
2044.4381	7.00E-05	2044.4381	1.20E-04	2044.4381	1.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2043.47374	6.00E-05	2043.47374	1.10E-04	2043.47374	1.40E-04
2042.50938	6.00E-05	2042.50938	1.10E-04	2042.50938	1.40E-04
2041.54503	6.00E-05	2041.54503	1.10E-04	2041.54503	1.40E-04
2040.58067	6.00E-05	2040.58067	1.00E-04	2040.58067	1.40E-04
2039.61631	7.00E-05	2039.61631	1.00E-04	2039.61631	1.40E-04
2038.65195	7.00E-05	2038.65195	1.00E-04	2038.65195	1.50E-04
2037.6876	6.00E-05	2037.6876	1.00E-04	2037.6876	1.50E-04
2036.72324	5.00E-05	2036.72324	1.00E-04	2036.72324	1.50E-04
2035.75888	5.00E-05	2035.75888	9.00E-05	2035.75888	1.40E-04
2034.79452	4.00E-05	2034.79452	8.00E-05	2034.79452	1.40E-04
2033.83017	4.00E-05	2033.83017	9.00E-05	2033.83017	1.40E-04
2032.86581	4.00E-05	2032.86581	1.00E-04	2032.86581	1.30E-04
2031.90145	5.00E-05	2031.90145	1.10E-04	2031.90145	1.30E-04
2030.93709	5.00E-05	2030.93709	1.00E-04	2030.93709	1.40E-04
2029.97273	6.00E-05	2029.97273	9.00E-05	2029.97273	1.40E-04
2029.00838	6.00E-05	2029.00838	1.00E-04	2029.00838	1.50E-04
2028.04402	6.00E-05	2028.04402	1.00E-04	2028.04402	1.40E-04
2027.07966	6.00E-05	2027.07966	1.00E-04	2027.07966	1.40E-04
2026.1153	6.00E-05	2026.1153	9.00E-05	2026.1153	1.40E-04
2025.15095	5.00E-05	2025.15095	9.00E-05	2025.15095	1.30E-04
2024.18659	5.00E-05	2024.18659	9.00E-05	2024.18659	1.20E-04
2023.22223	5.00E-05	2023.22223	1.00E-04	2023.22223	1.20E-04
2022.25787	4.00E-05	2022.25787	1.00E-04	2022.25787	1.20E-04
2021.29352	4.00E-05	2021.29352	9.00E-05	2021.29352	1.20E-04
2020.32916	4.00E-05	2020.32916	9.00E-05	2020.32916	1.30E-04
2019.3648	5.00E-05	2019.3648	9.00E-05	2019.3648	1.30E-04
2018.40044	4.00E-05	2018.40044	1.00E-04	2018.40044	1.20E-04
2017.43609	4.00E-05	2017.43609	9.00E-05	2017.43609	1.20E-04
2016.47173	4.00E-05	2016.47173	1.00E-04	2016.47173	1.10E-04
2015.50737	4.00E-05	2015.50737	1.00E-04	2015.50737	1.00E-04
2014.54301	4.00E-05	2014.54301	9.00E-05	2014.54301	1.00E-04
2013.57866	4.00E-05	2013.57866	9.00E-05	2013.57866	9.00E-05
2012.6143	5.00E-05	2012.6143	1.00E-04	2012.6143	9.00E-05
2011.64994	5.00E-05	2011.64994	1.20E-04	2011.64994	1.00E-04
2010.68558	5.00E-05	2010.68558	1.20E-04	2010.68558	1.00E-04
2009.72123	4.00E-05	2009.72123	1.20E-04	2009.72123	1.10E-04
2008.75687	4.00E-05	2008.75687	1.10E-04	2008.75687	1.10E-04
2007.79251	4.00E-05	2007.79251	1.00E-04	2007.79251	1.10E-04
2006.82815	4.00E-05	2006.82815	9.00E-05	2006.82815	1.10E-04
2005.8638	4.00E-05	2005.8638	9.00E-05	2005.8638	1.10E-04
2004.89944	5.00E-05	2004.89944	1.00E-04	2004.89944	1.00E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2003.93508	4.00E-05	2003.93508	1.10E-04	2003.93508	1.00E-04
2002.97072	4.00E-05	2002.97072	1.10E-04	2002.97072	9.00E-05
2002.00636	4.00E-05	2002.00636	1.00E-04	2002.00636	9.00E-05
2001.04201	5.00E-05	2001.04201	1.00E-04	2001.04201	9.00E-05
2000.07765	5.00E-05	2000.07765	1.10E-04	2000.07765	1.00E-04
1999.11329	6.00E-05	1999.11329	1.20E-04	1999.11329	1.00E-04
1998.14893	6.00E-05	1998.14893	1.20E-04	1998.14893	1.10E-04
1997.18458	5.00E-05	1997.18458	1.10E-04	1997.18458	1.10E-04
1996.22022	4.00E-05	1996.22022	9.00E-05	1996.22022	1.10E-04
1995.25586	3.00E-05	1995.25586	8.00E-05	1995.25586	1.00E-04
1994.2915	3.00E-05	1994.2915	7.00E-05	1994.2915	1.00E-04
1993.32715	4.00E-05	1993.32715	6.00E-05	1993.32715	9.00E-05
1992.36279	4.00E-05	1992.36279	7.00E-05	1992.36279	9.00E-05
1991.39843	5.00E-05	1991.39843	8.00E-05	1991.39843	1.00E-04
1990.43407	6.00E-05	1990.43407	9.00E-05	1990.43407	1.00E-04
1989.46972	6.00E-05	1989.46972	8.00E-05	1989.46972	1.10E-04
1988.50536	6.00E-05	1988.50536	6.00E-05	1988.50536	1.10E-04
1987.541	5.00E-05	1987.541	6.00E-05	1987.541	1.00E-04
1986.57664	4.00E-05	1986.57664	8.00E-05	1986.57664	1.00E-04
1985.61229	4.00E-05	1985.61229	8.00E-05	1985.61229	9.00E-05
1984.64793	5.00E-05	1984.64793	8.00E-05	1984.64793	8.00E-05
1983.68357	5.00E-05	1983.68357	8.00E-05	1983.68357	8.00E-05
1982.71921	6.00E-05	1982.71921	8.00E-05	1982.71921	8.00E-05
1981.75486	6.00E-05	1981.75486	8.00E-05	1981.75486	9.00E-05
1980.7905	5.00E-05	1980.7905	1.00E-04	1980.7905	1.00E-04
1979.82614	4.00E-05	1979.82614	1.00E-04	1979.82614	1.00E-04
1978.86178	4.00E-05	1978.86178	1.00E-04	1978.86178	1.10E-04
1977.89742	4.00E-05	1977.89742	1.00E-04	1977.89742	1.20E-04
1976.93307	4.00E-05	1976.93307	9.00E-05	1976.93307	1.30E-04
1975.96871	4.00E-05	1975.96871	7.00E-05	1975.96871	1.30E-04
1975.00435	5.00E-05	1975.00435	6.00E-05	1975.00435	1.30E-04
1974.03999	5.00E-05	1974.03999	7.00E-05	1974.03999	1.20E-04
1973.07564	5.00E-05	1973.07564	7.00E-05	1973.07564	1.10E-04
1972.11128	4.00E-05	1972.11128	7.00E-05	1972.11128	1.00E-04
1971.14692	4.00E-05	1971.14692	6.00E-05	1971.14692	9.00E-05
1970.18256	4.00E-05	1970.18256	7.00E-05	1970.18256	9.00E-05
1969.21821	4.00E-05	1969.21821	7.00E-05	1969.21821	9.00E-05
1968.25385	5.00E-05	1968.25385	7.00E-05	1968.25385	1.00E-04
1967.28949	5.00E-05	1967.28949	7.00E-05	1967.28949	1.10E-04
1966.32513	6.00E-05	1966.32513	8.00E-05	1966.32513	1.10E-04
1965.36078	5.00E-05	1965.36078	9.00E-05	1965.36078	1.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1964.39642	5.00E-05	1964.39642	9.00E-05	1964.39642	1.10E-04
1963.43206	4.00E-05	1963.43206	8.00E-05	1963.43206	1.10E-04
1962.4677	4.00E-05	1962.4677	9.00E-05	1962.4677	1.00E-04
1961.50335	3.00E-05	1961.50335	9.00E-05	1961.50335	1.00E-04
1960.53899	3.00E-05	1960.53899	9.00E-05	1960.53899	1.00E-04
1959.57463	3.00E-05	1959.57463	9.00E-05	1959.57463	1.10E-04
1958.61027	3.00E-05	1958.61027	9.00E-05	1958.61027	1.10E-04
1957.64592	3.00E-05	1957.64592	9.00E-05	1957.64592	1.10E-04
1956.68156	2.00E-05	1956.68156	9.00E-05	1956.68156	1.10E-04
1955.7172	2.00E-05	1955.7172	1.00E-04	1955.7172	1.00E-04
1954.75284	3.00E-05	1954.75284	8.00E-05	1954.75284	1.00E-04
1953.78849	3.00E-05	1953.78849	6.00E-05	1953.78849	1.00E-04
1952.82413	4.00E-05	1952.82413	6.00E-05	1952.82413	1.00E-04
1951.85977	5.00E-05	1951.85977	7.00E-05	1951.85977	1.10E-04
1950.89541	6.00E-05	1950.89541	8.00E-05	1950.89541	1.10E-04
1949.93105	6.00E-05	1949.93105	7.00E-05	1949.93105	1.10E-04
1948.9667	6.00E-05	1948.9667	7.00E-05	1948.9667	1.10E-04
1948.00234	6.00E-05	1948.00234	7.00E-05	1948.00234	1.10E-04
1947.03798	6.00E-05	1947.03798	8.00E-05	1947.03798	1.10E-04
1946.07362	6.00E-05	1946.07362	9.00E-05	1946.07362	1.10E-04
1945.10927	6.00E-05	1945.10927	9.00E-05	1945.10927	1.00E-04
1944.14491	6.00E-05	1944.14491	8.00E-05	1944.14491	9.00E-05
1943.18055	6.00E-05	1943.18055	7.00E-05	1943.18055	9.00E-05
1942.21619	6.00E-05	1942.21619	8.00E-05	1942.21619	8.00E-05
1941.25184	6.00E-05	1941.25184	1.00E-04	1941.25184	8.00E-05
1940.28748	6.00E-05	1940.28748	1.00E-04	1940.28748	8.00E-05
1939.32312	6.00E-05	1939.32312	9.00E-05	1939.32312	9.00E-05
1938.35876	6.00E-05	1938.35876	7.00E-05	1938.35876	9.00E-05
1937.39441	6.00E-05	1937.39441	7.00E-05	1937.39441	9.00E-05
1936.43005	6.00E-05	1936.43005	7.00E-05	1936.43005	9.00E-05
1935.46569	7.00E-05	1935.46569	8.00E-05	1935.46569	9.00E-05
1934.50133	8.00E-05	1934.50133	8.00E-05	1934.50133	9.00E-05
1933.53698	8.00E-05	1933.53698	8.00E-05	1933.53698	9.00E-05
1932.57262	8.00E-05	1932.57262	9.00E-05	1932.57262	9.00E-05
1931.60826	8.00E-05	1931.60826	9.00E-05	1931.60826	9.00E-05
1930.6439	8.00E-05	1930.6439	9.00E-05	1930.6439	8.00E-05
1929.67955	8.00E-05	1929.67955	1.00E-04	1929.67955	7.00E-05
1928.71519	7.00E-05	1928.71519	1.00E-04	1928.71519	7.00E-05
1927.75083	7.00E-05	1927.75083	1.00E-04	1927.75083	7.00E-05
1926.78647	7.00E-05	1926.78647	9.00E-05	1926.78647	7.00E-05
1925.82211	7.00E-05	1925.82211	9.00E-05	1925.82211	7.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1924.85776	8.00E-05	1924.85776	9.00E-05	1924.85776	8.00E-05
1923.8934	9.00E-05	1923.8934	8.00E-05	1923.8934	9.00E-05
1922.92904	9.00E-05	1922.92904	8.00E-05	1922.92904	1.00E-04
1921.96468	9.00E-05	1921.96468	9.00E-05	1921.96468	1.00E-04
1921.00033	8.00E-05	1921.00033	1.00E-04	1921.00033	9.00E-05
1920.03597	7.00E-05	1920.03597	1.00E-04	1920.03597	8.00E-05
1919.07161	7.00E-05	1919.07161	8.00E-05	1919.07161	7.00E-05
1918.10725	8.00E-05	1918.10725	8.00E-05	1918.10725	6.00E-05
1917.1429	9.00E-05	1917.1429	1.00E-04	1917.1429	6.00E-05
1916.17854	1.00E-04	1916.17854	1.10E-04	1916.17854	6.00E-05
1915.21418	1.00E-04	1915.21418	1.10E-04	1915.21418	7.00E-05
1914.24982	9.00E-05	1914.24982	1.20E-04	1914.24982	8.00E-05
1913.28547	8.00E-05	1913.28547	1.20E-04	1913.28547	8.00E-05
1912.32111	8.00E-05	1912.32111	1.20E-04	1912.32111	7.00E-05
1911.35675	8.00E-05	1911.35675	1.10E-04	1911.35675	7.00E-05
1910.39239	9.00E-05	1910.39239	1.00E-04	1910.39239	7.00E-05
1909.42804	1.00E-04	1909.42804	1.00E-04	1909.42804	6.00E-05
1908.46368	1.00E-04	1908.46368	1.10E-04	1908.46368	7.00E-05
1907.49932	1.00E-04	1907.49932	1.20E-04	1907.49932	7.00E-05
1906.53496	1.00E-04	1906.53496	1.30E-04	1906.53496	7.00E-05
1905.57061	9.00E-05	1905.57061	1.30E-04	1905.57061	7.00E-05
1904.60625	9.00E-05	1904.60625	1.30E-04	1904.60625	6.00E-05
1903.64189	9.00E-05	1903.64189	1.20E-04	1903.64189	6.00E-05
1902.67753	9.00E-05	1902.67753	1.20E-04	1902.67753	5.00E-05
1901.71317	9.00E-05	1901.71317	1.20E-04	1901.71317	4.00E-05
1900.74882	8.00E-05	1900.74882	1.30E-04	1900.74882	4.00E-05
1899.78446	8.00E-05	1899.78446	1.20E-04	1899.78446	5.00E-05
1898.8201	8.00E-05	1898.8201	1.10E-04	1898.8201	5.00E-05
1897.85574	8.00E-05	1897.85574	1.00E-04	1897.85574	6.00E-05
1896.89139	9.00E-05	1896.89139	1.00E-04	1896.89139	5.00E-05
1895.92703	1.00E-04	1895.92703	1.10E-04	1895.92703	5.00E-05
1894.96267	1.00E-04	1894.96267	1.10E-04	1894.96267	4.00E-05
1893.99831	1.00E-04	1893.99831	1.00E-04	1893.99831	4.00E-05
1893.03396	1.00E-04	1893.03396	1.00E-04	1893.03396	4.00E-05
1892.0696	1.00E-04	1892.0696	1.00E-04	1892.0696	4.00E-05
1891.10524	1.00E-04	1891.10524	1.00E-04	1891.10524	4.00E-05
1890.14088	1.00E-04	1890.14088	8.00E-05	1890.14088	4.00E-05
1889.17653	1.00E-04	1889.17653	7.00E-05	1889.17653	3.00E-05
1888.21217	1.00E-04	1888.21217	8.00E-05	1888.21217	2.00E-05
1887.24781	9.00E-05	1887.24781	1.00E-04	1887.24781	2.00E-05
1886.28345	8.00E-05	1886.28345	1.10E-04	1886.28345	1.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1885.3191	8.00E-05	1885.3191	1.00E-04	1885.3191	1.00E-05
1884.35474	8.00E-05	1884.35474	1.00E-04	1884.35474	1.00E-05
1883.39038	8.00E-05	1883.39038	1.00E-04	1883.39038	2.00E-05
1882.42602	9.00E-05	1882.42602	1.00E-04	1882.42602	3.00E-05
1881.46167	9.00E-05	1881.46167	9.00E-05	1881.46167	4.00E-05
1880.49731	9.00E-05	1880.49731	9.00E-05	1880.49731	4.00E-05
1879.53295	9.00E-05	1879.53295	1.00E-04	1879.53295	4.00E-05
1878.56859	9.00E-05	1878.56859	9.00E-05	1878.56859	3.00E-05
1877.60424	9.00E-05	1877.60424	9.00E-05	1877.60424	3.00E-05
1876.63988	1.00E-04	1876.63988	9.00E-05	1876.63988	2.00E-05
1875.67552	1.00E-04	1875.67552	1.00E-04	1875.67552	2.00E-05
1874.71116	1.00E-04	1874.71116	1.00E-04	1874.71116	2.00E-05
1873.7468	1.00E-04	1873.7468	1.00E-04	1873.7468	2.00E-05
1872.78245	8.00E-05	1872.78245	9.00E-05	1872.78245	2.00E-05
1871.81809	7.00E-05	1871.81809	9.00E-05	1871.81809	2.00E-05
1870.85373	7.00E-05	1870.85373	8.00E-05	1870.85373	2.00E-05
1869.88937	7.00E-05	1869.88937	6.00E-05	1869.88937	3.00E-05
1868.92502	7.00E-05	1868.92502	6.00E-05	1868.92502	4.00E-05
1867.96066	7.00E-05	1867.96066	7.00E-05	1867.96066	4.00E-05
1866.9963	7.00E-05	1866.9963	8.00E-05	1866.9963	5.00E-05
1866.03194	7.00E-05	1866.03194	9.00E-05	1866.03194	6.00E-05
1865.06759	7.00E-05	1865.06759	9.00E-05	1865.06759	6.00E-05
1864.10323	7.00E-05	1864.10323	9.00E-05	1864.10323	5.00E-05
1863.13887	7.00E-05	1863.13887	9.00E-05	1863.13887	5.00E-05
1862.17451	8.00E-05	1862.17451	1.00E-04	1862.17451	5.00E-05
1861.21016	8.00E-05	1861.21016	9.00E-05	1861.21016	5.00E-05
1860.2458	8.00E-05	1860.2458	9.00E-05	1860.2458	5.00E-05
1859.28144	8.00E-05	1859.28144	8.00E-05	1859.28144	5.00E-05
1858.31708	8.00E-05	1858.31708	8.00E-05	1858.31708	4.00E-05
1857.35273	8.00E-05	1857.35273	8.00E-05	1857.35273	4.00E-05
1856.38837	7.00E-05	1856.38837	8.00E-05	1856.38837	4.00E-05
1855.42401	7.00E-05	1855.42401	8.00E-05	1855.42401	3.00E-05
1854.45965	8.00E-05	1854.45965	8.00E-05	1854.45965	3.00E-05
1853.4953	8.00E-05	1853.4953	8.00E-05	1853.4953	3.00E-05
1852.53094	8.00E-05	1852.53094	9.00E-05	1852.53094	4.00E-05
1851.56658	7.00E-05	1851.56658	9.00E-05	1851.56658	4.00E-05
1850.60222	7.00E-05	1850.60222	8.00E-05	1850.60222	3.00E-05
1849.63786	6.00E-05	1849.63786	7.00E-05	1849.63786	3.00E-05
1848.67351	5.00E-05	1848.67351	6.00E-05	1848.67351	3.00E-05
1847.70915	4.00E-05	1847.70915	6.00E-05	1847.70915	3.00E-05
1846.74479	2.00E-05	1846.74479	6.00E-05	1846.74479	3.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1845.78043	2.00E-05	1845.78043	4.00E-05	1845.78043	2.00E-05
1844.81608	2.00E-05	1844.81608	1.00E-05	1844.81608	2.00E-05
1843.85172	3.00E-05	1843.85172	0	1843.85172	2.00E-05
1842.88736	4.00E-05	1842.88736	4.00E-05	1842.88736	2.00E-05
1841.923	5.00E-05	1841.923	6.00E-05	1841.923	3.00E-05
1840.95865	6.00E-05	1840.95865	7.00E-05	1840.95865	4.00E-05
1839.99429	5.00E-05	1839.99429	7.00E-05	1839.99429	4.00E-05
1839.02993	4.00E-05	1839.02993	6.00E-05	1839.02993	3.00E-05
1838.06557	4.00E-05	1838.06557	5.00E-05	1838.06557	3.00E-05
1837.10122	4.00E-05	1837.10122	5.00E-05	1837.10122	4.00E-05
1836.13686	4.00E-05	1836.13686	6.00E-05	1836.13686	4.00E-05
1835.1725	4.00E-05	1835.1725	8.00E-05	1835.1725	4.00E-05
1834.20814	3.00E-05	1834.20814	7.00E-05	1834.20814	3.00E-05
1833.24379	3.00E-05	1833.24379	7.00E-05	1833.24379	3.00E-05
1832.27943	2.00E-05	1832.27943	6.00E-05	1832.27943	2.00E-05
1831.31507	1.00E-05	1831.31507	5.00E-05	1831.31507	1.00E-05
1830.35071	1.00E-05	1830.35071	3.00E-05	1830.35071	1.00E-05
1829.38636	0	1829.38636	3.00E-05	1829.38636	1.00E-05
1828.422	0	1828.422	6.00E-05	1828.422	1.00E-05
1827.45764	0	1827.45764	6.00E-05	1827.45764	1.00E-05
1826.49328	0	1826.49328	3.00E-05	1826.49328	2.00E-05
1825.52893	0	1825.52893	0	1825.52893	2.00E-05
1824.56457	0	1824.56457	1.00E-05	1824.56457	1.00E-05
1823.60021	0	1823.60021	4.00E-05	1823.60021	0
1822.63585	0	1822.63585	5.00E-05	1822.63585	0
1821.67149	0	1821.67149	5.00E-05	1821.67149	0
1820.70714	-1.00E-05	1820.70714	5.00E-05	1820.70714	-1.00E-05
1819.74278	-2.00E-05	1819.74278	4.00E-05	1819.74278	-1.00E-05
1818.77842	-2.00E-05	1818.77842	5.00E-05	1818.77842	-1.00E-05
1817.81406	-2.00E-05	1817.81406	4.00E-05	1817.81406	-1.00E-05
1816.84971	-2.00E-05	1816.84971	4.00E-05	1816.84971	0
1815.88535	-1.00E-05	1815.88535	3.00E-05	1815.88535	1.00E-05
1814.92099	-1.00E-05	1814.92099	4.00E-05	1814.92099	2.00E-05
1813.95663	-2.00E-05	1813.95663	4.00E-05	1813.95663	2.00E-05
1812.99228	-2.00E-05	1812.99228	5.00E-05	1812.99228	2.00E-05
1812.02792	-2.00E-05	1812.02792	4.00E-05	1812.02792	2.00E-05
1811.06356	-2.00E-05	1811.06356	3.00E-05	1811.06356	1.00E-05
1810.0992	-1.00E-05	1810.0992	4.00E-05	1810.0992	1.00E-05
1809.13485	-1.00E-05	1809.13485	4.00E-05	1809.13485	1.00E-05
1808.17049	-1.00E-05	1808.17049	3.00E-05	1808.17049	1.00E-05
1807.20613	-2.00E-05	1807.20613	3.00E-05	1807.20613	1.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1806.24177	-4.00E-05	1806.24177	3.00E-05	1806.24177	1.00E-05
1805.27742	-5.00E-05	1805.27742	3.00E-05	1805.27742	0
1804.31306	-6.00E-05	1804.31306	4.00E-05	1804.31306	0
1803.3487	-6.00E-05	1803.3487	3.00E-05	1803.3487	-1.00E-05
1802.38434	-6.00E-05	1802.38434	2.00E-05	1802.38434	-1.00E-05
1801.41999	-6.00E-05	1801.41999	2.00E-05	1801.41999	-2.00E-05
1800.45563	-5.00E-05	1800.45563	2.00E-05	1800.45563	-1.00E-05
1799.49127	-4.00E-05	1799.49127	1.00E-05	1799.49127	-1.00E-05
1798.52691	-3.00E-05	1798.52691	2.00E-05	1798.52691	-1.00E-05
1797.56255	-2.00E-05	1797.56255	3.00E-05	1797.56255	-1.00E-05
1796.5982	-1.00E-05	1796.5982	3.00E-05	1796.5982	-1.00E-05
1795.63384	-1.00E-05	1795.63384	3.00E-05	1795.63384	-2.00E-05
1794.66948	-1.00E-05	1794.66948	3.00E-05	1794.66948	-2.00E-05
1793.70512	-1.00E-05	1793.70512	0	1793.70512	-2.00E-05
1792.74077	-1.00E-05	1792.74077	-4.00E-05	1792.74077	-1.00E-05
1791.77641	-1.00E-05	1791.77641	-2.00E-05	1791.77641	-1.00E-05
1790.81205	0	1790.81205	2.00E-05	1790.81205	0
1789.84769	1.00E-05	1789.84769	5.00E-05	1789.84769	1.00E-05
1788.88334	1.00E-05	1788.88334	6.00E-05	1788.88334	1.00E-05
1787.91898	0	1787.91898	6.00E-05	1787.91898	-1.00E-05
1786.95462	0	1786.95462	6.00E-05	1786.95462	-2.00E-05
1785.99026	1.00E-05	1785.99026	5.00E-05	1785.99026	-2.00E-05
1785.02591	1.00E-05	1785.02591	5.00E-05	1785.02591	-1.00E-05
1784.06155	1.00E-05	1784.06155	7.00E-05	1784.06155	0
1783.09719	0	1783.09719	7.00E-05	1783.09719	1.00E-05
1782.13283	0	1782.13283	6.00E-05	1782.13283	1.00E-05
1781.16848	1.00E-05	1781.16848	3.00E-05	1781.16848	2.00E-05
1780.20412	1.00E-05	1780.20412	3.00E-05	1780.20412	2.00E-05
1779.23976	2.00E-05	1779.23976	5.00E-05	1779.23976	1.00E-05
1778.2754	3.00E-05	1778.2754	6.00E-05	1778.2754	1.00E-05
1777.31105	3.00E-05	1777.31105	6.00E-05	1777.31105	1.00E-05
1776.34669	2.00E-05	1776.34669	5.00E-05	1776.34669	1.00E-05
1775.38233	1.00E-05	1775.38233	5.00E-05	1775.38233	1.00E-05
1774.41797	1.00E-05	1774.41797	6.00E-05	1774.41797	0
1773.45362	1.00E-05	1773.45362	4.00E-05	1773.45362	0
1772.48926	2.00E-05	1772.48926	0	1772.48926	0
1771.5249	3.00E-05	1771.5249	2.00E-05	1771.5249	1.00E-05
1770.56054	3.00E-05	1770.56054	6.00E-05	1770.56054	1.00E-05
1769.59618	4.00E-05	1769.59618	6.00E-05	1769.59618	1.00E-05
1768.63183	4.00E-05	1768.63183	3.00E-05	1768.63183	2.00E-05
1767.66747	3.00E-05	1767.66747	2.00E-05	1767.66747	1.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1766.70311	4.00E-05	1766.70311	5.00E-05	1766.70311	1.00E-05
1765.73875	5.00E-05	1765.73875	8.00E-05	1765.73875	2.00E-05
1764.7744	5.00E-05	1764.7744	8.00E-05	1764.7744	3.00E-05
1763.81004	4.00E-05	1763.81004	7.00E-05	1763.81004	3.00E-05
1762.84568	4.00E-05	1762.84568	5.00E-05	1762.84568	3.00E-05
1761.88132	5.00E-05	1761.88132	4.00E-05	1761.88132	3.00E-05
1760.91697	6.00E-05	1760.91697	7.00E-05	1760.91697	4.00E-05
1759.95261	7.00E-05	1759.95261	1.00E-04	1759.95261	5.00E-05
1758.98825	8.00E-05	1758.98825	1.00E-04	1758.98825	7.00E-05
1758.02389	8.00E-05	1758.02389	9.00E-05	1758.02389	8.00E-05
1757.05954	8.00E-05	1757.05954	7.00E-05	1757.05954	9.00E-05
1756.09518	9.00E-05	1756.09518	9.00E-05	1756.09518	1.00E-04
1755.13082	9.00E-05	1755.13082	1.30E-04	1755.13082	1.10E-04
1754.16646	1.00E-04	1754.16646	1.60E-04	1754.16646	1.30E-04
1753.20211	1.10E-04	1753.20211	1.60E-04	1753.20211	1.40E-04
1752.23775	1.30E-04	1752.23775	1.40E-04	1752.23775	1.60E-04
1751.27339	1.40E-04	1751.27339	1.40E-04	1751.27339	1.80E-04
1750.30903	1.60E-04	1750.30903	1.80E-04	1750.30903	2.00E-04
1749.34468	1.80E-04	1749.34468	2.10E-04	1749.34468	2.20E-04
1748.38032	2.00E-04	1748.38032	2.30E-04	1748.38032	2.50E-04
1747.41596	2.20E-04	1747.41596	2.80E-04	1747.41596	2.70E-04
1746.4516	2.30E-04	1746.4516	3.20E-04	1746.4516	2.80E-04
1745.48724	2.50E-04	1745.48724	3.30E-04	1745.48724	3.00E-04
1744.52289	2.80E-04	1744.52289	3.20E-04	1744.52289	3.30E-04
1743.55853	3.00E-04	1743.55853	3.20E-04	1743.55853	3.50E-04
1742.59417	3.10E-04	1742.59417	3.50E-04	1742.59417	3.70E-04
1741.62981	3.20E-04	1741.62981	3.70E-04	1741.62981	3.80E-04
1740.66546	3.40E-04	1740.66546	3.60E-04	1740.66546	4.10E-04
1739.7011	3.70E-04	1739.7011	3.40E-04	1739.7011	4.50E-04
1738.73674	3.90E-04	1738.73674	3.90E-04	1738.73674	4.80E-04
1737.77238	4.10E-04	1737.77238	4.40E-04	1737.77238	5.10E-04
1736.80803	4.20E-04	1736.80803	4.70E-04	1736.80803	5.20E-04
1735.84367	4.30E-04	1735.84367	4.60E-04	1735.84367	5.20E-04
1734.87931	4.50E-04	1734.87931	4.10E-04	1734.87931	5.30E-04
1733.91495	4.70E-04	1733.91495	4.10E-04	1733.91495	5.50E-04
1732.9506	5.00E-04	1732.9506	5.00E-04	1732.9506	5.70E-04
1731.98624	5.40E-04	1731.98624	5.50E-04	1731.98624	6.00E-04
1731.02188	5.70E-04	1731.02188	5.50E-04	1731.02188	6.40E-04
1730.05752	5.90E-04	1730.05752	5.50E-04	1730.05752	6.50E-04
1729.09317	5.90E-04	1729.09317	5.80E-04	1729.09317	6.50E-04
1728.12881	6.10E-04	1728.12881	6.20E-04	1728.12881	6.50E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1727.16445	6.20E-04	1727.16445	6.40E-04	1727.16445	6.60E-04
1726.20009	6.30E-04	1726.20009	6.50E-04	1726.20009	6.60E-04
1725.23574	6.40E-04	1725.23574	6.60E-04	1725.23574	6.50E-04
1724.27138	6.60E-04	1724.27138	6.60E-04	1724.27138	6.50E-04
1723.30702	6.80E-04	1723.30702	6.50E-04	1723.30702	6.50E-04
1722.34266	6.90E-04	1722.34266	6.30E-04	1722.34266	6.50E-04
1721.3783	7.00E-04	1721.3783	6.10E-04	1721.3783	6.40E-04
1720.41395	7.00E-04	1720.41395	5.70E-04	1720.41395	6.20E-04
1719.44959	7.00E-04	1719.44959	5.00E-04	1719.44959	6.10E-04
1718.48523	7.20E-04	1718.48523	4.20E-04	1718.48523	6.00E-04
1717.52087	7.30E-04	1717.52087	4.10E-04	1717.52087	6.00E-04
1716.55652	7.50E-04	1716.55652	4.50E-04	1716.55652	5.90E-04
1715.59216	7.70E-04	1715.59216	4.60E-04	1715.59216	6.00E-04
1714.6278	7.80E-04	1714.6278	4.50E-04	1714.6278	6.00E-04
1713.66344	7.80E-04	1713.66344	4.80E-04	1713.66344	6.00E-04
1712.69909	7.90E-04	1712.69909	5.10E-04	1712.69909	6.00E-04
1711.73473	8.00E-04	1711.73473	5.20E-04	1711.73473	6.00E-04
1710.77037	8.10E-04	1710.77037	5.30E-04	1710.77037	6.00E-04
1709.80601	8.10E-04	1709.80601	5.50E-04	1709.80601	6.10E-04
1708.84166	8.10E-04	1708.84166	5.60E-04	1708.84166	6.10E-04
1707.8773	8.20E-04	1707.8773	5.60E-04	1707.8773	6.10E-04
1706.91294	8.30E-04	1706.91294	5.30E-04	1706.91294	6.20E-04
1705.94858	8.50E-04	1705.94858	5.20E-04	1705.94858	6.30E-04
1704.98423	8.80E-04	1704.98423	5.40E-04	1704.98423	6.60E-04
1704.01987	9.00E-04	1704.01987	6.00E-04	1704.01987	6.80E-04
1703.05551	9.10E-04	1703.05551	6.50E-04	1703.05551	6.90E-04
1702.09115	9.40E-04	1702.09115	6.50E-04	1702.09115	7.10E-04
1701.1268	9.90E-04	1701.1268	5.80E-04	1701.1268	7.40E-04
1700.16244	0.00105	1700.16244	5.90E-04	1700.16244	7.90E-04
1699.19808	0.00111	1699.19808	7.40E-04	1699.19808	8.30E-04
1698.23372	0.00118	1698.23372	8.30E-04	1698.23372	8.70E-04
1697.26937	0.00127	1697.26937	8.50E-04	1697.26937	9.30E-04
1696.30501	0.00135	1696.30501	8.60E-04	1696.30501	9.90E-04
1695.34065	0.00143	1695.34065	9.70E-04	1695.34065	0.00104
1694.37629	0.00154	1694.37629	0.00113	1694.37629	0.00111
1693.41193	0.00166	1693.41193	0.00124	1693.41193	0.0012
1692.44758	0.00177	1692.44758	0.00134	1692.44758	0.00129
1691.48322	0.00187	1691.48322	0.00144	1691.48322	0.00136
1690.51886	0.00199	1690.51886	0.00155	1690.51886	0.00142
1689.5545	0.00214	1689.5545	0.00167	1689.5545	0.00151
1688.59015	0.00228	1688.59015	0.00179	1688.59015	0.0016



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1687.62579	0.0024	1687.62579	0.00192	1687.62579	0.00169
1686.66143	0.00252	1686.66143	0.00203	1686.66143	0.00177
1685.69707	0.00266	1685.69707	0.00209	1685.69707	0.00186
1684.73272	0.0028	1684.73272	0.00213	1684.73272	0.00196
1683.76836	0.00296	1683.76836	0.00228	1683.76836	0.00205
1682.804	0.00311	1682.804	0.00248	1682.804	0.00215
1681.83964	0.00327	1681.83964	0.00263	1681.83964	0.00225
1680.87529	0.0034	1680.87529	0.00272	1680.87529	0.00235
1679.91093	0.00351	1679.91093	0.00281	1679.91093	0.00243
1678.94657	0.00361	1678.94657	0.00292	1678.94657	0.00251
1677.98221	0.00372	1677.98221	0.00301	1677.98221	0.00258
1677.01786	0.00383	1677.01786	0.00307	1677.01786	0.00266
1676.0535	0.00394	1676.0535	0.0031	1676.0535	0.00274
1675.08914	0.00405	1675.08914	0.00318	1675.08914	0.00283
1674.12478	0.00414	1674.12478	0.00331	1674.12478	0.00292
1673.16043	0.00423	1673.16043	0.0034	1673.16043	0.00302
1672.19607	0.00431	1672.19607	0.00343	1672.19607	0.00311
1671.23171	0.00439	1671.23171	0.00344	1671.23171	0.00319
1670.26735	0.00446	1670.26735	0.00346	1670.26735	0.00326
1669.30299	0.00454	1669.30299	0.00349	1669.30299	0.00334
1668.33864	0.00462	1668.33864	0.00356	1668.33864	0.00342
1667.37428	0.00468	1667.37428	0.00362	1667.37428	0.00351
1666.40992	0.00475	1666.40992	0.00365	1666.40992	0.00359
1665.44556	0.0048	1665.44556	0.00367	1665.44556	0.00367
1664.48121	0.00485	1664.48121	0.00368	1664.48121	0.00374
1663.51685	0.0049	1663.51685	0.00368	1663.51685	0.00381
1662.55249	0.00495	1662.55249	0.00369	1662.55249	0.00389
1661.58813	0.00499	1661.58813	0.00372	1661.58813	0.00395
1660.62378	0.00501	1660.62378	0.00374	1660.62378	0.00401
1659.65942	0.00503	1659.65942	0.00374	1659.65942	0.00406
1658.69506	0.00505	1658.69506	0.00373	1658.69506	0.0041
1657.7307	0.00505	1657.7307	0.00371	1657.7307	0.00413
1656.76635	0.00503	1656.76635	0.0037	1656.76635	0.00416
1655.80199	0.005	1655.80199	0.00366	1655.80199	0.00415
1654.83763	0.00495	1654.83763	0.00358	1654.83763	0.00411
1653.87327	0.0049	1653.87327	0.00344	1653.87327	0.00406
1652.90892	0.00486	1652.90892	0.00334	1652.90892	0.00402
1651.94456	0.00481	1651.94456	0.00338	1651.94456	0.00398
1650.9802	0.00475	1650.9802	0.00342	1650.9802	0.00395
1650.01584	0.00469	1650.01584	0.00338	1650.01584	0.00393
1649.05149	0.0046	1649.05149	0.00329	1649.05149	0.0039

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1648.08713	0.0045	1648.08713	0.00319	1648.08713	0.00382
1647.12277	0.00442	1647.12277	0.0031	1647.12277	0.00374
1646.15841	0.00433	1646.15841	0.00303	1646.15841	0.00366
1645.19406	0.00425	1645.19406	0.003	1645.19406	0.00359
1644.2297	0.00417	1644.2297	0.00298	1644.2297	0.00353
1643.26534	0.00408	1643.26534	0.00293	1643.26534	0.00347
1642.30098	0.00399	1642.30098	0.00285	1642.30098	0.00342
1641.33662	0.0039	1641.33662	0.00278	1641.33662	0.00337
1640.37227	0.00382	1640.37227	0.00273	1640.37227	0.00332
1639.40791	0.00375	1639.40791	0.00268	1639.40791	0.00328
1638.44355	0.00367	1638.44355	0.00261	1638.44355	0.00322
1637.47919	0.00359	1637.47919	0.00254	1637.47919	0.00316
1636.51484	0.00352	1636.51484	0.00247	1636.51484	0.00309
1635.55048	0.00345	1635.55048	0.00239	1635.55048	0.00302
1634.58612	0.00339	1634.58612	0.00238	1634.58612	0.00296
1633.62176	0.00334	1633.62176	0.0024	1633.62176	0.0029
1632.65741	0.00329	1632.65741	0.00237	1632.65741	0.00285
1631.69305	0.00325	1631.69305	0.00233	1631.69305	0.00281
1630.72869	0.00321	1630.72869	0.00231	1630.72869	0.00275
1629.76433	0.00316	1629.76433	0.0023	1629.76433	0.00269
1628.79998	0.00313	1628.79998	0.00227	1628.79998	0.00264
1627.83562	0.00311	1627.83562	0.00225	1627.83562	0.0026
1626.87126	0.00309	1626.87126	0.00228	1626.87126	0.00257
1625.9069	0.00308	1625.9069	0.00231	1625.9069	0.00253
1624.94255	0.00309	1624.94255	0.00231	1624.94255	0.00249
1623.97819	0.00312	1623.97819	0.00233	1623.97819	0.00244
1623.01383	0.00316	1623.01383	0.00242	1623.01383	0.0024
1622.04947	0.00324	1622.04947	0.00253	1622.04947	0.00237
1621.08512	0.00333	1621.08512	0.00264	1621.08512	0.00235
1620.12076	0.00343	1620.12076	0.00274	1620.12076	0.00234
1619.1564	0.00353	1619.1564	0.00286	1619.1564	0.00232
1618.19204	0.00366	1618.19204	0.00296	1618.19204	0.0023
1617.22768	0.00381	1617.22768	0.00307	1617.22768	0.00228
1616.26333	0.00397	1616.26333	0.00326	1616.26333	0.00226
1615.29897	0.00414	1615.29897	0.00347	1615.29897	0.00224
1614.33461	0.0043	1614.33461	0.00363	1614.33461	0.00223
1613.37025	0.00444	1613.37025	0.00376	1613.37025	0.00223
1612.4059	0.00454	1612.4059	0.00387	1612.4059	0.00221
1611.44154	0.00462	1611.44154	0.00395	1611.44154	0.00218
1610.47718	0.00468	1610.47718	0.00399	1610.47718	0.00215
1609.51282	0.0047	1609.51282	0.004	1609.51282	0.00211

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1608.54847	0.00468	1608.54847	0.00397	1608.54847	0.00207
1607.58411	0.00462	1607.58411	0.00392	1607.58411	0.00202
1606.61975	0.00454	1606.61975	0.00384	1606.61975	0.00198
1605.65539	0.00444	1605.65539	0.00373	1605.65539	0.00193
1604.69104	0.00433	1604.69104	0.0036	1604.69104	0.00188
1603.72668	0.00422	1603.72668	0.00346	1603.72668	0.00182
1602.76232	0.0041	1602.76232	0.00333	1602.76232	0.00177
1601.79796	0.00398	1601.79796	0.0032	1601.79796	0.00172
1600.83361	0.00387	1600.83361	0.00308	1600.83361	0.00168
1599.86925	0.00376	1599.86925	0.00296	1599.86925	0.00164
1598.90489	0.00366	1598.90489	0.00287	1598.90489	0.00161
1597.94053	0.00358	1597.94053	0.00281	1597.94053	0.0016
1596.97618	0.00352	1596.97618	0.00275	1596.97618	0.00159
1596.01182	0.0035	1596.01182	0.00273	1596.01182	0.00161
1595.04746	0.00351	1595.04746	0.00276	1595.04746	0.00163
1594.0831	0.00357	1594.0831	0.00283	1594.0831	0.00167
1593.11874	0.00367	1593.11874	0.00295	1593.11874	0.00172
1592.15439	0.0038	1592.15439	0.00308	1592.15439	0.00177
1591.19003	0.00394	1591.19003	0.00322	1591.19003	0.00182
1590.22567	0.00408	1590.22567	0.00336	1590.22567	0.00186
1589.26131	0.00421	1589.26131	0.00348	1589.26131	0.00189
1588.29696	0.00431	1588.29696	0.00358	1588.29696	0.0019
1587.3326	0.00435	1587.3326	0.00365	1587.3326	0.0019
1586.36824	0.00433	1586.36824	0.00365	1586.36824	0.00187
1585.40388	0.00424	1585.40388	0.00358	1585.40388	0.00183
1584.43953	0.00409	1584.43953	0.00344	1584.43953	0.00178
1583.47517	0.0039	1583.47517	0.00327	1583.47517	0.00173
1582.51081	0.00368	1582.51081	0.00308	1582.51081	0.00167
1581.54645	0.00346	1581.54645	0.0029	1581.54645	0.00162
1580.5821	0.00325	1580.5821	0.00273	1580.5821	0.00159
1579.61774	0.00304	1579.61774	0.00257	1579.61774	0.00156
1578.65338	0.00284	1578.65338	0.00243	1578.65338	0.00152
1577.68902	0.00265	1577.68902	0.00227	1577.68902	0.00148
1576.72467	0.00248	1576.72467	0.00208	1576.72467	0.00145
1575.76031	0.00234	1575.76031	0.00195	1575.76031	0.00142
1574.79595	0.00222	1574.79595	0.00189	1574.79595	0.00141
1573.83159	0.00212	1573.83159	0.00184	1573.83159	0.00141
1572.86724	0.00206	1572.86724	0.00179	1572.86724	0.00142
1571.90288	0.00202	1571.90288	0.00178	1571.90288	0.00143
1570.93852	0.002	1570.93852	0.00177	1570.93852	0.00144
1569.97416	0.00202	1569.97416	0.00175	1569.97416	0.00146

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1569.00981	0.00205	1569.00981	0.00179	1569.00981	0.00148
1568.04545	0.00209	1568.04545	0.00186	1568.04545	0.00152
1567.08109	0.00215	1567.08109	0.00193	1567.08109	0.00155
1566.11673	0.00222	1566.11673	0.00199	1566.11673	0.0016
1565.15237	0.0023	1565.15237	0.00207	1565.15237	0.00164
1564.18802	0.00238	1564.18802	0.00217	1564.18802	0.0017
1563.22366	0.00246	1563.22366	0.00227	1563.22366	0.00176
1562.2593	0.00256	1562.2593	0.00235	1562.2593	0.00182
1561.29494	0.00267	1561.29494	0.00239	1561.29494	0.00188
1560.33059	0.0028	1560.33059	0.00241	1560.33059	0.00194
1559.36623	0.00296	1559.36623	0.00249	1559.36623	0.00201
1558.40187	0.00312	1558.40187	0.00264	1558.40187	0.0021
1557.43751	0.00328	1557.43751	0.00284	1557.43751	0.00218
1556.47316	0.00343	1556.47316	0.003	1556.47316	0.00227
1555.5088	0.00356	1555.5088	0.00311	1555.5088	0.00235
1554.54444	0.00368	1554.54444	0.00322	1554.54444	0.00244
1553.58008	0.00381	1553.58008	0.00338	1553.58008	0.00252
1552.61573	0.00394	1552.61573	0.00352	1552.61573	0.00261
1551.65137	0.00407	1551.65137	0.00362	1551.65137	0.0027
1550.68701	0.0042	1550.68701	0.00371	1550.68701	0.0028
1549.72265	0.00433	1549.72265	0.00385	1549.72265	0.00288
1548.7583	0.00445	1548.7583	0.00399	1548.7583	0.00296
1547.79394	0.00457	1547.79394	0.0041	1547.79394	0.00302
1546.82958	0.00467	1546.82958	0.00416	1546.82958	0.00309
1545.86522	0.00476	1545.86522	0.00421	1545.86522	0.00315
1544.90087	0.00483	1544.90087	0.00427	1544.90087	0.00319
1543.93651	0.00488	1543.93651	0.00433	1543.93651	0.00322
1542.97215	0.00492	1542.97215	0.00435	1542.97215	0.00324
1542.00779	0.00493	1542.00779	0.00435	1542.00779	0.00324
1541.04343	0.00491	1541.04343	0.00435	1541.04343	0.00322
1540.07908	0.00489	1540.07908	0.0043	1540.07908	0.00321
1539.11472	0.00485	1539.11472	0.00427	1539.11472	0.00319
1538.15036	0.00479	1538.15036	0.0043	1538.15036	0.00318
1537.186	0.00472	1537.186	0.0043	1537.186	0.00315
1536.22165	0.00463	1536.22165	0.00423	1536.22165	0.00311
1535.25729	0.00452	1535.25729	0.00413	1535.25729	0.00305
1534.29293	0.00439	1534.29293	0.00399	1534.29293	0.00298
1533.32857	0.00424	1533.32857	0.00385	1533.32857	0.0029
1532.36422	0.0041	1532.36422	0.00376	1532.36422	0.00282
1531.39986	0.00396	1531.39986	0.00367	1531.39986	0.00275
1530.4355	0.00382	1530.4355	0.00355	1530.4355	0.00267

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1529.47114	0.00368	1529.47114	0.0034	1529.47114	0.0026
1528.50679	0.00352	1528.50679	0.00323	1528.50679	0.00251
1527.54243	0.00336	1527.54243	0.00308	1527.54243	0.00242
1526.57807	0.0032	1526.57807	0.00295	1526.57807	0.00233
1525.61371	0.00305	1525.61371	0.00282	1525.61371	0.00225
1524.64936	0.00291	1524.64936	0.0027	1524.64936	0.00216
1523.685	0.00278	1523.685	0.0026	1523.685	0.00207
1522.72064	0.00267	1522.72064	0.00249	1522.72064	0.00197
1521.75628	0.00258	1521.75628	0.00236	1521.75628	0.00189
1520.79193	0.0025	1520.79193	0.00225	1520.79193	0.00182
1519.82757	0.00242	1519.82757	0.00221	1519.82757	0.00174
1518.86321	0.00235	1518.86321	0.00218	1518.86321	0.00168
1517.89885	0.0023	1517.89885	0.00213	1517.89885	0.00162
1516.9345	0.00227	1516.9345	0.00209	1516.9345	0.00156
1515.97014	0.00226	1515.97014	0.00211	1515.97014	0.00148
1515.00578	0.00226	1515.00578	0.00213	1515.00578	0.00141
1514.04142	0.0023	1514.04142	0.00216	1514.04142	0.00136
1513.07706	0.00237	1513.07706	0.0022	1513.07706	0.00132
1512.11271	0.00246	1512.11271	0.00228	1512.11271	0.00129
1511.14835	0.0026	1511.14835	0.00241	1511.14835	0.0013
1510.18399	0.00277	1510.18399	0.00255	1510.18399	0.00133
1509.21963	0.003	1509.21963	0.0027	1509.21963	0.00137
1508.25528	0.0033	1508.25528	0.00287	1508.25528	0.00143
1507.29092	0.00362	1507.29092	0.0031	1507.29092	0.00151
1506.32656	0.00394	1506.32656	0.00344	1506.32656	0.00159
1505.3622	0.00419	1505.3622	0.00375	1505.3622	0.00166
1504.39785	0.00435	1504.39785	0.0039	1504.39785	0.00169
1503.43349	0.00437	1503.43349	0.00389	1503.43349	0.0017
1502.46913	0.00427	1502.46913	0.00379	1502.46913	0.00167
1501.50477	0.00412	1501.50477	0.00365	1501.50477	0.00161
1500.54042	0.00395	1500.54042	0.00349	1500.54042	0.00155
1499.57606	0.00382	1499.57606	0.00335	1499.57606	0.0015
1498.6117	0.00377	1498.6117	0.0033	1498.6117	0.00146
1497.64734	0.00387	1497.64734	0.00334	1497.64734	0.00146
1496.68299	0.00411	1496.68299	0.00349	1496.68299	0.00149
1495.71863	0.00451	1495.71863	0.00379	1495.71863	0.00158
1494.75427	0.00506	1494.75427	0.0042	1494.75427	0.00172
1493.78991	0.00574	1493.78991	0.00468	1493.78991	0.0019
1492.82556	0.0065	1492.82556	0.00526	1492.82556	0.00213
1491.8612	0.00728	1491.8612	0.00591	1491.8612	0.00239
1490.89684	0.00801	1490.89684	0.0066	1490.89684	0.00264

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1489.93248	0.00857	1489.93248	0.00725	1489.93248	0.00285
1488.96812	0.00883	1488.96812	0.00764	1488.96812	0.00299
1488.00377	0.00875	1488.00377	0.00766	1488.00377	0.00302
1487.03941	0.00832	1487.03941	0.00732	1487.03941	0.00295
1486.07505	0.00764	1486.07505	0.00675	1486.07505	0.00279
1485.11069	0.00685	1485.11069	0.00611	1485.11069	0.00257
1484.14634	0.00605	1484.14634	0.00546	1484.14634	0.00235
1483.18198	0.00533	1483.18198	0.00486	1483.18198	0.00215
1482.21762	0.00473	1482.21762	0.00436	1482.21762	0.00198
1481.25326	0.00423	1481.25326	0.00394	1481.25326	0.00185
1480.28891	0.00382	1480.28891	0.0036	1480.28891	0.00174
1479.32455	0.00348	1479.32455	0.00332	1479.32455	0.00166
1478.36019	0.00319	1478.36019	0.00307	1478.36019	0.0016
1477.39583	0.00295	1477.39583	0.00284	1477.39583	0.00157
1476.43148	0.00275	1476.43148	0.00261	1476.43148	0.00155
1475.46712	0.00257	1475.46712	0.00242	1475.46712	0.00153
1474.50276	0.00241	1474.50276	0.00227	1474.50276	0.00151
1473.5384	0.00229	1473.5384	0.00213	1473.5384	0.0015
1472.57405	0.00221	1472.57405	0.00202	1472.57405	0.00151
1471.60969	0.00213	1471.60969	0.00196	1471.60969	0.00155
1470.64533	0.00207	1470.64533	0.00195	1470.64533	0.00161
1469.68097	0.00203	1469.68097	0.00193	1469.68097	0.0017
1468.71662	0.002	1468.71662	0.0019	1468.71662	0.0018
1467.75226	0.00197	1467.75226	0.00189	1467.75226	0.00188
1466.7879	0.00196	1466.7879	0.0019	1466.7879	0.00196
1465.82354	0.00198	1465.82354	0.0019	1465.82354	0.00202
1464.85918	0.00201	1464.85918	0.00189	1464.85918	0.00209
1463.89483	0.00205	1463.89483	0.00191	1463.89483	0.00217
1462.93047	0.0021	1462.93047	0.00196	1462.93047	0.00225
1461.96611	0.00216	1461.96611	0.00201	1461.96611	0.00234
1461.00175	0.00222	1461.00175	0.00204	1461.00175	0.00243
1460.0374	0.00226	1460.0374	0.00206	1460.0374	0.00248
1459.07304	0.0023	1459.07304	0.00204	1459.07304	0.0025
1458.10868	0.00235	1458.10868	0.00201	1458.10868	0.00253
1457.14432	0.00241	1457.14432	0.00201	1457.14432	0.00258
1456.17997	0.00248	1456.17997	0.0021	1456.17997	0.00265
1455.21561	0.00256	1455.21561	0.00223	1455.21561	0.00275
1454.25125	0.00264	1454.25125	0.00232	1454.25125	0.00285
1453.28689	0.00272	1453.28689	0.00237	1453.28689	0.00294
1452.32254	0.00277	1452.32254	0.00242	1452.32254	0.00299
1451.35818	0.00281	1451.35818	0.0025	1451.35818	0.00301

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1450.39382	0.00284	1450.39382	0.00258	1450.39382	0.00301
1449.42946	0.00287	1449.42946	0.00262	1449.42946	0.00299
1448.46511	0.00289	1448.46511	0.00261	1448.46511	0.00297
1447.50075	0.00291	1447.50075	0.0026	1447.50075	0.00296
1446.53639	0.00291	1446.53639	0.0026	1446.53639	0.00294
1445.57203	0.0029	1445.57203	0.00258	1445.57203	0.00293
1444.60768	0.00288	1444.60768	0.00253	1444.60768	0.0029
1443.64332	0.00284	1443.64332	0.00249	1443.64332	0.00286
1442.67896	0.00277	1442.67896	0.00247	1442.67896	0.0028
1441.7146	0.00271	1441.7146	0.00246	1441.7146	0.00274
1440.75025	0.00264	1440.75025	0.00243	1440.75025	0.00268
1439.78589	0.00257	1439.78589	0.00236	1439.78589	0.00262
1438.82153	0.00252	1438.82153	0.00229	1438.82153	0.00255
1437.85717	0.00249	1437.85717	0.0022	1437.85717	0.00247
1436.89281	0.00246	1436.89281	0.0021	1436.89281	0.00238
1435.92846	0.00243	1435.92846	0.00208	1435.92846	0.00228
1434.9641	0.00238	1434.9641	0.0021	1434.9641	0.00217
1433.99974	0.00234	1433.99974	0.00209	1433.99974	0.00208
1433.03538	0.0023	1433.03538	0.00208	1433.03538	0.002
1432.07103	0.00227	1432.07103	0.00206	1432.07103	0.00191
1431.10667	0.00226	1431.10667	0.00203	1431.10667	0.00181
1430.14231	0.00226	1430.14231	0.002	1430.14231	0.00171
1429.17795	0.00226	1429.17795	0.00199	1429.17795	0.00162
1428.2136	0.00226	1428.2136	0.00198	1428.2136	0.00155
1427.24924	0.00227	1427.24924	0.002	1427.24924	0.0015
1426.28488	0.00228	1426.28488	0.00202	1426.28488	0.00148
1425.32052	0.00231	1425.32052	0.00204	1425.32052	0.00148
1424.35617	0.00233	1424.35617	0.00207	1424.35617	0.00148
1423.39181	0.00236	1423.39181	0.00211	1423.39181	0.00148
1422.42745	0.00238	1422.42745	0.00218	1422.42745	0.00149
1421.46309	0.00242	1421.46309	0.00223	1421.46309	0.00149
1420.49874	0.00249	1420.49874	0.00225	1420.49874	0.0015
1419.53438	0.00256	1419.53438	0.00226	1419.53438	0.00151
1418.57002	0.00265	1418.57002	0.00232	1418.57002	0.00152
1417.60566	0.00273	1417.60566	0.00237	1417.60566	0.00156
1416.64131	0.00279	1416.64131	0.00241	1416.64131	0.00158
1415.67695	0.00281	1415.67695	0.00243	1415.67695	0.00153
1414.71259	0.00281	1414.71259	0.00244	1414.71259	0.00141
1413.74823	0.00278	1413.74823	0.00243	1413.74823	0.00129
1412.78387	0.00273	1412.78387	0.00238	1412.78387	0.00122
1411.81952	0.00267	1411.81952	0.00231	1411.81952	0.00121

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1410.85516	0.00259	1410.85516	0.00222	1410.85516	0.00128
1409.8908	0.00251	1409.8908	0.00211	1409.8908	0.00139
1408.92644	0.00242	1408.92644	0.00201	1408.92644	0.00149
1407.96209	0.00233	1407.96209	0.0019	1407.96209	0.00151
1406.99773	0.00223	1406.99773	0.0018	1406.99773	0.00147
1406.03337	0.00214	1406.03337	0.0017	1406.03337	0.00142
1405.06901	0.00206	1405.06901	0.00161	1405.06901	0.00137
1404.10466	0.00197	1404.10466	0.00154	1404.10466	0.00131
1403.1403	0.00189	1403.1403	0.00147	1403.1403	0.00126
1402.17594	0.0018	1402.17594	0.00138	1402.17594	0.00123
1401.21158	0.00171	1401.21158	0.00129	1401.21158	0.0012
1400.24723	0.00161	1400.24723	0.0012	1400.24723	0.00119
1399.28287	0.00153	1399.28287	0.00112	1399.28287	0.00118
1398.31851	0.00145	1398.31851	0.00106	1398.31851	0.00118
1397.35415	0.00138	1397.35415	0.00103	1397.35415	0.00118
1396.3898	0.00131	1396.3898	9.90E-04	1396.3898	0.00118
1395.42544	0.00124	1395.42544	9.30E-04	1395.42544	0.00121
1394.46108	0.00118	1394.46108	9.00E-04	1394.46108	0.00125
1393.49672	0.00112	1393.49672	9.00E-04	1393.49672	0.00131
1392.53237	0.00109	1392.53237	8.90E-04	1392.53237	0.00138
1391.56801	0.00106	1391.56801	8.80E-04	1391.56801	0.00145
1390.60365	0.00105	1390.60365	8.80E-04	1390.60365	0.00151
1389.63929	0.00104	1389.63929	8.80E-04	1389.63929	0.00155
1388.67494	0.00104	1388.67494	8.90E-04	1388.67494	0.00157
1387.71058	0.00103	1387.71058	8.90E-04	1387.71058	0.00158
1386.74622	0.00103	1386.74622	9.10E-04	1386.74622	0.00159
1385.78186	0.00102	1385.78186	9.30E-04	1385.78186	0.00161
1384.8175	0.00101	1384.8175	9.10E-04	1384.8175	0.00162
1383.85315	9.80E-04	1383.85315	8.80E-04	1383.85315	0.00165
1382.88879	9.40E-04	1382.88879	8.40E-04	1382.88879	0.00169
1381.92443	9.10E-04	1381.92443	8.50E-04	1381.92443	0.00174
1380.96007	8.70E-04	1380.96007	8.70E-04	1380.96007	0.00181
1379.99572	8.50E-04	1379.99572	8.60E-04	1379.99572	0.00188
1379.03136	8.30E-04	1379.03136	8.40E-04	1379.03136	0.00195
1378.067	8.10E-04	1378.067	8.30E-04	1378.067	0.00201
1377.10264	7.80E-04	1377.10264	8.40E-04	1377.10264	0.00204
1376.13829	7.40E-04	1376.13829	8.30E-04	1376.13829	0.00201
1375.17393	7.00E-04	1375.17393	8.00E-04	1375.17393	0.00193
1374.20957	6.70E-04	1374.20957	7.60E-04	1374.20957	0.00182
1373.24521	6.60E-04	1373.24521	7.40E-04	1373.24521	0.0017
1372.28086	6.50E-04	1372.28086	7.20E-04	1372.28086	0.00157



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1371.3165	6.40E-04	1371.3165	7.00E-04	1371.3165	0.00147
1370.35214	6.30E-04	1370.35214	7.00E-04	1370.35214	0.0014
1369.38778	6.20E-04	1369.38778	7.00E-04	1369.38778	0.00136
1368.42343	6.30E-04	1368.42343	7.00E-04	1368.42343	0.00134
1367.45907	6.60E-04	1367.45907	7.20E-04	1367.45907	0.00133
1366.49471	6.90E-04	1366.49471	7.60E-04	1366.49471	0.00132
1365.53035	7.20E-04	1365.53035	8.00E-04	1365.53035	0.0013
1364.566	7.40E-04	1364.566	8.30E-04	1364.566	0.00127
1363.60164	7.30E-04	1363.60164	8.40E-04	1363.60164	0.00124
1362.63728	7.00E-04	1362.63728	8.10E-04	1362.63728	0.00121
1361.67292	6.60E-04	1361.67292	7.60E-04	1361.67292	0.00119
1360.70856	6.20E-04	1360.70856	7.20E-04	1360.70856	0.00119
1359.74421	5.90E-04	1359.74421	6.80E-04	1359.74421	0.00119
1358.77985	5.60E-04	1358.77985	6.50E-04	1358.77985	0.0012
1357.81549	5.40E-04	1357.81549	6.50E-04	1357.81549	0.00121
1356.85113	5.40E-04	1356.85113	6.70E-04	1356.85113	0.00121
1355.88678	5.30E-04	1355.88678	6.90E-04	1355.88678	0.00122
1354.92242	5.30E-04	1354.92242	7.10E-04	1354.92242	0.00122
1353.95806	5.40E-04	1353.95806	7.30E-04	1353.95806	0.00123
1352.9937	5.70E-04	1352.9937	7.50E-04	1352.9937	0.00125
1352.02935	6.10E-04	1352.02935	7.60E-04	1352.02935	0.00127
1351.06499	6.70E-04	1351.06499	7.90E-04	1351.06499	0.0013
1350.10063	7.30E-04	1350.10063	8.20E-04	1350.10063	0.00132
1349.13627	7.90E-04	1349.13627	8.80E-04	1349.13627	0.00133
1348.17192	8.50E-04	1348.17192	9.40E-04	1348.17192	0.00134
1347.20756	9.00E-04	1347.20756	1.00E-03	1347.20756	0.00135
1346.2432	9.40E-04	1346.2432	0.00105	1346.2432	0.00136
1345.27884	9.90E-04	1345.27884	0.00112	1345.27884	0.00138
1344.31449	0.00105	1344.31449	0.00117	1344.31449	0.00141
1343.35013	0.00112	1343.35013	0.00121	1343.35013	0.00145
1342.38577	0.00119	1342.38577	0.00128	1342.38577	0.00148
1341.42141	0.00127	1341.42141	0.00137	1341.42141	0.00152
1340.45706	0.00135	1340.45706	0.00144	1340.45706	0.00156
1339.4927	0.00145	1339.4927	0.00151	1339.4927	0.00161
1338.52834	0.00156	1338.52834	0.00159	1338.52834	0.00165
1337.56398	0.00168	1337.56398	0.00168	1337.56398	0.00171
1336.59963	0.00181	1336.59963	0.00179	1336.59963	0.00177
1335.63527	0.00195	1335.63527	0.00192	1335.63527	0.00185
1334.67091	0.00211	1334.67091	0.00206	1334.67091	0.00193
1333.70655	0.00226	1333.70655	0.00221	1333.70655	0.00202
1332.74219	0.00243	1332.74219	0.00237	1332.74219	0.00212

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1331.77784	0.00262	1331.77784	0.00255	1331.77784	0.00221
1330.81348	0.00282	1330.81348	0.00272	1330.81348	0.00231
1329.84912	0.00302	1329.84912	0.00289	1329.84912	0.00241
1328.88476	0.0032	1328.88476	0.00305	1328.88476	0.00249
1327.92041	0.00335	1327.92041	0.00318	1327.92041	0.00257
1326.95605	0.00348	1326.95605	0.00329	1326.95605	0.00263
1325.99169	0.00357	1325.99169	0.00337	1325.99169	0.00269
1325.02733	0.00362	1325.02733	0.00341	1325.02733	0.00274
1324.06298	0.00363	1324.06298	0.00339	1324.06298	0.00277
1323.09862	0.0036	1323.09862	0.00335	1323.09862	0.00279
1322.13426	0.00354	1322.13426	0.00329	1322.13426	0.00281
1321.1699	0.00345	1321.1699	0.0032	1321.1699	0.00281
1320.20555	0.00336	1320.20555	0.00309	1320.20555	0.0028
1319.24119	0.00326	1319.24119	0.00299	1319.24119	0.00278
1318.27683	0.00318	1318.27683	0.00293	1318.27683	0.00277
1317.31247	0.00311	1317.31247	0.00288	1317.31247	0.00276
1316.34812	0.00306	1316.34812	0.00284	1316.34812	0.00275
1315.38376	0.00304	1315.38376	0.0028	1315.38376	0.00276
1314.4194	0.00305	1314.4194	0.00278	1314.4194	0.00279
1313.45504	0.00309	1313.45504	0.00282	1313.45504	0.00283
1312.49069	0.00315	1312.49069	0.00288	1312.49069	0.00287
1311.52633	0.00323	1311.52633	0.00295	1311.52633	0.00292
1310.56197	0.00329	1310.56197	0.00302	1310.56197	0.00298
1309.59761	0.00335	1309.59761	0.00309	1309.59761	0.00302
1308.63325	0.0034	1308.63325	0.00317	1308.63325	0.00306
1307.6689	0.00345	1307.6689	0.00323	1307.6689	0.00308
1306.70454	0.00349	1306.70454	0.00325	1306.70454	0.0031
1305.74018	0.00352	1305.74018	0.00325	1305.74018	0.00312
1304.77582	0.00354	1304.77582	0.00323	1304.77582	0.00313
1303.81147	0.00356	1303.81147	0.00323	1303.81147	0.00314
1302.84711	0.00357	1302.84711	0.00325	1302.84711	0.00316
1301.88275	0.00359	1301.88275	0.00328	1301.88275	0.00318
1300.91839	0.00363	1300.91839	0.00334	1300.91839	0.00322
1299.95404	0.00369	1299.95404	0.00341	1299.95404	0.00326
1298.98968	0.00378	1298.98968	0.00349	1298.98968	0.00331
1298.02532	0.0039	1298.02532	0.00358	1298.02532	0.00337
1297.06096	0.00402	1297.06096	0.00369	1297.06096	0.00342
1296.09661	0.00411	1296.09661	0.00378	1296.09661	0.00345
1295.13225	0.00415	1295.13225	0.0038	1295.13225	0.00348
1294.16789	0.00412	1294.16789	0.00377	1294.16789	0.00349
1293.20353	0.00404	1293.20353	0.00369	1293.20353	0.00347

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1292.23918	0.00392	1292.23918	0.00357	1292.23918	0.00344
1291.27482	0.00378	1291.27482	0.00344	1291.27482	0.00339
1290.31046	0.00364	1290.31046	0.0033	1290.31046	0.00333
1289.3461	0.00351	1289.3461	0.00315	1289.3461	0.00327
1288.38175	0.00339	1288.38175	0.003	1288.38175	0.00323
1287.41739	0.00328	1287.41739	0.00291	1287.41739	0.00318
1286.45303	0.0032	1286.45303	0.00285	1286.45303	0.00314
1285.48867	0.00312	1285.48867	0.0028	1285.48867	0.0031
1284.52431	0.00306	1284.52431	0.00272	1284.52431	0.00307
1283.55996	0.00302	1283.55996	0.00264	1283.55996	0.00304
1282.5956	0.00299	1282.5956	0.00256	1282.5956	0.00301
1281.63124	0.00295	1281.63124	0.00252	1281.63124	0.00298
1280.66688	0.00291	1280.66688	0.00249	1280.66688	0.00295
1279.70253	0.00286	1279.70253	0.00245	1279.70253	0.00293
1278.73817	0.00281	1278.73817	0.00239	1278.73817	0.00289
1277.77381	0.00277	1277.77381	0.00235	1277.77381	0.00286
1276.80945	0.00273	1276.80945	0.00234	1276.80945	0.00284
1275.8451	0.00269	1275.8451	0.00233	1275.8451	0.00281
1274.88074	0.00267	1274.88074	0.00233	1274.88074	0.0028
1273.91638	0.00266	1273.91638	0.00232	1273.91638	0.00278
1272.95202	0.00267	1272.95202	0.00231	1272.95202	0.00276
1271.98767	0.00271	1271.98767	0.00232	1271.98767	0.00274
1271.02331	0.00277	1271.02331	0.00236	1271.02331	0.00273
1270.05895	0.00285	1270.05895	0.00244	1270.05895	0.00272
1269.09459	0.00294	1269.09459	0.00256	1269.09459	0.00274
1268.13024	0.00305	1268.13024	0.00271	1268.13024	0.00278
1267.16588	0.00318	1267.16588	0.00287	1267.16588	0.00282
1266.20152	0.00335	1266.20152	0.00303	1266.20152	0.00286
1265.23716	0.00356	1265.23716	0.00323	1265.23716	0.00291
1264.27281	0.00382	1264.27281	0.00347	1264.27281	0.00297
1263.30845	0.00413	1263.30845	0.00375	1263.30845	0.00305
1262.34409	0.00449	1262.34409	0.00407	1262.34409	0.00315
1261.37973	0.0049	1261.37973	0.00443	1261.37973	0.00328
1260.41538	0.00535	1260.41538	0.00482	1260.41538	0.00343
1259.45102	0.00585	1259.45102	0.00527	1259.45102	0.00359
1258.48666	0.0064	1258.48666	0.00574	1258.48666	0.00376
1257.5223	0.00699	1257.5223	0.0062	1257.5223	0.00395
1256.55794	0.0076	1256.55794	0.00669	1256.55794	0.00416
1255.59359	0.00822	1255.59359	0.0072	1255.59359	0.00437
1254.62923	0.00882	1254.62923	0.00771	1254.62923	0.00458
1253.66487	0.00938	1253.66487	0.00821	1253.66487	0.00478

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1252.70051	0.00992	1252.70051	0.00868	1252.70051	0.00497
1251.73616	0.01044	1251.73616	0.0091	1251.73616	0.00516
1250.7718	0.01091	1250.7718	0.00949	1250.7718	0.00534
1249.80744	0.01135	1249.80744	0.00986	1249.80744	0.00551
1248.84308	0.01174	1248.84308	0.01018	1248.84308	0.00566
1247.87873	0.01206	1247.87873	0.01043	1247.87873	0.00578
1246.91437	0.01231	1246.91437	0.01061	1246.91437	0.00588
1245.95001	0.01249	1245.95001	0.01072	1245.95001	0.00594
1244.98565	0.0126	1244.98565	0.01076	1244.98565	0.00596
1244.0213	0.01264	1244.0213	0.01075	1244.0213	0.00597
1243.05694	0.01261	1243.05694	0.01068	1243.05694	0.00594
1242.09258	0.0125	1242.09258	0.01053	1242.09258	0.00589
1241.12822	0.01232	1241.12822	0.0103	1241.12822	0.00581
1240.16387	0.01207	1240.16387	0.01	1240.16387	0.00571
1239.19951	0.01175	1239.19951	0.00964	1239.19951	0.00559
1238.23515	0.01138	1238.23515	0.00923	1238.23515	0.00546
1237.27079	0.01097	1237.27079	0.00879	1237.27079	0.0053
1236.30644	0.01054	1236.30644	0.00833	1236.30644	0.00513
1235.34208	0.0101	1235.34208	0.00785	1235.34208	0.00495
1234.37772	0.00965	1234.37772	0.00735	1234.37772	0.00476
1233.41336	0.00921	1233.41336	0.00687	1233.41336	0.00458
1232.449	0.00878	1232.449	0.00639	1232.449	0.0044
1231.48465	0.00834	1231.48465	0.00594	1231.48465	0.00424
1230.52029	0.00792	1230.52029	0.00552	1230.52029	0.00409
1229.55593	0.00751	1229.55593	0.00512	1229.55593	0.00395
1228.59157	0.00712	1228.59157	0.00473	1228.59157	0.00382
1227.62722	0.00675	1227.62722	0.00437	1227.62722	0.0037
1226.66286	0.00639	1226.66286	0.00403	1226.66286	0.00357
1225.6985	0.00606	1225.6985	0.00371	1225.6985	0.00346
1224.73414	0.00574	1224.73414	0.00341	1224.73414	0.00335
1223.76979	0.00544	1223.76979	0.00314	1223.76979	0.00324
1222.80543	0.00514	1222.80543	0.0029	1222.80543	0.00314
1221.84107	0.00485	1221.84107	0.00269	1221.84107	0.00305
1220.87671	0.00459	1220.87671	0.00249	1220.87671	0.00297
1219.91236	0.00435	1219.91236	0.00229	1219.91236	0.00291
1218.948	0.00413	1218.948	0.00211	1218.948	0.00288
1217.98364	0.00392	1217.98364	0.00196	1217.98364	0.00286
1217.01928	0.00372	1217.01928	0.00184	1217.01928	0.00286
1216.05493	0.00355	1216.05493	0.00172	1216.05493	0.00285
1215.09057	0.00342	1215.09057	0.00162	1215.09057	0.00284
1214.12621	0.00332	1214.12621	0.00154	1214.12621	0.00282

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1213.16185	0.00326	1213.16185	0.00149	1213.16185	0.00281
1212.1975	0.00322	1212.1975	0.00147	1212.1975	0.00281
1211.23314	0.00319	1211.23314	0.00146	1211.23314	0.00283
1210.26878	0.00317	1210.26878	0.00145	1210.26878	0.00286
1209.30442	0.00316	1209.30442	0.00146	1209.30442	0.00292
1208.34007	0.00317	1208.34007	0.00148	1208.34007	0.00298
1207.37571	0.00319	1207.37571	0.00151	1207.37571	0.00303
1206.41135	0.00321	1206.41135	0.00152	1206.41135	0.00307
1205.44699	0.00322	1205.44699	0.00151	1205.44699	0.00309
1204.48263	0.0032	1204.48263	0.00149	1204.48263	0.0031
1203.51828	0.00315	1203.51828	0.00144	1203.51828	0.0031
1202.55392	0.00309	1202.55392	0.00137	1202.55392	0.0031
1201.58956	0.00303	1201.58956	0.0013	1201.58956	0.0031
1200.6252	0.00297	1200.6252	0.00122	1200.6252	0.00311
1199.66085	0.00292	1199.66085	0.00116	1199.66085	0.00312
1198.69649	0.00287	1198.69649	0.00111	1198.69649	0.00313
1197.73213	0.00284	1197.73213	0.00106	1197.73213	0.00312
1196.76777	0.00282	1196.76777	0.00101	1196.76777	0.00313
1195.80342	0.00283	1195.80342	9.70E-04	1195.80342	0.00314
1194.83906	0.00287	1194.83906	9.60E-04	1194.83906	0.00317
1193.8747	0.00292	1193.8747	9.80E-04	1193.8747	0.0032
1192.91034	0.00299	1192.91034	9.90E-04	1192.91034	0.00324
1191.94599	0.00305	1191.94599	1.00E-03	1191.94599	0.00327
1190.98163	0.0031	1190.98163	0.00101	1190.98163	0.00328
1190.01727	0.00313	1190.01727	0.00101	1190.01727	0.00329
1189.05291	0.00315	1189.05291	1.00E-03	1189.05291	0.0033
1188.08856	0.00317	1188.08856	0.00102	1188.08856	0.00332
1187.1242	0.00317	1187.1242	0.00104	1187.1242	0.00335
1186.15984	0.00317	1186.15984	0.00106	1186.15984	0.00339
1185.19548	0.00316	1185.19548	0.0011	1185.19548	0.00344
1184.23113	0.00316	1184.23113	0.00116	1184.23113	0.00349
1183.26677	0.00318	1183.26677	0.0012	1183.26677	0.00356
1182.30241	0.00324	1182.30241	0.00125	1182.30241	0.00364
1181.33805	0.00336	1181.33805	0.00135	1181.33805	0.00375
1180.37369	0.00354	1180.37369	0.00153	1180.37369	0.00388
1179.40934	0.00377	1179.40934	0.00178	1179.40934	0.00404
1178.44498	0.00405	1178.44498	0.00206	1178.44498	0.00422
1177.48062	0.00436	1177.48062	0.00234	1177.48062	0.00441
1176.51626	0.00471	1176.51626	0.00261	1176.51626	0.00462
1175.55191	0.00511	1175.55191	0.00292	1175.55191	0.00482
1174.58755	0.00555	1174.58755	0.00328	1174.58755	0.00501

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1173.62319	0.006	1173.62319	0.00367	1173.62319	0.00518
1172.65883	0.00641	1172.65883	0.00403	1172.65883	0.00535
1171.69448	0.00674	1171.69448	0.00433	1171.69448	0.00554
1170.73012	0.00697	1170.73012	0.00456	1170.73012	0.00572
1169.76576	0.00705	1169.76576	0.00467	1169.76576	0.00586
1168.8014	0.00698	1168.8014	0.00461	1168.8014	0.00594
1167.83705	0.0068	1167.83705	0.00441	1167.83705	0.00593
1166.87269	0.00654	1166.87269	0.00409	1166.87269	0.00584
1165.90833	0.00623	1165.90833	0.00369	1165.90833	0.00569
1164.94397	0.00592	1164.94397	0.00332	1164.94397	0.00556
1163.97962	0.00563	1163.97962	0.00307	1163.97962	0.00547
1163.01526	0.00539	1163.01526	0.00291	1163.01526	0.00542
1162.0509	0.00523	1162.0509	0.00281	1162.0509	0.00542
1161.08654	0.00518	1161.08654	0.00277	1161.08654	0.00545
1160.12219	0.0053	1160.12219	0.00283	1160.12219	0.00552
1159.15783	0.00563	1159.15783	0.00303	1159.15783	0.00565
1158.19347	0.0062	1158.19347	0.00348	1158.19347	0.00586
1157.22911	0.00698	1157.22911	0.00424	1157.22911	0.00616
1156.26475	0.0079	1156.26475	0.0052	1156.26475	0.00654
1155.3004	0.00884	1155.3004	0.00615	1155.3004	0.00695
1154.33604	0.00968	1154.33604	0.00691	1154.33604	0.00733
1153.37168	0.01031	1153.37168	0.00744	1153.37168	0.0076
1152.40732	0.01066	1152.40732	0.00772	1152.40732	0.00773
1151.44297	0.01073	1151.44297	0.00773	1151.44297	0.00769
1150.47861	0.01055	1150.47861	0.00748	1150.47861	0.00748
1149.51425	0.01016	1149.51425	0.00704	1149.51425	0.00712
1148.54989	0.00962	1148.54989	0.00649	1148.54989	0.00661
1147.58554	0.00898	1147.58554	0.00587	1147.58554	0.00597
1146.62118	0.00827	1146.62118	0.00524	1146.62118	0.00522
1145.65682	0.00757	1145.65682	0.00464	1145.65682	0.00441
1144.69246	0.00691	1144.69246	0.00408	1144.69246	0.00359
1143.72811	0.00634	1143.72811	0.00358	1143.72811	0.00276
1142.76375	0.00588	1142.76375	0.00317	1142.76375	0.00193
1141.79939	0.00553	1141.79939	0.00285	1141.79939	0.00117
1140.83503	0.00525	1140.83503	0.00258	1140.83503	5.70E-04
1139.87068	0.00501	1139.87068	0.00235	1139.87068	2.30E-04
1138.90632	0.00482	1138.90632	0.0022	1138.90632	1.60E-04
1137.94196	0.00467	1137.94196	0.00213	1137.94196	3.50E-04
1136.9776	0.00459	1136.9776	0.00208	1136.9776	7.10E-04
1136.01325	0.00457	1136.01325	0.00202	1136.01325	0.00113
1135.04889	0.0046	1135.04889	0.00196	1135.04889	0.00151

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1134.08453	0.00464	1134.08453	0.00196	1134.08453	0.00185
1133.12017	0.00464	1133.12017	0.002	1133.12017	0.00215
1132.15582	0.00462	1132.15582	0.002	1132.15582	0.00245
1131.19146	0.00459	1131.19146	0.00195	1131.19146	0.00272
1130.2271	0.00459	1130.2271	0.00192	1130.2271	0.00295
1129.26274	0.00462	1129.26274	0.00199	1129.26274	0.00319
1128.29838	0.00467	1128.29838	0.00206	1128.29838	0.00348
1127.33403	0.00472	1127.33403	0.00206	1127.33403	0.00383
1126.36967	0.00475	1126.36967	0.00201	1126.36967	0.00422
1125.40531	0.00477	1125.40531	0.002	1125.40531	0.00462
1124.44095	0.00481	1124.44095	0.00206	1124.44095	0.005
1123.4766	0.00487	1123.4766	0.00208	1123.4766	0.00533
1122.51224	0.00495	1122.51224	0.00204	1122.51224	0.0056
1121.54788	0.00502	1121.54788	0.00203	1121.54788	0.00585
1120.58352	0.00509	1120.58352	0.0021	1120.58352	0.00609
1119.61917	0.00515	1119.61917	0.00221	1119.61917	0.00631
1118.65481	0.00522	1118.65481	0.00228	1118.65481	0.00649
1117.69045	0.00535	1117.69045	0.00239	1117.69045	0.00665
1116.72609	0.00555	1116.72609	0.00262	1116.72609	0.0068
1115.76174	0.00586	1115.76174	0.00291	1115.76174	0.00697
1114.79738	0.00625	1114.79738	0.00318	1114.79738	0.00715
1113.83302	0.00673	1113.83302	0.00347	1113.83302	0.00736
1112.86866	0.00729	1112.86866	0.00387	1112.86866	0.0076
1111.90431	0.0079	1111.90431	0.00442	1111.90431	0.00784
1110.93995	0.00854	1110.93995	0.00507	1110.93995	0.00806
1109.97559	0.00913	1109.97559	0.00568	1109.97559	0.00827
1109.01123	0.00963	1109.01123	0.00614	1109.01123	0.00845
1108.04688	0.01001	1108.04688	0.00648	1108.04688	0.00857
1107.08252	0.01022	1107.08252	0.00669	1107.08252	0.00862
1106.11816	0.01023	1106.11816	0.00671	1106.11816	0.00858
1105.1538	0.01005	1105.1538	0.00646	1105.1538	0.00846
1104.18944	0.00973	1104.18944	0.00603	1104.18944	0.00828
1103.22509	0.00933	1103.22509	0.00556	1103.22509	0.00808
1102.26073	0.0089	1102.26073	0.0051	1102.26073	0.00787
1101.29637	0.00846	1101.29637	0.00468	1101.29637	0.00765
1100.33201	0.00803	1100.33201	0.00427	1100.33201	0.00741
1099.36766	0.00763	1099.36766	0.00383	1099.36766	0.00715
1098.4033	0.00724	1098.4033	0.00335	1098.4033	0.00689
1097.43894	0.00687	1097.43894	0.00296	1097.43894	0.00665
1096.47458	0.00656	1096.47458	0.00272	1096.47458	0.00645
1095.51023	0.00632	1095.51023	0.00257	1095.51023	0.00631

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1094.54587	0.00614	1094.54587	0.00241	1094.54587	0.00618
1093.58151	0.00596	1093.58151	0.00226	1093.58151	0.00604
1092.61715	0.00579	1092.61715	0.00215	1092.61715	0.00587
1091.6528	0.00564	1091.6528	0.00205	1091.6528	0.00569
1090.68844	0.00552	1090.68844	0.00197	1090.68844	0.00551
1089.72408	0.00544	1089.72408	0.0019	1089.72408	0.00536
1088.75972	0.00541	1088.75972	0.00181	1088.75972	0.00526
1087.79537	0.00542	1087.79537	0.00174	1087.79537	0.00519
1086.83101	0.00546	1086.83101	0.00171	1086.83101	0.00515
1085.86665	0.00552	1085.86665	0.00173	1085.86665	0.00512
1084.90229	0.0056	1084.90229	0.0018	1084.90229	0.0051
1083.93794	0.00567	1083.93794	0.00188	1083.93794	0.00508
1082.97358	0.00573	1082.97358	0.00196	1082.97358	0.00506
1082.00922	0.00574	1082.00922	0.00204	1082.00922	0.00504
1081.04486	0.00569	1081.04486	0.00209	1081.04486	0.00499
1080.08051	0.0056	1080.08051	0.00202	1080.08051	0.00489
1079.11615	0.00546	1079.11615	0.00191	1079.11615	0.00475
1078.15179	0.00533	1078.15179	0.00182	1078.15179	0.00458
1077.18743	0.00522	1077.18743	0.00175	1077.18743	0.00441
1076.22307	0.00512	1076.22307	0.00169	1076.22307	0.00426
1075.25872	0.00501	1075.25872	0.00165	1075.25872	0.00416
1074.29436	0.0049	1074.29436	0.0016	1074.29436	0.00407
1073.33	0.00476	1073.33	0.00149	1073.33	0.00398
1072.36564	0.00457	1072.36564	0.0013	1072.36564	0.00387
1071.40129	0.00434	1071.40129	0.00112	1071.40129	0.00374
1070.43693	0.00409	1070.43693	9.90E-04	1070.43693	0.00361
1069.47257	0.00383	1069.47257	8.90E-04	1069.47257	0.00348
1068.50821	0.00359	1068.50821	8.00E-04	1068.50821	0.00335
1067.54386	0.00338	1067.54386	6.90E-04	1067.54386	0.00322
1066.5795	0.0032	1066.5795	6.00E-04	1066.5795	0.00308
1065.61514	0.00306	1065.61514	5.50E-04	1065.61514	0.00293
1064.65078	0.00295	1064.65078	5.10E-04	1064.65078	0.00279
1063.68643	0.00286	1063.68643	4.50E-04	1063.68643	0.00267
1062.72207	0.00278	1062.72207	4.00E-04	1062.72207	0.00258
1061.75771	0.00269	1061.75771	3.80E-04	1061.75771	0.00251
1060.79335	0.0026	1060.79335	3.90E-04	1060.79335	0.00244
1059.829	0.00252	1059.829	4.00E-04	1059.829	0.00237
1058.86464	0.00244	1058.86464	3.80E-04	1058.86464	0.0023
1057.90028	0.00237	1057.90028	3.40E-04	1057.90028	0.00221
1056.93592	0.00229	1056.93592	3.10E-04	1056.93592	0.00211
1055.97157	0.00221	1055.97157	3.10E-04	1055.97157	0.00201



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1055.00721	0.0021	1055.00721	3.30E-04	1055.00721	0.00193
1054.04285	0.00198	1054.04285	3.10E-04	1054.04285	0.00188
1053.07849	0.00187	1053.07849	2.40E-04	1053.07849	0.00184
1052.11413	0.00178	1052.11413	1.80E-04	1052.11413	0.0018
1051.14978	0.00171	1051.14978	1.40E-04	1051.14978	0.00176
1050.18542	0.00166	1050.18542	1.50E-04	1050.18542	0.0017
1049.22106	0.00162	1049.22106	1.80E-04	1049.22106	0.00163
1048.2567	0.00156	1048.2567	2.00E-04	1048.2567	0.00156
1047.29235	0.00147	1047.29235	1.70E-04	1047.29235	0.00149
1046.32799	0.00138	1046.32799	1.10E-04	1046.32799	0.00143
1045.36363	0.0013	1045.36363	8.00E-05	1045.36363	0.00138
1044.39927	0.00123	1044.39927	1.00E-04	1044.39927	0.00133
1043.43492	0.00116	1043.43492	1.20E-04	1043.43492	0.00129
1042.47056	0.00111	1042.47056	1.50E-04	1042.47056	0.00126
1041.5062	0.00107	1041.5062	1.70E-04	1041.5062	0.00124
1040.54184	0.00102	1040.54184	2.00E-04	1040.54184	0.00122
1039.57749	9.40E-04	1039.57749	2.10E-04	1039.57749	0.0012
1038.61313	8.70E-04	1038.61313	2.00E-04	1038.61313	0.00119
1037.64877	8.10E-04	1037.64877	1.80E-04	1037.64877	0.00116
1036.68441	7.50E-04	1036.68441	1.80E-04	1036.68441	0.00111
1035.72006	6.80E-04	1035.72006	1.80E-04	1035.72006	0.00105
1034.7557	6.30E-04	1034.7557	1.60E-04	1034.7557	0.00101
1033.79134	6.10E-04	1033.79134	1.30E-04	1033.79134	9.90E-04
1032.82698	5.90E-04	1032.82698	1.00E-04	1032.82698	9.90E-04
1031.86263	5.30E-04	1031.86263	1.00E-04	1031.86263	9.90E-04
1030.89827	4.40E-04	1030.89827	7.00E-05	1030.89827	1.00E-03
1029.93391	3.60E-04	1029.93391	2.00E-05	1029.93391	0.00101
1028.96955	2.70E-04	1028.96955	0	1028.96955	9.90E-04
1028.0052	1.80E-04	1028.0052	1.00E-05	1028.0052	9.50E-04
1027.04084	1.10E-04	1027.04084	1.00E-05	1027.04084	9.30E-04
1026.07648	8.00E-05	1026.07648	1.00E-05	1026.07648	9.30E-04
1025.11212	5.00E-05	1025.11212	2.00E-05	1025.11212	9.30E-04
1024.14776	1.00E-05	1024.14776	3.00E-05	1024.14776	9.50E-04
1023.18341	0	1023.18341	2.00E-05	1023.18341	9.80E-04
1022.21905	4.00E-05	1022.21905	5.00E-05	1022.21905	0.00101
1021.25469	1.40E-04	1021.25469	1.60E-04	1021.25469	0.00105
1020.29033	2.90E-04	1020.29033	3.60E-04	1020.29033	0.00112
1019.32598	5.10E-04	1019.32598	6.10E-04	1019.32598	0.00124
1018.36162	7.90E-04	1018.36162	8.80E-04	1018.36162	0.00139
1017.39726	0.00111	1017.39726	0.00117	1017.39726	0.00156
1016.4329	0.00142	1016.4329	0.00146	1016.4329	0.00175

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1015.46855	0.00166	1015.46855	0.0017	1015.46855	0.00192
1014.50419	0.00178	1014.50419	0.00184	1014.50419	0.00205
1013.53983	0.00175	1013.53983	0.00179	1013.53983	0.00213
1012.57547	0.00157	1012.57547	0.00158	1012.57547	0.00217
1011.61112	0.00133	1011.61112	0.00131	1011.61112	0.00215
1010.64676	0.00106	1010.64676	0.00111	1010.64676	0.00209
1009.6824	8.20E-04	1009.6824	9.40E-04	1009.6824	0.00203
1008.71804	5.90E-04	1008.71804	7.40E-04	1008.71804	0.00198
1007.75369	3.90E-04	1007.75369	5.60E-04	1007.75369	0.00195
1006.78933	2.00E-04	1006.78933	4.00E-04	1006.78933	0.00195
1005.82497	5.00E-05	1005.82497	2.90E-04	1005.82497	0.00198
1004.86061	-5.00E-05	1004.86061	3.00E-04	1004.86061	0.00206
1003.89626	-1.00E-04	1003.89626	3.40E-04	1003.89626	0.00217
1002.9319	-1.30E-04	1002.9319	3.30E-04	1002.9319	0.00228
1001.96754	-1.60E-04	1001.96754	2.70E-04	1001.96754	0.00241
1001.00318	-2.00E-04	1001.00318	1.90E-04	1001.00318	0.00253
1000.03882	-2.30E-04	1000.03882	1.50E-04	1000.03882	0.00263
999.07447	-2.10E-04	999.07447	2.10E-04	999.07447	0.0027
998.11011	-1.60E-04	998.11011	2.70E-04	998.11011	0.00281
997.14575	-9.00E-05	997.14575	3.00E-04	997.14575	0.00296
996.18139	0	996.18139	3.40E-04	996.18139	0.00316
995.21704	7.00E-05	995.21704	4.30E-04	995.21704	0.00338
994.25268	1.50E-04	994.25268	5.00E-04	994.25268	0.00363
993.28832	2.50E-04	993.28832	5.70E-04	993.28832	0.00386
992.32396	3.90E-04	992.32396	6.80E-04	992.32396	0.00407
991.35961	5.30E-04	991.35961	7.60E-04	991.35961	0.00425
990.39525	6.40E-04	990.39525	7.80E-04	990.39525	0.00442
989.43089	7.10E-04	989.43089	8.00E-04	989.43089	0.00462
988.46653	7.30E-04	988.46653	8.70E-04	988.46653	0.00485
987.50218	7.60E-04	987.50218	9.00E-04	987.50218	0.00511
986.53782	8.30E-04	986.53782	8.70E-04	986.53782	0.00539
985.57346	9.40E-04	985.57346	9.20E-04	985.57346	0.00568
984.6091	0.00107	984.6091	0.00112	984.6091	0.00601
983.64475	0.0012	983.64475	0.0013	983.64475	0.00639
982.68039	0.00133	982.68039	0.00144	982.68039	0.00681
981.71603	0.00145	981.71603	0.00159	981.71603	0.00725
980.75167	0.00155	980.75167	0.00167	980.75167	0.00769
979.78732	0.00166	979.78732	0.00177	979.78732	0.00805
978.82296	0.0018	978.82296	0.00194	978.82296	0.00832
977.8586	0.00194	977.8586	0.00204	977.8586	0.00851
976.89424	0.00205	976.89424	0.00205	976.89424	0.00869

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
975.92988	0.00216	975.92988	0.00213	975.92988	0.00886
974.96553	0.00231	974.96553	0.00226	974.96553	0.00907
974.00117	0.00251	974.00117	0.00229	974.00117	0.00935
973.03681	0.00271	973.03681	0.0023	973.03681	0.00966
972.07245	0.00292	972.07245	0.00236	972.07245	0.00992
971.1081	0.00309	971.1081	0.00243	971.1081	0.01009
970.14374	0.00316	970.14374	0.00254	970.14374	0.01021
969.17938	0.00314	969.17938	0.00262	969.17938	0.01031
968.21502	0.00312	968.21502	0.00264	968.21502	0.01042
967.25067	0.00316	967.25067	0.00263	967.25067	0.01058
966.28631	0.00321	966.28631	0.00259	966.28631	0.0108
965.32195	0.00325	965.32195	0.0026	965.32195	0.01101
964.35759	0.00331	964.35759	0.00273	964.35759	0.01114
963.39324	0.00335	963.39324	0.00285	963.39324	0.01118
962.42888	0.00333	962.42888	0.00286	962.42888	0.01114
961.46452	0.00329	961.46452	0.00286	961.46452	0.01105
960.50016	0.0033	960.50016	0.00296	960.50016	0.01096
959.53581	0.00331	959.53581	0.00301	959.53581	0.01092
958.57145	0.00324	958.57145	0.00293	958.57145	0.01088
957.60709	0.00311	957.60709	0.00289	957.60709	0.01082
956.64273	0.00299	956.64273	0.00286	956.64273	0.01079
955.67838	0.00291	955.67838	0.00268	955.67838	0.01078
954.71402	0.00285	954.71402	0.00248	954.71402	0.0107
953.74966	0.00286	953.74966	0.00257	953.74966	0.01053
952.7853	0.00293	952.7853	0.00289	952.7853	0.01029
951.82095	0.00301	951.82095	0.00303	951.82095	0.01007
950.85659	0.00301	950.85659	0.00292	950.85659	0.00987
949.89223	0.00294	949.89223	0.00284	949.89223	0.00974
948.92787	0.00285	948.92787	0.00283	948.92787	0.00971
947.96351	0.00278	947.96351	0.00272	947.96351	0.00971
946.99916	0.00272	946.99916	0.00257	946.99916	0.00967
946.0348	0.00266	946.0348	0.00249	946.0348	0.00959
945.07044	0.00263	945.07044	0.00251	945.07044	0.00954
944.10608	0.00263	944.10608	0.00248	944.10608	0.00955
943.14173	0.00263	943.14173	0.00236	943.14173	0.00963
942.17737	0.00264	942.17737	0.00226	942.17737	0.00973
941.21301	0.00273	941.21301	0.00225	941.21301	0.00981
940.24865	0.00289	940.24865	0.0023	940.24865	0.00984
939.2843	0.00304	939.2843	0.00238	939.2843	0.00988
938.31994	0.00316	938.31994	0.00247	938.31994	0.00997
937.35558	0.00329	937.35558	0.00255	937.35558	0.01013

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
936.39122	0.00343	936.39122	0.00265	936.39122	0.01033
935.42687	0.00356	935.42687	0.00279	935.42687	0.01055
934.46251	0.00366	934.46251	0.00306	934.46251	0.01074
933.49815	0.00375	933.49815	0.00336	933.49815	0.01094
932.53379	0.00383	932.53379	0.00336	932.53379	0.01119
931.56944	0.00385	931.56944	0.00313	931.56944	0.0115
930.60508	0.00385	930.60508	0.00311	930.60508	0.01187
929.64072	0.00393	929.64072	0.00331	929.64072	0.01227
928.67636	0.00407	928.67636	0.00358	928.67636	0.01268
927.71201	0.00423	927.71201	0.00381	927.71201	0.01306
926.74765	0.00441	926.74765	0.00391	926.74765	0.01343
925.78329	0.00459	925.78329	0.00405	925.78329	0.01381
924.81893	0.00478	924.81893	0.00424	924.81893	0.01423
923.85457	0.00495	923.85457	0.00431	923.85457	0.0147
922.89022	0.0051	922.89022	0.00443	922.89022	0.01517
921.92586	0.00524	921.92586	0.00471	921.92586	0.01558
920.9615	0.0054	920.9615	0.00497	920.9615	0.01597
919.99714	0.00557	919.99714	0.00508	919.99714	0.0164
919.03279	0.00576	919.03279	0.00521	919.03279	0.01683
918.06843	0.00592	918.06843	0.00559	918.06843	0.01727
917.10407	0.00607	917.10407	0.00602	917.10407	0.01787
916.13971	0.00626	916.13971	0.00621	916.13971	0.01869
915.17536	0.0065	915.17536	0.00621	915.17536	0.01961
914.211	0.00676	914.211	0.00621	914.211	0.02053
913.24664	0.00702	913.24664	0.00648	913.24664	0.02147
912.28228	0.00729	912.28228	0.00692	912.28228	0.02244
911.31793	0.00761	911.31793	0.00703	911.31793	0.02336
910.35357	0.00795	910.35357	0.00689	910.35357	0.02413
909.38921	0.00827	909.38921	0.00698	909.38921	0.02474
908.42485	0.00858	908.42485	0.00728	908.42485	0.0252
907.4605	0.0089	907.4605	0.00746	907.4605	0.02545
906.49614	0.00913	906.49614	0.00748	906.49614	0.02556
905.53178	0.00916	905.53178	0.00745	905.53178	0.02573
904.56742	0.00906	904.56742	0.00753	904.56742	0.02612
903.60307	0.00903	903.60307	0.00764	903.60307	0.02662
902.63871	0.00919	902.63871	0.00746	902.63871	0.02705
901.67435	0.00951	901.67435	0.00709	901.67435	0.0273
900.70999	0.00995	900.70999	0.00699	900.70999	0.02742
899.74564	0.01042	899.74564	0.00721	899.74564	0.02753
898.78128	0.01071	898.78128	0.00738	898.78128	0.0278
897.81692	0.01068	897.81692	0.00758	897.81692	0.0283

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
896.85256	0.01037	896.85256	0.00795	896.85256	0.02896
895.8882	0.00994	895.8882	0.00815	895.8882	0.02957
894.92385	0.00963	894.92385	0.00795	894.92385	0.02992
893.95949	0.00958	893.95949	0.00778	893.95949	0.02993
892.99513	0.00975	892.99513	0.0079	892.99513	0.02975
892.03077	0.00992	892.03077	0.00792	892.03077	0.02963
891.06642	0.00994	891.06642	0.00781	891.06642	0.02969
890.10206	0.00983	890.10206	0.0081	890.10206	0.02981
889.1377	0.00963	889.1377	0.00883	889.1377	0.0299
888.17334	0.00943	888.17334	0.00949	888.17334	0.02997
887.20899	0.00936	887.20899	0.00971	887.20899	0.02998
886.24463	0.0095	886.24463	0.00966	886.24463	0.02985
885.28027	0.00978	885.28027	0.00952	885.28027	0.02957
884.31591	0.0101	884.31591	0.00936	884.31591	0.02915
883.35156	0.01034	883.35156	0.00926	883.35156	0.02874
882.3872	0.0105	882.3872	0.0092	882.3872	0.0284
881.42284	0.01061	881.42284	0.00896	881.42284	0.02822
880.45848	0.01068	880.45848	0.00871	880.45848	0.02826
879.49413	0.01077	879.49413	0.00877	879.49413	0.02849
878.52977	0.01087	878.52977	0.00883	878.52977	0.02877
877.56541	0.0109	877.56541	0.00861	877.56541	0.02892
876.60105	0.01092	876.60105	0.00855	876.60105	0.02884
875.6367	0.01093	875.6367	0.00893	875.6367	0.02858
874.67234	0.01088	874.67234	0.00942	874.67234	0.02826
873.70798	0.01072	873.70798	0.00973	873.70798	0.02792
872.74362	0.01052	872.74362	0.00983	872.74362	0.02759
871.77926	0.01035	871.77926	0.00967	871.77926	0.02724
870.81491	0.01013	870.81491	0.00929	870.81491	0.02695
869.85055	0.0098	869.85055	0.00906	869.85055	0.02672
868.88619	0.00948	868.88619	0.00909	868.88619	0.02644
867.92183	0.00924	867.92183	0.00891	867.92183	0.02608
866.95748	0.00909	866.95748	0.00834	866.95748	0.02569
865.99312	0.00899	865.99312	0.00783	865.99312	0.02529
865.02876	0.0089	865.02876	0.00766	865.02876	0.02488
864.0644	0.00884	864.0644	0.00763	864.0644	0.02442
863.10005	0.00876	863.10005	0.0076	863.10005	0.02393
862.13569	0.0085	862.13569	0.00781	862.13569	0.02335
861.17133	0.00807	861.17133	0.00807	861.17133	0.02261
860.20697	0.00765	860.20697	0.00773	860.20697	0.0217
859.24262	0.00735	859.24262	0.00698	859.24262	0.02069
858.27826	0.00709	858.27826	0.00646	858.27826	0.01969

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
857.3139	0.00695	857.3139	0.00631	857.3139	0.01885
856.34954	0.00698	856.34954	0.00639	856.34954	0.01825
855.38519	0.00701	855.38519	0.00654	855.38519	0.01784
854.42083	0.00694	854.42083	0.00661	854.42083	0.01751
853.45647	0.00692	853.45647	0.00637	853.45647	0.01718
852.49211	0.00695	852.49211	0.00579	852.49211	0.01679
851.52776	0.00687	851.52776	0.00526	851.52776	0.01633
850.5634	0.00676	850.5634	0.00525	850.5634	0.01587
849.59904	0.00663	849.59904	0.00547	849.59904	0.01549
848.63468	0.00636	848.63468	0.00535	848.63468	0.01521
847.67032	0.00597	847.67032	0.00491	847.67032	0.01491
846.70597	0.00562	846.70597	0.00458	846.70597	0.01449
845.74161	0.00541	845.74161	0.00458	845.74161	0.01394
844.77725	0.00532	844.77725	0.00469	844.77725	0.01337
843.81289	0.00531	843.81289	0.00456	843.81289	0.01291
842.84854	0.00538	842.84854	0.00433	842.84854	0.01257
841.88418	0.00549	841.88418	0.00436	841.88418	0.01228
840.91982	0.00564	840.91982	0.00467	840.91982	0.01207
839.95546	0.00587	839.95546	0.00502	839.95546	0.012
838.99111	0.00614	838.99111	0.00523	838.99111	0.01204
838.02675	0.00639	838.02675	0.00523	838.02675	0.01217
837.06239	0.0066	837.06239	0.00529	837.06239	0.0125
836.09803	0.00672	836.09803	0.00571	836.09803	0.013
835.13368	0.00675	835.13368	0.00623	835.13368	0.01349
834.16932	0.00676	834.16932	0.00656	834.16932	0.01386
833.20496	0.00682	833.20496	0.00675	833.20496	0.0142
832.2406	0.00694	832.2406	0.00673	832.2406	0.01467
831.27625	0.00706	831.27625	0.00636	831.27625	0.01532
830.31189	0.00715	830.31189	0.00593	830.31189	0.01613
829.34753	0.00725	829.34753	0.00581	829.34753	0.01706
828.38317	0.00738	828.38317	0.00595	828.38317	0.01806
827.41882	0.00749	827.41882	0.00614	827.41882	0.0191
826.45446	0.0076	826.45446	0.00638	826.45446	0.02016
825.4901	0.00772	825.4901	0.00695	825.4901	0.0212
824.52574	0.00783	824.52574	0.00764	824.52574	0.02215
823.56139	0.00792	823.56139	0.00778	823.56139	0.02295
822.59703	0.00799	822.59703	0.00756	822.59703	0.02359
821.63267	0.00802	821.63267	0.00738	821.63267	0.02407
820.66831	0.008	820.66831	0.00708	820.66831	0.02444
819.70395	0.00804	819.70395	0.00728	819.70395	0.02477
818.7396	0.00824	818.7396	0.00827	818.7396	0.02507

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
817.77524	0.00852	817.77524	0.00873	817.77524	0.02522
816.81088	0.00877	816.81088	0.00811	816.81088	0.02504
815.84652	0.00888	815.84652	0.00721	815.84652	0.02464
814.88217	0.00877	814.88217	0.0066	814.88217	0.02424
813.91781	0.00845	813.91781	0.00642	813.91781	0.02386
812.95345	0.00812	812.95345	0.00653	812.95345	0.0234
811.98909	0.00793	811.98909	0.00642	811.98909	0.02293
811.02474	0.00784	811.02474	0.00618	811.02474	0.02249
810.06038	0.00774	810.06038	0.00614	810.06038	0.02198
809.09602	0.00761	809.09602	0.00608	809.09602	0.02126
808.13166	0.0074	808.13166	0.00584	808.13166	0.02038
807.16731	0.00696	807.16731	0.0056	807.16731	0.01951
806.20295	0.00636	806.20295	0.00526	806.20295	0.01868
805.23859	0.00584	805.23859	0.00487	805.23859	0.01784
804.27423	0.00542	804.27423	0.00446	804.27423	0.01702
803.30988	0.00495	803.30988	0.0039	803.30988	0.01626
802.34552	0.00453	802.34552	0.00346	802.34552	0.01556
801.38116	0.00437	801.38116	0.00344	801.38116	0.01495
800.4168	0.00448	800.4168	0.00373	800.4168	0.01467
799.45245	0.00467	799.45245	0.00404	799.45245	0.01492
798.48809	0.00499	798.48809	0.00424	798.48809	0.01572
797.52373	0.00554	797.52373	0.00455	797.52373	0.01697
796.55937	0.0061	796.55937	0.00509	796.55937	0.01844
795.59501	0.00644	795.59501	0.00548	795.59501	0.01985
794.63066	0.00663	794.63066	0.00551	794.63066	0.02091
793.6663	0.00682	793.6663	0.00554	793.6663	0.02155
792.70194	0.00695	792.70194	0.00591	792.70194	0.02191
791.73758	0.00697	791.73758	0.00648	791.73758	0.02214
790.77323	0.00698	790.77323	0.00689	790.77323	0.02236
789.80887	0.00711	789.80887	0.00681	789.80887	0.02259
788.84451	0.00729	788.84451	0.00635	788.84451	0.02276
787.88015	0.00747	787.88015	0.00619	787.88015	0.02283
786.9158	0.00768	786.9158	0.00647	786.9158	0.02285
785.95144	0.00786	785.95144	0.00678	785.95144	0.02287
784.98708	0.00791	784.98708	0.00693	784.98708	0.02307
784.02272	0.00786	784.02272	0.00665	784.02272	0.02347
783.05837	0.00778	783.05837	0.00613	783.05837	0.02394
782.09401	0.00766	782.09401	0.0061	782.09401	0.02422
781.12965	0.00754	781.12965	0.00664	781.12965	0.02423
780.16529	0.00748	780.16529	0.00728	780.16529	0.02409
779.20094	0.00754	779.20094	0.00769	779.20094	0.02393

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
778.23658	0.00763	778.23658	0.00762	778.23658	0.02383
777.27222	0.00774	777.27222	0.00722	777.27222	0.02392
776.30786	0.0079	776.30786	0.00694	776.30786	0.02411
775.34351	0.00803	775.34351	0.00713	775.34351	0.02423
774.37915	0.00806	774.37915	0.00767	774.37915	0.02432
773.41479	0.00804	773.41479	0.00776	773.41479	0.02458
772.45043	0.00801	772.45043	0.00728	772.45043	0.02499
771.48608	0.00803	771.48608	0.0071	771.48608	0.02536
770.52172	0.00809	770.52172	0.00742	770.52172	0.02552
769.55736	0.00813	769.55736	0.00755	769.55736	0.02553
768.593	0.00814	768.593	0.00726	768.593	0.02545
767.62864	0.0082	767.62864	0.00684	767.62864	0.02535
766.66429	0.00839	766.66429	0.00689	766.66429	0.0254
765.69993	0.00866	765.69993	0.00772	765.69993	0.0257
764.73557	0.00893	764.73557	0.00845	764.73557	0.02608
763.77121	0.00917	763.77121	0.00833	763.77121	0.0264
762.80686	0.00935	762.80686	0.0078	762.80686	0.02667
761.8425	0.00951	761.8425	0.00713	761.8425	0.02694
760.87814	0.0097	760.87814	0.00683	760.87814	0.02721
759.91378	0.00986	759.91378	0.00763	759.91378	0.0275
758.94943	0.00995	758.94943	0.00866	758.94943	0.02782
757.98507	0.01003	757.98507	0.00871	757.98507	0.02817
757.02071	0.01012	757.02071	0.00818	757.02071	0.02853
756.05635	0.01015	756.05635	0.00779	756.05635	0.02898
755.092	0.01017	755.092	0.00795	755.092	0.0295
754.12764	0.01037	754.12764	0.00853	754.12764	0.02995
753.16328	0.01075	753.16328	0.009	753.16328	0.03031
752.19892	0.01116	752.19892	0.0093	752.19892	0.03068
751.23457	0.01147	751.23457	0.00955	751.23457	0.03111
750.27021	0.01167	750.27021	0.00976	750.27021	0.03159
749.30585	0.01175	749.30585	0.00998	749.30585	0.03212
748.34149	0.0117	748.34149	0.01034	748.34149	0.03269
747.37714	0.01161	747.37714	0.01084	747.37714	0.03324
746.41278	0.01161	746.41278	0.01086	746.41278	0.03373
745.44842	0.01175	745.44842	0.01021	745.44842	0.03425
744.48406	0.01206	744.48406	0.00976	744.48406	0.03497
743.5197	0.01251	743.5197	0.00996	743.5197	0.03593
742.55535	0.013	742.55535	0.01049	742.55535	0.03706
741.59099	0.01345	741.59099	0.01097	741.59099	0.03813
740.62663	0.0138	740.62663	0.01145	740.62663	0.03896
739.66227	0.01404	739.66227	0.01198	739.66227	0.03958



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
738.69792	0.01418	738.69792	0.01201	738.69792	0.03991
737.73356	0.01428	737.73356	0.01144	737.73356	0.03978
736.7692	0.01434	736.7692	0.01101	736.7692	0.03918
735.80484	0.01434	735.80484	0.01101	735.80484	0.0384
734.84049	0.01421	734.84049	0.01104	734.84049	0.03768
733.87613	0.01395	733.87613	0.01084	733.87613	0.03703
732.91177	0.01355	732.91177	0.01083	732.91177	0.03633
731.94741	0.01308	731.94741	0.01124	731.94741	0.03565
730.98306	0.01258	730.98306	0.01158	730.98306	0.03505
730.0187	0.01208	730.0187	0.01146	730.0187	0.03438
729.05434	0.01164	729.05434	0.01102	729.05434	0.0335
728.08998	0.0113	728.08998	0.01052	728.08998	0.0325
727.12563	0.01102	727.12563	0.01012	727.12563	0.03151
726.16127	0.01081	726.16127	0.00978	726.16127	0.03042
725.19691	0.01069	725.19691	0.00947	725.19691	0.02915
724.23255	0.01057	724.23255	0.00912	724.23255	0.02786
723.2682	0.01031	723.2682	0.00889	723.2682	0.02675
722.30384	0.00994	722.30384	0.00882	722.30384	0.02571
721.33948	0.00966	721.33948	0.00876	721.33948	0.02467
720.37512	0.00944	720.37512	0.00869	720.37512	0.02362
719.41076	0.00912	719.41076	0.00817	719.41076	0.02245
718.44641	0.0087	718.44641	0.00715	718.44641	0.02103
717.48205	0.00826	717.48205	0.00643	717.48205	0.01935
716.51769	0.00766	716.51769	0.00635	716.51769	0.01748
715.55333	0.00683	715.55333	0.00625	715.55333	0.01537
714.58898	0.0059	714.58898	0.00545	714.58898	0.013
713.62462	0.00498	713.62462	0.00426	713.62462	0.01055
712.66026	0.00406	712.66026	0.00338	712.66026	0.00826
711.6959	0.00316	711.6959	0.00285	711.6959	0.00626
710.73155	0.00238	710.73155	0.00235	710.73155	0.00462
709.76719	0.00178	709.76719	0.00174	709.76719	0.00335
708.80283	0.00127	708.80283	0.00109	708.80283	0.00239
707.83847	8.20E-04	707.83847	6.20E-04	707.83847	0.00167
706.87412	5.00E-04	706.87412	4.50E-04	706.87412	0.00112
705.90976	3.70E-04	705.90976	4.90E-04	705.90976	6.70E-04
704.9454	4.30E-04	704.9454	6.10E-04	704.9454	3.00E-04
703.98104	6.20E-04	703.98104	7.30E-04	703.98104	7.00E-05
703.01669	9.00E-04	703.01669	8.30E-04	703.01669	0
702.05233	0.00121	702.05233	9.80E-04	702.05233	5.00E-05
701.08797	0.00154	701.08797	0.00118	701.08797	1.30E-04
700.12361	0.00189	700.12361	0.00139	700.12361	2.70E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
699.15926	0.00226	699.15926	0.00171	699.15926	5.10E-04
698.1949	0.00264	698.1949	0.00218	698.1949	8.20E-04
697.23054	0.00302	697.23054	0.00268	697.23054	0.00113
696.26618	0.0034	696.26618	0.00308	696.26618	0.00143
695.30183	0.00369	695.30183	0.00343	695.30183	0.00174
694.33747	0.00388	694.33747	0.00372	694.33747	0.00203
693.37311	0.004	693.37311	0.00382	693.37311	0.00226
692.40875	0.00414	692.40875	0.00382	692.40875	0.00246
691.44439	0.00426	691.44439	0.00397	691.44439	0.00267
690.48004	0.00435	690.48004	0.00427	690.48004	0.00283
689.51568	0.00447	689.51568	0.00434	689.51568	0.00285
688.55132	0.00459	688.55132	0.0041	688.55132	0.00273
687.58696	0.00461	687.58696	0.00384	687.58696	0.00255
686.62261	0.00444	686.62261	0.00368	686.62261	0.00232
685.65825	0.0041	685.65825	0.00344	685.65825	0.00204
684.69389	0.00364	684.69389	0.00298	684.69389	0.0017
683.72953	0.00314	683.72953	0.00243	683.72953	0.00137
682.76518	0.00267	682.76518	0.00197	682.76518	0.00104
681.80082	0.00224	681.80082	0.00155	681.80082	7.00E-04
680.83646	0.00185	680.83646	0.00121	680.83646	4.00E-04
679.8721	0.00149	679.8721	1.00E-03	679.8721	1.90E-04
678.90775	0.00117	678.90775	7.80E-04	678.90775	4.00E-05
677.94339	9.00E-04	677.94339	4.70E-04	677.94339	-1.30E-04
676.97903	7.00E-04	676.97903	2.30E-04	676.97903	-3.00E-04
676.01467	6.00E-04	676.01467	1.30E-04	676.01467	-4.00E-04
675.05032	5.70E-04	675.05032	1.30E-04	675.05032	-4.50E-04
674.08596	5.70E-04	674.08596	1.00E-04	674.08596	-4.70E-04
673.1216	5.60E-04	673.1216	2.00E-05	673.1216	-4.20E-04
672.15724	4.90E-04	672.15724	0	672.15724	-2.30E-04
671.19289	3.30E-04	671.19289	3.00E-05	671.19289	-1.30E-04
670.22853	2.30E-04	670.22853	2.80E-04	670.22853	-3.00E-04
669.26417	1.90E-04	669.26417	0.00108	669.26417	-5.20E-04
668.29981	2.00E-04	668.29981	0.00175	668.29981	-6.60E-04
667.33545	2.90E-04	667.33545	5.70E-04	667.33545	-6.50E-04
666.3711	5.00E-04	666.3711	9.00E-05	666.3711	-5.00E-04
665.40674	7.80E-04	665.40674	3.40E-04	665.40674	-2.30E-04
664.44238	9.60E-04	664.44238	6.90E-04	664.44238	1.00E-04
663.47802	9.70E-04	663.47802	7.50E-04	663.47802	2.70E-04
662.51367	9.40E-04	662.51367	5.90E-04	662.51367	2.30E-04
661.54931	9.00E-04	661.54931	5.30E-04	661.54931	2.00E-04
660.58495	8.70E-04	660.58495	6.10E-04	660.58495	2.60E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
659.62059	8.60E-04	659.62059	6.10E-04	659.62059	4.20E-04
658.65624	8.70E-04	658.65624	6.00E-04	658.65624	7.00E-04
657.69188	9.20E-04	657.69188	8.00E-04	657.69188	1.00E-03
656.72752	9.40E-04	656.72752	9.70E-04	656.72752	0.00118
655.76316	9.50E-04	655.76316	8.40E-04	655.76316	0.00121
654.79881	9.90E-04	654.79881	7.00E-04	654.79881	0.00115
653.83445	0.00104	653.83445	8.60E-04	653.83445	1.00E-03
652.87009	0.00106	652.87009	0.00102	652.87009	7.40E-04
651.90573	0.00105	651.90573	9.40E-04	651.90573	4.40E-04
650.94138	9.70E-04	650.94138	7.20E-04	650.94138	2.20E-04
649.97702	7.80E-04	649.97702	4.40E-04	649.97702	1.70E-04
649.01266	5.30E-04	649.01266	1.30E-04	649.01266	2.30E-04
648.0483	3.30E-04	648.0483	0	648.0483	3.70E-04
647.08395	1.90E-04	647.08395	3.80E-04	647.08395	5.70E-04
646.11959	5.00E-05	646.11959	0.0011	646.11959	8.00E-04
645.15523	2.00E-05	645.15523	0.00142	645.15523	9.60E-04
644.19087	2.20E-04	644.19087	0.00118	644.19087	0.0011
643.22652	5.70E-04	643.22652	0.00109	643.22652	0.00136
642.26216	9.80E-04	642.26216	0.00147	642.26216	0.0018
641.2978	0.00139	641.2978	0.00193	641.2978	0.00236
640.33344	0.00172	640.33344	0.00222	640.33344	0.003
639.36908	0.00187	639.36908	0.00252	639.36908	0.00366
638.40473	0.00188	638.40473	0.00285	638.40473	0.00422
637.44037	0.0019	637.44037	0.00298	637.44037	0.00458
636.47601	0.00203	636.47601	0.00306	636.47601	0.00481
635.51165	0.00219	635.51165	0.00326	635.51165	0.00507
634.5473	0.0023	634.5473	0.00349	634.5473	0.00541
633.58294	0.00253	633.58294	0.00393	633.58294	0.00605
632.61858	0.00314	632.61858	0.0045	632.61858	0.00753
631.65422	0.00421	631.65422	0.00511	631.65422	0.01042
630.68987	0.00574	630.68987	0.00637	630.68987	0.01484
629.72551	0.00789	629.72551	0.00883	629.72551	0.02034
628.76115	0.01041	628.76115	0.01183	628.76115	0.02618
627.79679	0.01255	627.79679	0.01366	627.79679	0.03153
626.83244	0.01388	626.83244	0.0142	626.83244	0.03548
625.86808	0.01471	625.86808	0.01475	625.86808	0.03764
624.90372	0.01521	624.90372	0.01489	624.90372	0.03832
623.93936	0.01502	623.93936	0.01428	623.93936	0.03804
622.97501	0.01428	622.97501	0.01393	622.97501	0.03725
622.01065	0.01359	622.01065	0.01408	622.01065	0.03641
621.04629	0.01306	621.04629	0.01388	621.04629	0.03581

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
620.08193	0.01258	620.08193	0.01286	620.08193	0.03547
619.11758	0.01229	619.11758	0.01212	619.11758	0.03534
618.15322	0.01232	618.15322	0.01235	618.15322	0.03547
617.18886	0.01243	617.18886	0.01216	617.18886	0.03588
616.2245	0.01226	616.2245	0.01142	616.2245	0.03622
615.26014	0.01186	615.26014	0.01166	615.26014	0.03617
614.29579	0.0115	614.29579	0.01296	614.29579	0.03584
613.33143	0.01142	613.33143	0.01431	613.33143	0.03531
612.36707	0.01177	612.36707	0.01504	612.36707	0.03462
611.40271	0.01234	611.40271	0.01496	611.40271	0.03397
610.43836	0.01277	610.43836	0.01417	610.43836	0.0337
609.474	0.01301	609.474	0.01333	609.474	0.03386
608.50964	0.01324	608.50964	0.01318	608.50964	0.03414
607.54528	0.01354	607.54528	0.01352	607.54528	0.03424
606.58093	0.01405	606.58093	0.01389	606.58093	0.03416
605.61657	0.01483	605.61657	0.01408	605.61657	0.03398
604.65221	0.01559	604.65221	0.01399	604.65221	0.03382
603.68785	0.01582	603.68785	0.01352	603.68785	0.03375
602.7235	0.01543	602.7235	0.01282	602.7235	0.03379
601.75914	0.0147	601.75914	0.01242	601.75914	0.03391
600.79478	0.01381	600.79478	0.01256	600.79478	0.03398
599.83042	0.01288	599.83042	0.01288	599.83042	0.03397
598.86607	0.01216	598.86607	0.01244	598.86607	0.03394
597.90171	0.01179	597.90171	0.01084	597.90171	0.03387
596.93735	0.0117	596.93735	0.0097	596.93735	0.03371
595.97299	0.01176	595.97299	0.00964	595.97299	0.03347
595.00864	0.01192	595.00864	0.00896	595.00864	0.03319
594.04428	0.01208	594.04428	0.00817	594.04428	0.03295
593.07992	0.01229	593.07992	0.00903	593.07992	0.03257
592.11556	0.01255	592.11556	0.01063	592.11556	0.03173
591.15121	0.01264	591.15121	0.01163	591.15121	0.03055
590.18685	0.0125	590.18685	0.0122	590.18685	0.02949
589.22249	0.01239	589.22249	0.01258	589.22249	0.0288
588.25813	0.01222	588.25813	0.01288	588.25813	0.02842
587.29377	0.01176	587.29377	0.01262	587.29377	0.02829
586.32942	0.01133	586.32942	0.01129	586.32942	0.02818
585.36506	0.01139	585.36506	0.0101	585.36506	0.02764
584.4007	0.01177	584.4007	0.00987	584.4007	0.02643
583.43634	0.01189	583.43634	0.01006	583.43634	0.02511
582.47199	0.01145	582.47199	0.01044	582.47199	0.02442
581.50763	0.01054	581.50763	0.01046	581.50763	0.02438

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
580.54327	0.00951	580.54327	0.00964	580.54327	0.02455
579.57891	0.00882	579.57891	0.00844	579.57891	0.02453
578.61456	0.00867	578.61456	0.00742	578.61456	0.02407
577.6502	0.00878	577.6502	0.00717	577.6502	0.02343
576.68584	0.00887	576.68584	0.00793	576.68584	0.02315
575.72148	0.00889	575.72148	0.00963	575.72148	0.02354
574.75713	0.00901	574.75713	0.01199	574.75713	0.02454
573.79277	0.00939	573.79277	0.01374	573.79277	0.02588
572.82841	0.01	572.82841	0.01423	572.82841	0.02698
571.86405	0.01074	571.86405	0.01391	571.86405	0.02709
570.8997	0.01141	570.8997	0.01321	570.8997	0.02623
569.93534	0.01161	569.93534	0.01274	569.93534	0.02521
568.97098	0.01125	568.97098	0.01304	568.97098	0.02476
568.00662	0.01067	568.00662	0.01316	568.00662	0.02486
567.04227	0.01004	567.04227	0.01208	567.04227	0.02511
566.07791	0.00942	566.07791	0.01106	566.07791	0.02562
565.11355	0.00919	565.11355	0.01107	565.11355	0.02634
564.14919	0.00973	564.14919	0.01133	564.14919	0.02664
563.18483	0.01072	563.18483	0.01074	563.18483	0.02637
562.22048	0.01191	562.22048	0.00956	562.22048	0.02606
561.25612	0.0132	561.25612	0.00969	561.25612	0.02614
560.29176	0.01387	560.29176	0.01051	560.29176	0.02631
559.3274	0.01348	559.3274	0.01055	559.3274	0.02616
558.36305	0.01263	558.36305	0.01072	558.36305	0.02568
557.39869	0.01218	557.39869	0.0109	557.39869	0.02471
556.43433	0.01219	556.43433	0.01055	556.43433	0.02304
555.46997	0.012	555.46997	0.00996	555.46997	0.0212
554.50562	0.01123	554.50562	0.00851	554.50562	0.02003
553.54126	0.00991	553.54126	0.00669	553.54126	0.01969
552.5769	0.00818	552.5769	0.00612	552.5769	0.01989
551.61254	0.00655	551.61254	0.0069	551.61254	0.02035
550.64819	0.00558	550.64819	0.00844	550.64819	0.02052
549.68383	0.00603	549.68383	0.00919	549.68383	0.01963
548.71947	0.0078	548.71947	0.00701	548.71947	0.01767
547.75511	0.00931	547.75511	0.00447	547.75511	0.01547
546.79076	0.00986	546.79076	0.0053	546.79076	0.0136
545.8264	0.01007	545.8264	0.00746	545.8264	0.0127
544.86204	0.01005	544.86204	0.00689	544.86204	0.01336
543.89768	0.00912	543.89768	0.00419	543.89768	0.01502
542.93333	0.00762	542.93333	0.00434	542.93333	0.01658
541.96897	0.00659	541.96897	0.00758	541.96897	0.01748

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
541.00461	0.00581	541.00461	0.00987	541.00461	0.01773
540.04025	0.00454	540.04025	0.01196	540.04025	0.01744
539.07589	0.0034	539.07589	0.01407	539.07589	0.01664
538.11154	0.00345	538.11154	0.01323	538.11154	0.01586
537.14718	0.00475	537.14718	0.00981	537.14718	0.01541
536.18282	0.00662	536.18282	0.00603	536.18282	0.01467
535.21846	0.00827	535.21846	0.00352	535.21846	0.0132
534.25411	0.00919	534.25411	0.00348	534.25411	0.01137
533.28975	0.00915	533.28975	0.00552	533.28975	0.00984
532.32539	0.00774	532.32539	0.00783	532.32539	0.00901
531.36103	0.00513	531.36103	0.00852	531.36103	0.00903
530.39668	0.00285	530.39668	0.00733	530.39668	0.00963
529.43232	0.00216	529.43232	0.00566	529.43232	0.01027
528.46796	0.00256	528.46796	0.00428	528.46796	0.01048
527.5036	0.00297	527.5036	0.00292	527.5036	0.01016
526.53925	0.00326	526.53925	0.00237	526.53925	0.00947
525.57489	0.00369	525.57489	0.00343	525.57489	0.00881
524.61053	0.00384	524.61053	0.00501	524.61053	0.00878
523.64617	0.00347	523.64617	0.00615	523.64617	0.00947
522.68182	0.00323	522.68182	0.00693	522.68182	0.01009
521.71746	0.00345	521.71746	0.00697	521.71746	0.01005
520.7531	0.00353	520.7531	0.00614	520.7531	0.00964
519.78874	0.00286	519.78874	0.0053	519.78874	0.0094
518.82439	0.00195	518.82439	0.00399	518.82439	0.00929
517.86003	0.0015	517.86003	0.0019	517.86003	0.00903
516.89567	0.00123	516.89567	0.0013	516.89567	0.00868
515.93131	8.50E-04	515.93131	0.00214	515.93131	0.00827
514.96696	7.10E-04	514.96696	0.00265	514.96696	0.00754
514.0026	9.20E-04	514.0026	0.00275	514.0026	0.00659
513.03824	0.00112	513.03824	0.00211	513.03824	0.00592
512.07388	0.0012	512.07388	0.0013	512.07388	0.00559
511.10952	0.00136	511.10952	0.00107	511.10952	0.00498
510.14517	0.00147	510.14517	3.10E-04	510.14517	0.00378
509.18081	0.0012	509.18081	0	509.18081	0.00241
508.21645	5.90E-04	508.21645	0.00245	508.21645	0.00141
507.25209	-1.10E-04	507.25209	0.00565	507.25209	0.00102
506.28774	-6.30E-04	506.28774	0.00579	506.28774	0.00114
505.32338	-7.80E-04	505.32338	0.00357	505.32338	0.00149
504.35902	-6.90E-04	504.35902	0.0016	504.35902	0.00168
503.39466	-4.10E-04	503.39466	6.80E-04	503.39466	0.00151
502.43031	-4.10E-04	502.43031	1.00E-03	502.43031	0.00151

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
501.46595	-4.10E-04	501.46595	0.00192	501.46595	0.00151
500.50159	-4.10E-04	500.50159	0.00161	500.50159	0.00151
499.53723	-4.10E-04	499.53723	0	499.53723	0.00151

Figure 5.26

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3998.22658	3.70E-04	3998.22658	-2.00E-05	3998.22658	1.10E-04
3997.26223	5.00E-04	3997.26223	-2.00E-05	3997.26223	1.10E-04
3996.29787	4.60E-04	3996.29787	-2.00E-05	3996.29787	1.10E-04
3995.33351	2.40E-04	3995.33351	-2.00E-05	3995.33351	1.10E-04
3994.36915	4.00E-05	3994.36915	-2.00E-05	3994.36915	1.10E-04
3993.4048	1.60E-04	3993.4048	-1.00E-05	3993.4048	1.10E-04
3992.44044	4.90E-04	3992.44044	-1.00E-05	3992.44044	1.00E-04
3991.47608	6.70E-04	3991.47608	-2.00E-05	3991.47608	9.00E-05
3990.51172	6.10E-04	3990.51172	-2.00E-05	3990.51172	7.00E-05
3989.54737	4.50E-04	3989.54737	-2.00E-05	3989.54737	6.00E-05
3988.58301	3.00E-04	3988.58301	-1.00E-05	3988.58301	7.00E-05
3987.61865	1.70E-04	3987.61865	-1.00E-05	3987.61865	9.00E-05
3986.65429	1.60E-04	3986.65429	0	3986.65429	1.10E-04
3985.68994	3.10E-04	3985.68994	0	3985.68994	1.30E-04
3984.72558	4.10E-04	3984.72558	1.00E-05	3984.72558	1.50E-04
3983.76122	3.60E-04	3983.76122	1.00E-05	3983.76122	1.60E-04
3982.79686	3.00E-04	3982.79686	1.00E-05	3982.79686	1.60E-04
3981.8325	2.90E-04	3981.8325	1.00E-05	3981.8325	1.40E-04
3980.86815	2.00E-04	3980.86815	1.00E-05	3980.86815	1.30E-04
3979.90379	1.30E-04	3979.90379	2.00E-05	3979.90379	1.20E-04
3978.93943	1.10E-04	3978.93943	2.00E-05	3978.93943	1.20E-04
3977.97507	9.00E-05	3977.97507	2.00E-05	3977.97507	1.20E-04
3977.01072	1.30E-04	3977.01072	2.00E-05	3977.01072	1.30E-04
3976.04636	2.30E-04	3976.04636	1.00E-05	3976.04636	1.40E-04
3975.082	2.80E-04	3975.082	1.00E-05	3975.082	1.50E-04
3974.11764	2.90E-04	3974.11764	2.00E-05	3974.11764	1.40E-04
3973.15329	2.40E-04	3973.15329	3.00E-05	3973.15329	1.20E-04
3972.18893	2.40E-04	3972.18893	5.00E-05	3972.18893	1.00E-04
3971.22457	3.90E-04	3971.22457	5.00E-05	3971.22457	8.00E-05
3970.26021	4.20E-04	3970.26021	4.00E-05	3970.26021	7.00E-05

**Figure 5.26**

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3969.29586	2.30E-04	3969.29586	2.00E-05	3969.29586	8.00E-05
3968.3315	1.20E-04	3968.3315	0	3968.3315	1.00E-04
3967.36714	1.60E-04	3967.36714	0	3967.36714	1.30E-04
3966.40278	1.90E-04	3966.40278	1.00E-05	3966.40278	1.40E-04
3965.43843	2.00E-04	3965.43843	4.00E-05	3965.43843	1.40E-04
3964.47407	2.10E-04	3964.47407	5.00E-05	3964.47407	1.20E-04
3963.50971	1.40E-04	3963.50971	6.00E-05	3963.50971	1.00E-04
3962.54535	1.00E-05	3962.54535	7.00E-05	3962.54535	1.00E-04
3961.581	2.00E-05	3961.581	9.00E-05	3961.581	1.10E-04
3960.61664	1.50E-04	3960.61664	8.00E-05	3960.61664	1.30E-04
3959.65228	2.70E-04	3959.65228	6.00E-05	3959.65228	1.60E-04
3958.68792	2.60E-04	3958.68792	5.00E-05	3958.68792	1.80E-04
3957.72357	1.40E-04	3957.72357	4.00E-05	3957.72357	1.80E-04
3956.75921	7.00E-05	3956.75921	3.00E-05	3956.75921	1.60E-04
3955.79485	1.10E-04	3955.79485	3.00E-05	3955.79485	1.50E-04
3954.83049	1.60E-04	3954.83049	5.00E-05	3954.83049	1.40E-04
3953.86613	1.70E-04	3953.86613	7.00E-05	3953.86613	1.40E-04
3952.90178	2.60E-04	3952.90178	9.00E-05	3952.90178	1.40E-04
3951.93742	3.90E-04	3951.93742	1.10E-04	3951.93742	1.40E-04
3950.97306	4.10E-04	3950.97306	1.30E-04	3950.97306	1.40E-04
3950.0087	4.00E-04	3950.0087	1.40E-04	3950.0087	1.20E-04
3949.04435	4.70E-04	3949.04435	1.30E-04	3949.04435	1.10E-04
3948.07999	4.90E-04	3948.07999	1.00E-04	3948.07999	7.00E-05
3947.11563	3.80E-04	3947.11563	6.00E-05	3947.11563	4.00E-05
3946.15127	1.70E-04	3946.15127	4.00E-05	3946.15127	3.00E-05
3945.18692	0	3945.18692	2.00E-05	3945.18692	4.00E-05
3944.22256	1.00E-04	3944.22256	2.00E-05	3944.22256	5.00E-05
3943.2582	2.60E-04	3943.2582	3.00E-05	3943.2582	7.00E-05
3942.29384	2.70E-04	3942.29384	4.00E-05	3942.29384	9.00E-05
3941.32949	3.80E-04	3941.32949	6.00E-05	3941.32949	1.10E-04
3940.36513	5.80E-04	3940.36513	7.00E-05	3940.36513	1.20E-04
3939.40077	5.70E-04	3939.40077	8.00E-05	3939.40077	1.50E-04
3938.43641	4.00E-04	3938.43641	1.00E-04	3938.43641	1.90E-04
3937.47206	2.50E-04	3937.47206	1.00E-04	3937.47206	2.30E-04
3936.5077	1.80E-04	3936.5077	9.00E-05	3936.5077	2.40E-04
3935.54334	1.40E-04	3935.54334	8.00E-05	3935.54334	2.40E-04
3934.57898	2.40E-04	3934.57898	8.00E-05	3934.57898	2.30E-04
3933.61463	4.30E-04	3933.61463	7.00E-05	3933.61463	2.20E-04
3932.65027	5.40E-04	3932.65027	6.00E-05	3932.65027	1.90E-04
3931.68591	6.30E-04	3931.68591	5.00E-05	3931.68591	1.80E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3930.72155	6.50E-04	3930.72155	5.00E-05	3930.72155	1.70E-04
3929.75719	4.40E-04	3929.75719	5.00E-05	3929.75719	1.70E-04
3928.79284	1.80E-04	3928.79284	6.00E-05	3928.79284	1.70E-04
3927.82848	1.50E-04	3927.82848	7.00E-05	3927.82848	2.00E-04
3926.86412	2.90E-04	3926.86412	7.00E-05	3926.86412	2.20E-04
3925.89976	3.50E-04	3925.89976	5.00E-05	3925.89976	2.30E-04
3924.93541	2.10E-04	3924.93541	4.00E-05	3924.93541	2.10E-04
3923.97105	1.10E-04	3923.97105	5.00E-05	3923.97105	1.90E-04
3923.00669	2.40E-04	3923.00669	8.00E-05	3923.00669	1.60E-04
3922.04233	3.60E-04	3922.04233	1.10E-04	3922.04233	1.40E-04
3921.07798	2.80E-04	3921.07798	1.30E-04	3921.07798	1.40E-04
3920.11362	1.80E-04	3920.11362	1.50E-04	3920.11362	1.60E-04
3919.14926	4.00E-04	3919.14926	1.40E-04	3919.14926	1.80E-04
3918.1849	6.60E-04	3918.1849	1.10E-04	3918.1849	1.60E-04
3917.22055	4.50E-04	3917.22055	7.00E-05	3917.22055	1.40E-04
3916.25619	1.40E-04	3916.25619	5.00E-05	3916.25619	1.10E-04
3915.29183	1.70E-04	3915.29183	5.00E-05	3915.29183	9.00E-05
3914.32747	3.30E-04	3914.32747	8.00E-05	3914.32747	6.00E-05
3913.36312	4.40E-04	3913.36312	1.10E-04	3913.36312	6.00E-05
3912.39876	5.30E-04	3912.39876	1.40E-04	3912.39876	9.00E-05
3911.4344	6.00E-04	3911.4344	1.50E-04	3911.4344	1.20E-04
3910.47004	5.70E-04	3910.47004	1.40E-04	3910.47004	1.30E-04
3909.50569	3.80E-04	3909.50569	1.30E-04	3909.50569	1.60E-04
3908.54133	2.00E-04	3908.54133	1.40E-04	3908.54133	2.00E-04
3907.57697	2.90E-04	3907.57697	1.70E-04	3907.57697	2.20E-04
3906.61261	5.30E-04	3906.61261	2.00E-04	3906.61261	2.30E-04
3905.64825	7.10E-04	3905.64825	2.20E-04	3905.64825	2.30E-04
3904.6839	6.50E-04	3904.6839	2.20E-04	3904.6839	2.40E-04
3903.71954	6.00E-04	3903.71954	1.90E-04	3903.71954	2.20E-04
3902.75518	6.70E-04	3902.75518	1.60E-04	3902.75518	2.10E-04
3901.79082	5.80E-04	3901.79082	1.50E-04	3901.79082	2.20E-04
3900.82647	5.80E-04	3900.82647	1.40E-04	3900.82647	2.10E-04
3899.86211	6.60E-04	3899.86211	1.30E-04	3899.86211	1.80E-04
3898.89775	4.30E-04	3898.89775	1.20E-04	3898.89775	1.40E-04
3897.93339	2.10E-04	3897.93339	1.20E-04	3897.93339	1.20E-04
3896.96904	1.50E-04	3896.96904	1.10E-04	3896.96904	1.10E-04
3896.00468	1.70E-04	3896.00468	1.20E-04	3896.00468	1.10E-04
3895.04032	2.50E-04	3895.04032	1.70E-04	3895.04032	1.50E-04
3894.07596	3.80E-04	3894.07596	2.40E-04	3894.07596	2.20E-04
3893.11161	6.40E-04	3893.11161	2.70E-04	3893.11161	2.50E-04
3892.14725	8.10E-04	3892.14725	2.50E-04	3892.14725	2.40E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3891.18289	6.30E-04	3891.18289	2.20E-04	3891.18289	2.20E-04
3890.21853	4.40E-04	3890.21853	1.90E-04	3890.21853	2.20E-04
3889.25418	4.20E-04	3889.25418	1.70E-04	3889.25418	2.30E-04
3888.28982	4.70E-04	3888.28982	1.60E-04	3888.28982	2.40E-04
3887.32546	6.10E-04	3887.32546	1.60E-04	3887.32546	2.30E-04
3886.3611	6.60E-04	3886.3611	1.60E-04	3886.3611	2.10E-04
3885.39675	6.90E-04	3885.39675	1.40E-04	3885.39675	1.80E-04
3884.43239	9.90E-04	3884.43239	1.30E-04	3884.43239	1.80E-04
3883.46803	0.0012	3883.46803	1.70E-04	3883.46803	2.00E-04
3882.50367	0.00122	3882.50367	2.10E-04	3882.50367	2.40E-04
3881.53932	0.00108	3881.53932	2.40E-04	3881.53932	2.60E-04
3880.57496	5.60E-04	3880.57496	2.50E-04	3880.57496	2.40E-04
3879.6106	1.90E-04	3879.6106	2.30E-04	3879.6106	1.90E-04
3878.64624	3.70E-04	3878.64624	2.00E-04	3878.64624	1.50E-04
3877.68188	5.60E-04	3877.68188	2.00E-04	3877.68188	1.60E-04
3876.71753	5.80E-04	3876.71753	2.20E-04	3876.71753	2.10E-04
3875.75317	5.70E-04	3875.75317	2.50E-04	3875.75317	2.50E-04
3874.78881	3.40E-04	3874.78881	2.40E-04	3874.78881	2.50E-04
3873.82445	7.00E-05	3873.82445	2.40E-04	3873.82445	2.60E-04
3872.8601	2.80E-04	3872.8601	2.50E-04	3872.8601	2.80E-04
3871.89574	6.80E-04	3871.89574	2.20E-04	3871.89574	3.00E-04
3870.93138	7.50E-04	3870.93138	1.80E-04	3870.93138	2.90E-04
3869.96702	3.50E-04	3869.96702	1.60E-04	3869.96702	2.80E-04
3869.00267	1.80E-04	3869.00267	1.70E-04	3869.00267	2.80E-04
3868.03831	5.10E-04	3868.03831	1.80E-04	3868.03831	2.70E-04
3867.07395	8.60E-04	3867.07395	1.90E-04	3867.07395	2.60E-04
3866.10959	8.40E-04	3866.10959	2.20E-04	3866.10959	2.90E-04
3865.14524	3.70E-04	3865.14524	2.40E-04	3865.14524	3.40E-04
3864.18088	1.90E-04	3864.18088	2.30E-04	3864.18088	3.50E-04
3863.21652	4.40E-04	3863.21652	1.90E-04	3863.21652	3.00E-04
3862.25216	4.10E-04	3862.25216	1.80E-04	3862.25216	2.30E-04
3861.28781	2.20E-04	3861.28781	2.10E-04	3861.28781	2.10E-04
3860.32345	3.30E-04	3860.32345	2.30E-04	3860.32345	2.30E-04
3859.35909	4.70E-04	3859.35909	2.20E-04	3859.35909	2.40E-04
3858.39473	4.50E-04	3858.39473	2.40E-04	3858.39473	2.80E-04
3857.43038	4.00E-04	3857.43038	3.10E-04	3857.43038	4.00E-04
3856.46602	5.50E-04	3856.46602	3.60E-04	3856.46602	5.10E-04
3855.50166	7.70E-04	3855.50166	3.40E-04	3855.50166	5.40E-04
3854.5373	5.20E-04	3854.5373	2.90E-04	3854.5373	5.00E-04
3853.57294	2.50E-04	3853.57294	2.20E-04	3853.57294	4.00E-04
3852.60859	6.00E-04	3852.60859	1.60E-04	3852.60859	2.70E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3851.64423	8.30E-04	3851.64423	1.10E-04	3851.64423	1.30E-04
3850.67987	9.20E-04	3850.67987	1.00E-04	3850.67987	6.00E-05
3849.71551	7.20E-04	3849.71551	1.50E-04	3849.71551	9.00E-05
3848.75116	3.00E-04	3848.75116	1.80E-04	3848.75116	1.40E-04
3847.7868	1.50E-04	3847.7868	1.90E-04	3847.7868	2.10E-04
3846.82244	2.50E-04	3846.82244	2.00E-04	3846.82244	2.60E-04
3845.85808	3.00E-04	3845.85808	2.10E-04	3845.85808	2.80E-04
3844.89373	2.70E-04	3844.89373	2.20E-04	3844.89373	2.90E-04
3843.92937	2.40E-04	3843.92937	2.30E-04	3843.92937	3.10E-04
3842.96501	4.30E-04	3842.96501	2.30E-04	3842.96501	3.20E-04
3842.00065	7.80E-04	3842.00065	2.50E-04	3842.00065	3.20E-04
3841.0363	9.00E-04	3841.0363	3.00E-04	3841.0363	3.50E-04
3840.07194	8.10E-04	3840.07194	3.20E-04	3840.07194	3.70E-04
3839.10758	7.80E-04	3839.10758	2.90E-04	3839.10758	3.70E-04
3838.14322	5.40E-04	3838.14322	2.40E-04	3838.14322	3.30E-04
3837.17887	4.60E-04	3837.17887	1.90E-04	3837.17887	2.70E-04
3836.21451	7.60E-04	3836.21451	1.50E-04	3836.21451	2.10E-04
3835.25015	6.80E-04	3835.25015	1.50E-04	3835.25015	1.60E-04
3834.28579	4.00E-04	3834.28579	2.00E-04	3834.28579	1.50E-04
3833.32144	5.40E-04	3833.32144	2.40E-04	3833.32144	1.80E-04
3832.35708	7.50E-04	3832.35708	2.40E-04	3832.35708	1.90E-04
3831.39272	7.10E-04	3831.39272	2.20E-04	3831.39272	2.00E-04
3830.42836	7.10E-04	3830.42836	2.20E-04	3830.42836	2.40E-04
3829.46401	7.60E-04	3829.46401	2.10E-04	3829.46401	2.60E-04
3828.49965	7.00E-04	3828.49965	2.10E-04	3828.49965	2.70E-04
3827.53529	6.30E-04	3827.53529	2.10E-04	3827.53529	2.80E-04
3826.57093	6.20E-04	3826.57093	2.00E-04	3826.57093	2.80E-04
3825.60657	5.90E-04	3825.60657	1.90E-04	3825.60657	2.80E-04
3824.64222	4.50E-04	3824.64222	2.20E-04	3824.64222	3.30E-04
3823.67786	3.80E-04	3823.67786	2.60E-04	3823.67786	3.80E-04
3822.7135	5.50E-04	3822.7135	2.70E-04	3822.7135	4.10E-04
3821.74914	6.80E-04	3821.74914	2.60E-04	3821.74914	3.90E-04
3820.78479	5.50E-04	3820.78479	2.20E-04	3820.78479	3.50E-04
3819.82043	5.70E-04	3819.82043	2.20E-04	3819.82043	3.40E-04
3818.85607	7.20E-04	3818.85607	2.30E-04	3818.85607	3.50E-04
3817.89171	8.40E-04	3817.89171	2.30E-04	3817.89171	3.40E-04
3816.92736	7.80E-04	3816.92736	2.30E-04	3816.92736	3.20E-04
3815.963	5.10E-04	3815.963	2.30E-04	3815.963	2.70E-04
3814.99864	4.90E-04	3814.99864	2.10E-04	3814.99864	1.90E-04
3814.03428	6.20E-04	3814.03428	1.80E-04	3814.03428	1.20E-04
3813.06993	6.60E-04	3813.06993	1.70E-04	3813.06993	1.00E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3812.10557	7.40E-04	3812.10557	2.20E-04	3812.10557	1.30E-04
3811.14121	7.30E-04	3811.14121	3.00E-04	3811.14121	2.10E-04
3810.17685	6.40E-04	3810.17685	3.50E-04	3810.17685	2.80E-04
3809.2125	7.10E-04	3809.2125	3.50E-04	3809.2125	3.10E-04
3808.24814	8.70E-04	3808.24814	3.10E-04	3808.24814	3.00E-04
3807.28378	7.70E-04	3807.28378	2.70E-04	3807.28378	2.90E-04
3806.31942	6.30E-04	3806.31942	2.40E-04	3806.31942	2.80E-04
3805.35507	7.90E-04	3805.35507	2.40E-04	3805.35507	3.00E-04
3804.39071	9.30E-04	3804.39071	2.60E-04	3804.39071	3.60E-04
3803.42635	9.50E-04	3803.42635	2.70E-04	3803.42635	4.30E-04
3802.46199	9.50E-04	3802.46199	2.50E-04	3802.46199	4.70E-04
3801.49763	7.50E-04	3801.49763	1.90E-04	3801.49763	4.50E-04
3800.53328	6.20E-04	3800.53328	1.50E-04	3800.53328	3.90E-04
3799.56892	7.00E-04	3799.56892	1.50E-04	3799.56892	3.20E-04
3798.60456	7.10E-04	3798.60456	1.80E-04	3798.60456	2.40E-04
3797.6402	6.50E-04	3797.6402	2.40E-04	3797.6402	2.10E-04
3796.67585	6.40E-04	3796.67585	2.90E-04	3796.67585	2.10E-04
3795.71149	6.60E-04	3795.71149	2.90E-04	3795.71149	1.90E-04
3794.74713	7.10E-04	3794.74713	2.60E-04	3794.74713	1.60E-04
3793.78277	7.20E-04	3793.78277	2.30E-04	3793.78277	1.60E-04
3792.81842	7.10E-04	3792.81842	2.20E-04	3792.81842	1.70E-04
3791.85406	5.70E-04	3791.85406	2.10E-04	3791.85406	1.90E-04
3790.8897	3.20E-04	3790.8897	2.00E-04	3790.8897	1.80E-04
3789.92534	2.10E-04	3789.92534	1.90E-04	3789.92534	1.80E-04
3788.96099	2.60E-04	3788.96099	2.00E-04	3788.96099	1.80E-04
3787.99663	3.50E-04	3787.99663	2.20E-04	3787.99663	2.00E-04
3787.03227	4.60E-04	3787.03227	2.40E-04	3787.03227	2.30E-04
3786.06791	4.80E-04	3786.06791	2.50E-04	3786.06791	2.40E-04
3785.10356	4.20E-04	3785.10356	2.50E-04	3785.10356	2.30E-04
3784.1392	4.60E-04	3784.1392	2.60E-04	3784.1392	2.20E-04
3783.17484	5.40E-04	3783.17484	2.80E-04	3783.17484	2.30E-04
3782.21048	5.30E-04	3782.21048	2.90E-04	3782.21048	2.40E-04
3781.24613	4.80E-04	3781.24613	2.80E-04	3781.24613	2.40E-04
3780.28177	4.10E-04	3780.28177	2.70E-04	3780.28177	2.30E-04
3779.31741	3.00E-04	3779.31741	2.50E-04	3779.31741	2.30E-04
3778.35305	3.20E-04	3778.35305	2.20E-04	3778.35305	2.10E-04
3777.38869	3.80E-04	3777.38869	2.00E-04	3777.38869	1.80E-04
3776.42434	4.30E-04	3776.42434	1.90E-04	3776.42434	1.80E-04
3775.45998	5.00E-04	3775.45998	2.10E-04	3775.45998	2.00E-04
3774.49562	4.80E-04	3774.49562	2.40E-04	3774.49562	2.60E-04
3773.53126	4.10E-04	3773.53126	2.70E-04	3773.53126	3.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3772.56691	4.50E-04	3772.56691	2.80E-04	3772.56691	3.90E-04
3771.60255	5.40E-04	3771.60255	2.60E-04	3771.60255	4.00E-04
3770.63819	4.90E-04	3770.63819	2.00E-04	3770.63819	3.60E-04
3769.67383	3.80E-04	3769.67383	1.60E-04	3769.67383	3.10E-04
3768.70948	5.20E-04	3768.70948	1.40E-04	3768.70948	2.60E-04
3767.74512	7.50E-04	3767.74512	1.40E-04	3767.74512	2.20E-04
3766.78076	8.10E-04	3766.78076	1.60E-04	3766.78076	2.20E-04
3765.8164	6.60E-04	3765.8164	1.90E-04	3765.8164	2.40E-04
3764.85205	6.70E-04	3764.85205	2.10E-04	3764.85205	2.60E-04
3763.88769	8.20E-04	3763.88769	2.20E-04	3763.88769	2.70E-04
3762.92333	7.60E-04	3762.92333	2.20E-04	3762.92333	3.00E-04
3761.95897	6.80E-04	3761.95897	2.30E-04	3761.95897	3.20E-04
3760.99462	7.30E-04	3760.99462	2.30E-04	3760.99462	3.30E-04
3760.03026	7.20E-04	3760.03026	2.20E-04	3760.03026	3.30E-04
3759.0659	7.60E-04	3759.0659	2.10E-04	3759.0659	3.20E-04
3758.10154	8.50E-04	3758.10154	1.90E-04	3758.10154	2.70E-04
3757.13719	7.60E-04	3757.13719	2.00E-04	3757.13719	2.10E-04
3756.17283	6.60E-04	3756.17283	2.50E-04	3756.17283	2.30E-04
3755.20847	6.80E-04	3755.20847	3.10E-04	3755.20847	3.10E-04
3754.24411	6.70E-04	3754.24411	3.10E-04	3754.24411	3.40E-04
3753.27976	6.20E-04	3753.27976	2.90E-04	3753.27976	3.90E-04
3752.3154	5.70E-04	3752.3154	2.90E-04	3752.3154	4.70E-04
3751.35104	8.20E-04	3751.35104	2.60E-04	3751.35104	4.80E-04
3750.38668	9.70E-04	3750.38668	1.80E-04	3750.38668	3.90E-04
3749.42232	4.60E-04	3749.42232	1.30E-04	3749.42232	3.00E-04
3748.45797	2.90E-04	3748.45797	1.90E-04	3748.45797	3.30E-04
3747.49361	7.70E-04	3747.49361	3.00E-04	3747.49361	4.30E-04
3746.52925	0.00113	3746.52925	3.30E-04	3746.52925	4.30E-04
3745.56489	9.10E-04	3745.56489	3.20E-04	3745.56489	4.00E-04
3744.60054	0	3744.60054	3.00E-04	3744.60054	3.70E-04
3743.63618	5.00E-05	3743.63618	2.40E-04	3743.63618	3.00E-04
3742.67182	7.60E-04	3742.67182	1.40E-04	3742.67182	2.00E-04
3741.70746	9.80E-04	3741.70746	1.00E-04	3741.70746	1.50E-04
3740.74311	8.80E-04	3740.74311	1.50E-04	3740.74311	2.30E-04
3739.77875	8.50E-04	3739.77875	2.60E-04	3739.77875	3.80E-04
3738.81439	9.00E-04	3738.81439	3.10E-04	3738.81439	4.50E-04
3737.85003	9.80E-04	3737.85003	3.00E-04	3737.85003	4.60E-04
3736.88568	9.90E-04	3736.88568	2.70E-04	3736.88568	4.50E-04
3735.92132	8.10E-04	3735.92132	2.30E-04	3735.92132	4.20E-04
3734.95696	6.00E-04	3734.95696	2.00E-04	3734.95696	3.80E-04
3733.9926	8.40E-04	3733.9926	1.60E-04	3733.9926	3.10E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3733.02825	0.00106	3733.02825	1.30E-04	3733.02825	2.40E-04
3732.06389	7.50E-04	3732.06389	1.20E-04	3732.06389	2.00E-04
3731.09953	6.10E-04	3731.09953	1.30E-04	3731.09953	1.90E-04
3730.13517	7.90E-04	3730.13517	1.50E-04	3730.13517	2.20E-04
3729.17082	8.80E-04	3729.17082	1.60E-04	3729.17082	2.60E-04
3728.20646	8.90E-04	3728.20646	1.90E-04	3728.20646	3.10E-04
3727.2421	8.20E-04	3727.2421	2.10E-04	3727.2421	3.40E-04
3726.27774	6.70E-04	3726.27774	2.00E-04	3726.27774	3.30E-04
3725.31338	7.20E-04	3725.31338	1.90E-04	3725.31338	3.10E-04
3724.34903	9.20E-04	3724.34903	1.60E-04	3724.34903	2.80E-04
3723.38467	9.50E-04	3723.38467	1.40E-04	3723.38467	2.40E-04
3722.42031	7.40E-04	3722.42031	1.40E-04	3722.42031	2.20E-04
3721.45595	6.40E-04	3721.45595	1.40E-04	3721.45595	2.30E-04
3720.4916	7.30E-04	3720.4916	1.40E-04	3720.4916	2.20E-04
3719.52724	6.80E-04	3719.52724	1.40E-04	3719.52724	2.30E-04
3718.56288	4.80E-04	3718.56288	1.60E-04	3718.56288	2.50E-04
3717.59852	3.40E-04	3717.59852	1.80E-04	3717.59852	2.70E-04
3716.63417	2.80E-04	3716.63417	2.00E-04	3716.63417	3.00E-04
3715.66981	2.80E-04	3715.66981	2.40E-04	3715.66981	3.70E-04
3714.70545	4.10E-04	3714.70545	2.70E-04	3714.70545	4.30E-04
3713.74109	6.10E-04	3713.74109	2.80E-04	3713.74109	4.70E-04
3712.77674	6.00E-04	3712.77674	2.70E-04	3712.77674	4.70E-04
3711.81238	4.40E-04	3711.81238	2.60E-04	3711.81238	4.40E-04
3710.84802	5.80E-04	3710.84802	2.20E-04	3710.84802	3.60E-04
3709.88366	6.10E-04	3709.88366	1.80E-04	3709.88366	2.60E-04
3708.91931	4.40E-04	3708.91931	1.50E-04	3708.91931	2.00E-04
3707.95495	5.60E-04	3707.95495	1.60E-04	3707.95495	1.90E-04
3706.99059	8.10E-04	3706.99059	1.70E-04	3706.99059	1.90E-04
3706.02623	8.90E-04	3706.02623	2.10E-04	3706.02623	2.00E-04
3705.06188	8.60E-04	3705.06188	2.70E-04	3705.06188	2.60E-04
3704.09752	8.80E-04	3704.09752	3.10E-04	3704.09752	3.20E-04
3703.13316	9.50E-04	3703.13316	3.00E-04	3703.13316	3.50E-04
3702.1688	8.40E-04	3702.1688	2.60E-04	3702.1688	3.70E-04
3701.20445	6.40E-04	3701.20445	2.20E-04	3701.20445	3.70E-04
3700.24009	6.60E-04	3700.24009	1.90E-04	3700.24009	3.60E-04
3699.27573	6.70E-04	3699.27573	1.90E-04	3699.27573	3.20E-04
3698.31137	5.50E-04	3698.31137	2.10E-04	3698.31137	2.80E-04
3697.34701	5.30E-04	3697.34701	2.50E-04	3697.34701	2.60E-04
3696.38266	6.60E-04	3696.38266	2.70E-04	3696.38266	2.60E-04
3695.4183	6.90E-04	3695.4183	2.70E-04	3695.4183	2.90E-04
3694.45394	6.10E-04	3694.45394	2.90E-04	3694.45394	3.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3693.48958	5.60E-04	3693.48958	3.10E-04	3693.48958	3.80E-04
3692.52523	6.20E-04	3692.52523	3.40E-04	3692.52523	4.30E-04
3691.56087	7.10E-04	3691.56087	3.80E-04	3691.56087	4.70E-04
3690.59651	8.10E-04	3690.59651	3.80E-04	3690.59651	4.60E-04
3689.63215	8.40E-04	3689.63215	3.20E-04	3689.63215	4.00E-04
3688.6678	5.00E-04	3688.6678	2.70E-04	3688.6678	3.10E-04
3687.70344	2.50E-04	3687.70344	2.40E-04	3687.70344	2.50E-04
3686.73908	4.60E-04	3686.73908	2.40E-04	3686.73908	1.90E-04
3685.77472	6.20E-04	3685.77472	2.50E-04	3685.77472	1.50E-04
3684.81037	7.30E-04	3684.81037	2.80E-04	3684.81037	1.50E-04
3683.84601	9.40E-04	3683.84601	3.30E-04	3683.84601	2.10E-04
3682.88165	0.00104	3682.88165	3.50E-04	3682.88165	2.60E-04
3681.91729	9.90E-04	3681.91729	3.40E-04	3681.91729	2.80E-04
3680.95294	9.90E-04	3680.95294	3.30E-04	3680.95294	2.90E-04
3679.98858	0.00102	3679.98858	3.50E-04	3679.98858	3.20E-04
3679.02422	9.70E-04	3679.02422	4.20E-04	3679.02422	4.10E-04
3678.05986	9.60E-04	3678.05986	4.80E-04	3678.05986	4.80E-04
3677.09551	8.90E-04	3677.09551	4.70E-04	3677.09551	4.90E-04
3676.13115	6.20E-04	3676.13115	4.20E-04	3676.13115	4.40E-04
3675.16679	5.00E-04	3675.16679	3.70E-04	3675.16679	3.90E-04
3674.20243	7.20E-04	3674.20243	3.60E-04	3674.20243	3.70E-04
3673.23807	9.50E-04	3673.23807	3.80E-04	3673.23807	3.60E-04
3672.27372	0.00106	3672.27372	4.30E-04	3672.27372	3.80E-04
3671.30936	9.00E-04	3671.30936	5.10E-04	3671.30936	4.20E-04
3670.345	8.40E-04	3670.345	5.20E-04	3670.345	4.10E-04
3669.38064	0.00114	3669.38064	4.60E-04	3669.38064	3.30E-04
3668.41629	0.00114	3668.41629	4.00E-04	3668.41629	2.30E-04
3667.45193	8.80E-04	3667.45193	3.70E-04	3667.45193	1.90E-04
3666.48757	8.10E-04	3666.48757	4.00E-04	3666.48757	2.30E-04
3665.52321	9.40E-04	3665.52321	4.30E-04	3665.52321	2.80E-04
3664.55886	0.00107	3664.55886	4.70E-04	3664.55886	3.10E-04
3663.5945	0.00102	3663.5945	5.00E-04	3663.5945	3.30E-04
3662.63014	8.80E-04	3662.63014	5.20E-04	3662.63014	3.30E-04
3661.66578	8.60E-04	3661.66578	5.40E-04	3661.66578	3.10E-04
3660.70143	9.60E-04	3660.70143	5.80E-04	3660.70143	3.00E-04
3659.73707	0.00108	3659.73707	6.40E-04	3659.73707	3.40E-04
3658.77271	0.00115	3658.77271	6.70E-04	3658.77271	3.70E-04
3657.80835	0.00124	3657.80835	6.70E-04	3657.80835	3.90E-04
3656.844	0.00113	3656.844	6.50E-04	3656.844	3.80E-04
3655.87964	9.20E-04	3655.87964	6.50E-04	3655.87964	3.70E-04
3654.91528	0.00101	3654.91528	6.90E-04	3654.91528	3.70E-04

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3653.95092	0.00119	3653.95092	7.60E-04	3653.95092	4.00E-04
3652.98657	0.00129	3652.98657	8.70E-04	3652.98657	4.50E-04
3652.02221	0.00145	3652.02221	9.80E-04	3652.02221	5.20E-04
3651.05785	0.00174	3651.05785	0.00103	3651.05785	5.60E-04
3650.09349	0.00198	3650.09349	0.00103	3650.09349	5.50E-04
3649.12913	0.00201	3649.12913	9.70E-04	3649.12913	4.60E-04
3648.16478	0.00194	3648.16478	8.80E-04	3648.16478	3.50E-04
3647.20042	0.00168	3647.20042	8.00E-04	3647.20042	2.50E-04
3646.23606	0.00143	3646.23606	7.70E-04	3646.23606	2.10E-04
3645.2717	0.00144	3645.2717	7.80E-04	3645.2717	2.10E-04
3644.30735	0.0015	3644.30735	8.30E-04	3644.30735	2.20E-04
3643.34299	0.00148	3643.34299	8.90E-04	3643.34299	2.30E-04
3642.37863	0.00144	3642.37863	9.70E-04	3642.37863	2.50E-04
3641.41427	0.00142	3641.41427	0.00102	3641.41427	2.70E-04
3640.44992	0.00139	3640.44992	0.00104	3640.44992	2.80E-04
3639.48556	0.00138	3639.48556	0.00104	3639.48556	3.10E-04
3638.5212	0.0014	3638.5212	0.00105	3638.5212	3.50E-04
3637.55684	0.00141	3637.55684	0.00108	3637.55684	4.00E-04
3636.59249	0.00146	3636.59249	0.00111	3636.59249	4.30E-04
3635.62813	0.00157	3635.62813	0.00113	3635.62813	4.20E-04
3634.66377	0.00162	3634.66377	0.00115	3634.66377	4.00E-04
3633.69941	0.00151	3633.69941	0.00119	3633.69941	3.90E-04
3632.73506	0.00147	3632.73506	0.00128	3632.73506	4.40E-04
3631.7707	0.00163	3631.7707	0.00136	3631.7707	5.00E-04
3630.80634	0.00175	3630.80634	0.00141	3630.80634	5.50E-04
3629.84198	0.00154	3629.84198	0.00142	3629.84198	5.50E-04
3628.87763	0.00122	3628.87763	0.00141	3628.87763	5.20E-04
3627.91327	0.00136	3627.91327	0.00137	3627.91327	4.60E-04
3626.94891	0.00154	3626.94891	0.00133	3626.94891	3.80E-04
3625.98455	0.00146	3625.98455	0.00135	3625.98455	3.40E-04
3625.0202	0.00144	3625.0202	0.00141	3625.0202	3.80E-04
3624.05584	0.00165	3624.05584	0.00148	3624.05584	4.70E-04
3623.09148	0.00187	3623.09148	0.00152	3623.09148	5.50E-04
3622.12712	0.00199	3622.12712	0.00156	3622.12712	6.00E-04
3621.16276	0.002	3621.16276	0.00158	3621.16276	6.30E-04
3620.19841	0.00185	3620.19841	0.00158	3620.19841	6.10E-04
3619.23405	0.00165	3619.23405	0.00158	3619.23405	5.50E-04
3618.26969	0.00155	3618.26969	0.00158	3618.26969	4.80E-04
3617.30533	0.00153	3617.30533	0.00161	3617.30533	4.40E-04
3616.34098	0.0016	3616.34098	0.00167	3616.34098	4.50E-04
3615.37662	0.00174	3615.37662	0.00176	3615.37662	4.80E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3614.41226	0.00198	3614.41226	0.00182	3614.41226	5.00E-04
3613.4479	0.00214	3613.4479	0.00187	3613.4479	5.20E-04
3612.48355	0.00193	3612.48355	0.00192	3612.48355	5.20E-04
3611.51919	0.00186	3611.51919	0.00196	3611.51919	5.20E-04
3610.55483	0.00211	3610.55483	0.00197	3610.55483	5.20E-04
3609.59047	0.00208	3609.59047	0.00198	3609.59047	5.20E-04
3608.62612	0.00188	3608.62612	0.00198	3608.62612	5.20E-04
3607.66176	0.00196	3607.66176	0.00198	3607.66176	5.00E-04
3606.6974	0.00207	3606.6974	0.00198	3606.6974	4.60E-04
3605.73304	0.00203	3605.73304	0.00201	3605.73304	4.40E-04
3604.76869	0.00198	3604.76869	0.00208	3604.76869	4.30E-04
3603.80433	0.00201	3603.80433	0.00214	3603.80433	4.30E-04
3602.83997	0.00218	3602.83997	0.00219	3602.83997	4.50E-04
3601.87561	0.0024	3601.87561	0.00223	3601.87561	4.70E-04
3600.91126	0.00243	3600.91126	0.00227	3600.91126	4.80E-04
3599.9469	0.00231	3599.9469	0.00231	3599.9469	4.90E-04
3598.98254	0.00224	3598.98254	0.00236	3598.98254	5.00E-04
3598.01818	0.00233	3598.01818	0.00239	3598.01818	5.20E-04
3597.05382	0.00256	3597.05382	0.00242	3597.05382	5.30E-04
3596.08947	0.00261	3596.08947	0.00243	3596.08947	5.50E-04
3595.12511	0.00243	3595.12511	0.00244	3595.12511	5.60E-04
3594.16075	0.0023	3594.16075	0.00244	3594.16075	5.50E-04
3593.19639	0.00226	3593.19639	0.00246	3593.19639	5.50E-04
3592.23204	0.00233	3592.23204	0.00252	3592.23204	5.60E-04
3591.26768	0.00247	3591.26768	0.00262	3591.26768	5.90E-04
3590.30332	0.00252	3590.30332	0.00274	3590.30332	6.10E-04
3589.33896	0.00245	3589.33896	0.00284	3589.33896	6.30E-04
3588.37461	0.00244	3588.37461	0.00289	3588.37461	6.30E-04
3587.41025	0.00246	3587.41025	0.0029	3587.41025	6.10E-04
3586.44589	0.00218	3586.44589	0.00287	3586.44589	5.70E-04
3585.48153	0.00193	3585.48153	0.00285	3585.48153	5.20E-04
3584.51718	0.00203	3584.51718	0.00286	3584.51718	4.90E-04
3583.55282	0.00216	3583.55282	0.00291	3583.55282	4.80E-04
3582.58846	0.00204	3582.58846	0.00298	3582.58846	4.80E-04
3581.6241	0.00188	3581.6241	0.00303	3581.6241	5.10E-04
3580.65975	0.002	3580.65975	0.00307	3580.65975	5.40E-04
3579.69539	0.00231	3579.69539	0.00312	3579.69539	5.60E-04
3578.73103	0.00257	3578.73103	0.00316	3578.73103	5.60E-04
3577.76667	0.00263	3577.76667	0.00321	3577.76667	5.50E-04
3576.80232	0.00252	3576.80232	0.00325	3576.80232	5.20E-04
3575.83796	0.00241	3575.83796	0.00331	3575.83796	5.00E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3574.8736	0.00238	3574.8736	0.00335	3574.8736	5.10E-04
3573.90924	0.00234	3573.90924	0.00338	3573.90924	5.30E-04
3572.94489	0.00228	3572.94489	0.0034	3572.94489	5.50E-04
3571.98053	0.00225	3571.98053	0.00343	3571.98053	5.80E-04
3571.01617	0.00231	3571.01617	0.00349	3571.01617	6.10E-04
3570.05181	0.00248	3570.05181	0.00354	3570.05181	6.40E-04
3569.08745	0.00272	3569.08745	0.00357	3569.08745	6.60E-04
3568.1231	0.00292	3568.1231	0.00358	3568.1231	6.50E-04
3567.15874	0.00303	3567.15874	0.00357	3567.15874	6.20E-04
3566.19438	0.00299	3566.19438	0.00356	3566.19438	5.70E-04
3565.23002	0.00292	3565.23002	0.00356	3565.23002	5.20E-04
3564.26567	0.00288	3564.26567	0.00361	3564.26567	4.90E-04
3563.30131	0.00274	3563.30131	0.00369	3563.30131	4.70E-04
3562.33695	0.00256	3562.33695	0.00379	3562.33695	4.80E-04
3561.37259	0.00255	3561.37259	0.00388	3561.37259	5.10E-04
3560.40824	0.00265	3560.40824	0.00394	3560.40824	5.30E-04
3559.44388	0.00269	3559.44388	0.00399	3559.44388	5.50E-04
3558.47952	0.00259	3558.47952	0.00404	3558.47952	5.70E-04
3557.51516	0.00242	3557.51516	0.00407	3557.51516	6.00E-04
3556.55081	0.00235	3556.55081	0.0041	3556.55081	6.20E-04
3555.58645	0.00243	3555.58645	0.00413	3555.58645	6.20E-04
3554.62209	0.0026	3554.62209	0.00417	3554.62209	6.20E-04
3553.65773	0.00283	3553.65773	0.0042	3553.65773	6.10E-04
3552.69338	0.00301	3552.69338	0.00424	3552.69338	5.90E-04
3551.72902	0.00303	3551.72902	0.0043	3551.72902	5.90E-04
3550.76466	0.00303	3550.76466	0.00436	3550.76466	6.20E-04
3549.8003	0.00308	3549.8003	0.00442	3549.8003	6.50E-04
3548.83595	0.00313	3548.83595	0.00447	3548.83595	6.80E-04
3547.87159	0.00327	3547.87159	0.0045	3547.87159	6.90E-04
3546.90723	0.0035	3546.90723	0.00454	3546.90723	6.90E-04
3545.94287	0.00359	3545.94287	0.00456	3545.94287	6.90E-04
3544.97851	0.00341	3544.97851	0.00459	3544.97851	6.70E-04
3544.01416	0.00311	3544.01416	0.00464	3544.01416	6.50E-04
3543.0498	0.00293	3543.0498	0.0047	3543.0498	6.50E-04
3542.08544	0.00296	3542.08544	0.00475	3542.08544	6.70E-04
3541.12108	0.00308	3541.12108	0.00478	3541.12108	6.90E-04
3540.15673	0.00309	3540.15673	0.00482	3540.15673	7.10E-04
3539.19237	0.00305	3539.19237	0.00484	3539.19237	7.30E-04
3538.22801	0.00317	3538.22801	0.00486	3538.22801	7.60E-04
3537.26365	0.00345	3537.26365	0.00488	3537.26365	7.70E-04
3536.2993	0.00368	3536.2993	0.00492	3536.2993	7.50E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3535.33494	0.00366	3535.33494	0.00496	3535.33494	7.30E-04
3534.37058	0.00349	3534.37058	0.00501	3534.37058	7.10E-04
3533.40622	0.00344	3533.40622	0.00507	3533.40622	6.90E-04
3532.44187	0.00352	3532.44187	0.00513	3532.44187	6.90E-04
3531.47751	0.00354	3531.47751	0.00518	3531.47751	7.20E-04
3530.51315	0.00355	3530.51315	0.00523	3530.51315	7.50E-04
3529.54879	0.00357	3529.54879	0.00529	3529.54879	7.80E-04
3528.58444	0.0035	3528.58444	0.00535	3528.58444	7.70E-04
3527.62008	0.00339	3527.62008	0.00542	3527.62008	7.60E-04
3526.65572	0.0034	3526.65572	0.00548	3526.65572	7.70E-04
3525.69136	0.00358	3525.69136	0.00552	3525.69136	7.90E-04
3524.72701	0.00377	3524.72701	0.00554	3524.72701	8.00E-04
3523.76265	0.00382	3523.76265	0.00556	3523.76265	8.10E-04
3522.79829	0.00386	3522.79829	0.00558	3522.79829	8.00E-04
3521.83393	0.004	3521.83393	0.00561	3521.83393	8.00E-04
3520.86958	0.00404	3520.86958	0.00565	3520.86958	7.80E-04
3519.90522	0.00383	3519.90522	0.0057	3519.90522	7.60E-04
3518.94086	0.00366	3518.94086	0.00575	3518.94086	7.40E-04
3517.9765	0.00373	3517.9765	0.00581	3517.9765	7.40E-04
3517.01214	0.00391	3517.01214	0.00585	3517.01214	7.30E-04
3516.04779	0.00406	3516.04779	0.0059	3516.04779	7.30E-04
3515.08343	0.00414	3515.08343	0.00593	3515.08343	7.60E-04
3514.11907	0.00412	3514.11907	0.00595	3514.11907	8.00E-04
3513.15471	0.00399	3513.15471	0.00599	3513.15471	8.50E-04
3512.19036	0.00393	3512.19036	0.00604	3512.19036	8.70E-04
3511.226	0.00415	3511.226	0.00609	3511.226	8.70E-04
3510.26164	0.00442	3510.26164	0.00612	3510.26164	8.60E-04
3509.29728	0.00439	3509.29728	0.00614	3509.29728	8.60E-04
3508.33293	0.00425	3508.33293	0.00614	3508.33293	8.80E-04
3507.36857	0.00423	3507.36857	0.00615	3507.36857	9.10E-04
3506.40421	0.00424	3506.40421	0.00618	3506.40421	9.40E-04
3505.43985	0.00427	3505.43985	0.00623	3505.43985	9.50E-04
3504.4755	0.00427	3504.4755	0.0063	3504.4755	9.50E-04
3503.51114	0.00415	3503.51114	0.00635	3503.51114	9.30E-04
3502.54678	0.00416	3502.54678	0.0064	3502.54678	9.10E-04
3501.58242	0.00435	3501.58242	0.00643	3501.58242	9.00E-04
3500.61807	0.00446	3500.61807	0.00646	3500.61807	9.10E-04
3499.65371	0.00436	3499.65371	0.0065	3499.65371	9.20E-04
3498.68935	0.00416	3498.68935	0.00656	3498.68935	9.30E-04
3497.72499	0.00409	3497.72499	0.00659	3497.72499	9.40E-04
3496.76064	0.00418	3496.76064	0.00662	3496.76064	9.50E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3495.79628	0.00429	3495.79628	0.00662	3495.79628	9.60E-04
3494.83192	0.00435	3494.83192	0.00663	3494.83192	9.50E-04
3493.86756	0.00439	3493.86756	0.00665	3493.86756	9.40E-04
3492.9032	0.00434	3492.9032	0.00669	3492.9032	9.30E-04
3491.93885	0.00424	3491.93885	0.00676	3491.93885	9.30E-04
3490.97449	0.00431	3490.97449	0.00684	3490.97449	9.60E-04
3490.01013	0.00451	3490.01013	0.0069	3490.01013	1.00E-03
3489.04577	0.00458	3489.04577	0.00695	3489.04577	0.00105
3488.08142	0.00452	3488.08142	0.00697	3488.08142	0.0011
3487.11706	0.00445	3487.11706	0.00699	3487.11706	0.00113
3486.1527	0.00439	3486.1527	0.00702	3486.1527	0.00112
3485.18834	0.00444	3485.18834	0.00706	3485.18834	0.00108
3484.22399	0.00462	3484.22399	0.0071	3484.22399	0.00106
3483.25963	0.00468	3483.25963	0.00714	3483.25963	0.00104
3482.29527	0.00466	3482.29527	0.00717	3482.29527	0.00102
3481.33091	0.00478	3481.33091	0.0072	3481.33091	0.00101
3480.36656	0.0049	3480.36656	0.00724	3480.36656	0.00102
3479.4022	0.0048	3479.4022	0.00727	3479.4022	0.00102
3478.43784	0.0047	3478.43784	0.00731	3478.43784	0.00102
3477.47348	0.00477	3477.47348	0.00735	3477.47348	0.00103
3476.50913	0.00481	3476.50913	0.00736	3476.50913	0.00105
3475.54477	0.00474	3475.54477	0.00737	3475.54477	0.00108
3474.58041	0.00476	3474.58041	0.00738	3474.58041	0.0011
3473.61605	0.00494	3473.61605	0.00742	3473.61605	0.0011
3472.6517	0.00511	3472.6517	0.00747	3472.6517	0.00109
3471.68734	0.00519	3471.68734	0.00752	3471.68734	0.00108
3470.72298	0.00522	3470.72298	0.00755	3470.72298	0.00107
3469.75862	0.00522	3469.75862	0.00758	3469.75862	0.00106
3468.79426	0.0052	3468.79426	0.00761	3468.79426	0.00104
3467.82991	0.0051	3467.82991	0.00763	3467.82991	0.00103
3466.86555	0.00506	3466.86555	0.00765	3466.86555	0.00103
3465.90119	0.00515	3465.90119	0.00768	3465.90119	0.00105
3464.93683	0.00517	3464.93683	0.00772	3464.93683	0.00107
3463.97248	0.00514	3463.97248	0.00775	3463.97248	0.0011
3463.00812	0.00524	3463.00812	0.00778	3463.00812	0.00113
3462.04376	0.0054	3462.04376	0.00781	3462.04376	0.00116
3461.0794	0.00542	3461.0794	0.00785	3461.0794	0.00117
3460.11505	0.00531	3460.11505	0.00788	3460.11505	0.00118
3459.15069	0.0052	3459.15069	0.00791	3459.15069	0.00117
3458.18633	0.0051	3458.18633	0.00794	3458.18633	0.00116
3457.22197	0.00509	3457.22197	0.00798	3457.22197	0.00114

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3456.25762	0.00521	3456.25762	0.00803	3456.25762	0.00114
3455.29326	0.0054	3455.29326	0.00807	3455.29326	0.00115
3454.3289	0.0056	3454.3289	0.0081	3454.3289	0.00117
3453.36454	0.00572	3453.36454	0.00812	3453.36454	0.0012
3452.40019	0.00564	3452.40019	0.00815	3452.40019	0.00123
3451.43583	0.00543	3451.43583	0.00817	3451.43583	0.00124
3450.47147	0.00537	3450.47147	0.00821	3450.47147	0.00125
3449.50711	0.00557	3449.50711	0.00824	3449.50711	0.00125
3448.54276	0.00584	3448.54276	0.00826	3448.54276	0.00124
3447.5784	0.00594	3447.5784	0.00828	3447.5784	0.00123
3446.61404	0.00592	3446.61404	0.00829	3446.61404	0.00122
3445.64968	0.00587	3445.64968	0.0083	3445.64968	0.00122
3444.68533	0.00578	3444.68533	0.00831	3444.68533	0.00122
3443.72097	0.00571	3443.72097	0.00832	3443.72097	0.00123
3442.75661	0.00569	3442.75661	0.00834	3442.75661	0.00124
3441.79225	0.00564	3441.79225	0.00837	3441.79225	0.00125
3440.82789	0.00572	3440.82789	0.0084	3440.82789	0.00125
3439.86354	0.00605	3439.86354	0.00842	3439.86354	0.00127
3438.89918	0.00627	3438.89918	0.00846	3438.89918	0.00129
3437.93482	0.00632	3437.93482	0.0085	3437.93482	0.0013
3436.97046	0.00636	3436.97046	0.00853	3436.97046	0.0013
3436.00611	0.00625	3436.00611	0.00854	3436.00611	0.0013
3435.04175	0.00605	3435.04175	0.00857	3435.04175	0.00129
3434.07739	0.00598	3434.07739	0.00859	3434.07739	0.00129
3433.11303	0.00599	3433.11303	0.0086	3433.11303	0.00129
3432.14868	0.00608	3432.14868	0.00862	3432.14868	0.0013
3431.18432	0.00626	3431.18432	0.00867	3431.18432	0.00133
3430.21996	0.00631	3430.21996	0.00873	3430.21996	0.00135
3429.2556	0.00617	3429.2556	0.00877	3429.2556	0.00136
3428.29125	0.0061	3428.29125	0.0088	3428.29125	0.00137
3427.32689	0.00617	3427.32689	0.00881	3427.32689	0.00137
3426.36253	0.00632	3426.36253	0.00881	3426.36253	0.00136
3425.39817	0.00648	3425.39817	0.00881	3425.39817	0.00134
3424.43382	0.00657	3424.43382	0.00882	3424.43382	0.00133
3423.46946	0.00653	3423.46946	0.00887	3423.46946	0.00133
3422.5051	0.00647	3422.5051	0.00893	3422.5051	0.00134
3421.54074	0.00643	3421.54074	0.00899	3421.54074	0.00135
3420.57639	0.00638	3420.57639	0.00903	3420.57639	0.00137
3419.61203	0.00638	3419.61203	0.00905	3419.61203	0.00142
3418.64767	0.00641	3418.64767	0.00906	3418.64767	0.00147
3417.68331	0.0065	3417.68331	0.00906	3417.68331	0.00152

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3416.71895	0.0067	3416.71895	0.00907	3416.71895	0.00154
3415.7546	0.00682	3415.7546	0.00908	3415.7546	0.00153
3414.79024	0.00673	3414.79024	0.00911	3414.79024	0.00148
3413.82588	0.00662	3413.82588	0.00914	3413.82588	0.00143
3412.86152	0.00665	3412.86152	0.00917	3412.86152	0.00141
3411.89717	0.00674	3411.89717	0.00919	3411.89717	0.00141
3410.93281	0.00676	3410.93281	0.00921	3410.93281	0.00143
3409.96845	0.00677	3409.96845	0.00924	3409.96845	0.00145
3409.00409	0.00691	3409.00409	0.00925	3409.00409	0.00147
3408.03974	0.00708	3408.03974	0.00926	3408.03974	0.00147
3407.07538	0.00708	3407.07538	0.00927	3407.07538	0.00148
3406.11102	0.00686	3406.11102	0.00929	3406.11102	0.00147
3405.14666	0.00673	3405.14666	0.00932	3405.14666	0.00146
3404.18231	0.00685	3404.18231	0.00935	3404.18231	0.00144
3403.21795	0.007	3403.21795	0.00938	3403.21795	0.00143
3402.25359	0.00704	3402.25359	0.0094	3402.25359	0.00143
3401.28923	0.00711	3401.28923	0.00941	3401.28923	0.00146
3400.32488	0.00722	3400.32488	0.00941	3400.32488	0.0015
3399.36052	0.00719	3399.36052	0.0094	3399.36052	0.00154
3398.39616	0.00709	3398.39616	0.0094	3398.39616	0.00157
3397.4318	0.00709	3397.4318	0.00942	3397.4318	0.00158
3396.46745	0.00714	3396.46745	0.00945	3396.46745	0.00158
3395.50309	0.00715	3395.50309	0.00949	3395.50309	0.00158
3394.53873	0.00716	3394.53873	0.00953	3394.53873	0.00157
3393.57437	0.00719	3393.57437	0.00956	3393.57437	0.00156
3392.61002	0.00718	3392.61002	0.00956	3392.61002	0.00154
3391.64566	0.00715	3391.64566	0.00953	3391.64566	0.00154
3390.6813	0.00723	3390.6813	0.0095	3390.6813	0.00155
3389.71694	0.00733	3389.71694	0.00948	3389.71694	0.00159
3388.75258	0.00737	3388.75258	0.00949	3388.75258	0.00165
3387.78823	0.00745	3387.78823	0.00952	3387.78823	0.00171
3386.82387	0.00752	3386.82387	0.00957	3386.82387	0.00175
3385.85951	0.00749	3385.85951	0.00964	3385.85951	0.00176
3384.89515	0.00743	3384.89515	0.00971	3384.89515	0.00176
3383.9308	0.00744	3383.9308	0.00975	3383.9308	0.00174
3382.96644	0.00756	3382.96644	0.00977	3382.96644	0.00172
3382.00208	0.00773	3382.00208	0.00978	3382.00208	0.0017
3381.03772	0.00783	3381.03772	0.00978	3381.03772	0.00167
3380.07337	0.00779	3380.07337	0.00976	3380.07337	0.00166
3379.10901	0.00767	3379.10901	0.00973	3379.10901	0.00165
3378.14465	0.00758	3378.14465	0.00971	3378.14465	0.00165

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3377.18029	0.00749	3377.18029	0.00971	3377.18029	0.00167
3376.21594	0.00734	3376.21594	0.00971	3376.21594	0.00169
3375.25158	0.0073	3375.25158	0.00972	3375.25158	0.0017
3374.28722	0.00755	3374.28722	0.00973	3374.28722	0.00171
3373.32286	0.00779	3373.32286	0.00974	3373.32286	0.00172
3372.35851	0.00781	3372.35851	0.00975	3372.35851	0.00175
3371.39415	0.00775	3371.39415	0.00975	3371.39415	0.00177
3370.42979	0.00768	3370.42979	0.00977	3370.42979	0.00179
3369.46543	0.0076	3369.46543	0.00979	3369.46543	0.00181
3368.50108	0.00753	3368.50108	0.0098	3368.50108	0.00181
3367.53672	0.00757	3367.53672	0.00981	3367.53672	0.00179
3366.57236	0.0077	3366.57236	0.00982	3366.57236	0.00177
3365.608	0.0078	3365.608	0.00984	3365.608	0.00175
3364.64364	0.00784	3364.64364	0.00985	3364.64364	0.00176
3363.67929	0.00789	3363.67929	0.00987	3363.67929	0.00177
3362.71493	0.00786	3362.71493	0.00988	3362.71493	0.0018
3361.75057	0.00777	3361.75057	0.00989	3361.75057	0.00184
3360.78621	0.00774	3360.78621	0.00989	3360.78621	0.00188
3359.82186	0.0078	3359.82186	0.00988	3359.82186	0.00191
3358.8575	0.0079	3358.8575	0.00987	3358.8575	0.00192
3357.89314	0.00804	3357.89314	0.00985	3357.89314	0.00191
3356.92878	0.00811	3356.92878	0.00984	3356.92878	0.00189
3355.96443	0.00803	3355.96443	0.00983	3355.96443	0.00187
3355.00007	0.00796	3355.00007	0.00983	3355.00007	0.00187
3354.03571	0.00798	3354.03571	0.00983	3354.03571	0.00187
3353.07135	0.008	3353.07135	0.00984	3353.07135	0.00189
3352.107	0.00788	3352.107	0.00984	3352.107	0.00192
3351.14264	0.00778	3351.14264	0.00986	3351.14264	0.00194
3350.17828	0.00789	3350.17828	0.00986	3350.17828	0.00195
3349.21392	0.00806	3349.21392	0.00984	3349.21392	0.00195
3348.24957	0.00813	3348.24957	0.0098	3348.24957	0.00195
3347.28521	0.00814	3347.28521	0.00976	3347.28521	0.00195
3346.32085	0.00814	3346.32085	0.00973	3346.32085	0.00193
3345.35649	0.00815	3345.35649	0.00971	3345.35649	0.00191
3344.39214	0.00817	3344.39214	0.00971	3344.39214	0.00189
3343.42778	0.00814	3343.42778	0.00974	3343.42778	0.00189
3342.46342	0.00811	3342.46342	0.00979	3342.46342	0.0019
3341.49906	0.00815	3341.49906	0.00983	3341.49906	0.00193
3340.5347	0.00823	3340.5347	0.00986	3340.5347	0.00197
3339.57035	0.0082	3339.57035	0.00988	3339.57035	0.00199
3338.60599	0.00817	3338.60599	0.00988	3338.60599	0.002

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3337.64163	0.0082	3337.64163	0.00986	3337.64163	0.00198
3336.67727	0.0082	3336.67727	0.00984	3336.67727	0.00196
3335.71292	0.00813	3335.71292	0.00982	3335.71292	0.00196
3334.74856	0.00805	3334.74856	0.00982	3334.74856	0.00199
3333.7842	0.008	3333.7842	0.00981	3333.7842	0.00203
3332.81984	0.00807	3332.81984	0.00979	3332.81984	0.00207
3331.85549	0.00816	3331.85549	0.00978	3331.85549	0.0021
3330.89113	0.00819	3330.89113	0.00978	3330.89113	0.00211
3329.92677	0.00822	3329.92677	0.00978	3329.92677	0.0021
3328.96241	0.00829	3328.96241	0.00977	3328.96241	0.00209
3327.99806	0.00828	3327.99806	0.00976	3327.99806	0.00208
3327.0337	0.00823	3327.0337	0.00976	3327.0337	0.00208
3326.06934	0.00819	3326.06934	0.00974	3326.06934	0.0021
3325.10498	0.00809	3325.10498	0.00974	3325.10498	0.00211
3324.14063	0.00799	3324.14063	0.00974	3324.14063	0.00212
3323.17627	0.008	3323.17627	0.00974	3323.17627	0.00211
3322.21191	0.00803	3322.21191	0.00973	3322.21191	0.0021
3321.24755	0.008	3321.24755	0.00972	3321.24755	0.00207
3320.2832	0.00804	3320.2832	0.00971	3320.2832	0.00205
3319.31884	0.0082	3319.31884	0.0097	3319.31884	0.00203
3318.35448	0.00827	3318.35448	0.00968	3318.35448	0.00205
3317.39012	0.0082	3317.39012	0.00967	3317.39012	0.00207
3316.42577	0.00814	3316.42577	0.00966	3316.42577	0.0021
3315.46141	0.00819	3315.46141	0.00966	3315.46141	0.00212
3314.49705	0.00832	3314.49705	0.00965	3314.49705	0.00214
3313.53269	0.00836	3313.53269	0.00965	3313.53269	0.00215
3312.56833	0.00827	3312.56833	0.00964	3312.56833	0.00215
3311.60398	0.00814	3311.60398	0.00964	3311.60398	0.00215
3310.63962	0.00814	3310.63962	0.00964	3310.63962	0.00216
3309.67526	0.00826	3309.67526	0.00964	3309.67526	0.00217
3308.7109	0.00831	3308.7109	0.00966	3308.7109	0.00218
3307.74655	0.0083	3307.74655	0.00969	3307.74655	0.0022
3306.78219	0.0083	3306.78219	0.00971	3306.78219	0.0022
3305.81783	0.00831	3305.81783	0.00973	3305.81783	0.00221
3304.85347	0.00823	3304.85347	0.00975	3304.85347	0.0022
3303.88912	0.0081	3303.88912	0.00975	3303.88912	0.00219
3302.92476	0.00806	3302.92476	0.00974	3302.92476	0.00218
3301.9604	0.0081	3301.9604	0.00972	3301.9604	0.00216
3300.99604	0.00806	3300.99604	0.0097	3300.99604	0.00216
3300.03169	0.00794	3300.03169	0.00968	3300.03169	0.00216
3299.06733	0.00789	3299.06733	0.00965	3299.06733	0.00218



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3298.10297	0.00789	3298.10297	0.00963	3298.10297	0.0022
3297.13861	0.00773	3297.13861	0.00962	3297.13861	0.00222
3296.17426	0.00755	3296.17426	0.00962	3296.17426	0.00222
3295.2099	0.00761	3295.2099	0.00963	3295.2099	0.00221
3294.24554	0.00783	3294.24554	0.00965	3294.24554	0.00219
3293.28118	0.008	3293.28118	0.00966	3293.28118	0.00218
3292.31683	0.00802	3292.31683	0.00966	3292.31683	0.00217
3291.35247	0.00791	3291.35247	0.00964	3291.35247	0.00217
3290.38811	0.00783	3290.38811	0.00962	3290.38811	0.00217
3289.42375	0.00785	3289.42375	0.0096	3289.42375	0.00217
3288.45939	0.00794	3288.45939	0.0096	3288.45939	0.00216
3287.49504	0.00803	3287.49504	0.00961	3287.49504	0.00214
3286.53068	0.00799	3286.53068	0.00963	3286.53068	0.00213
3285.56632	0.00778	3285.56632	0.00964	3285.56632	0.00213
3284.60196	0.00751	3284.60196	0.00964	3284.60196	0.00214
3283.63761	0.00745	3283.63761	0.00964	3283.63761	0.00214
3282.67325	0.00759	3282.67325	0.00962	3282.67325	0.00215
3281.70889	0.0077	3281.70889	0.00962	3281.70889	0.00216
3280.74453	0.00774	3280.74453	0.00962	3280.74453	0.00215
3279.78018	0.00777	3279.78018	0.00962	3279.78018	0.00213
3278.81582	0.00775	3278.81582	0.00962	3278.81582	0.0021
3277.85146	0.00765	3277.85146	0.00963	3277.85146	0.00209
3276.8871	0.00754	3276.8871	0.00964	3276.8871	0.00209
3275.92275	0.00757	3275.92275	0.00963	3275.92275	0.00209
3274.95839	0.00766	3274.95839	0.00961	3274.95839	0.0021
3273.99403	0.00767	3273.99403	0.00959	3273.99403	0.0021
3273.02967	0.00768	3273.02967	0.00959	3273.02967	0.0021
3272.06532	0.00773	3272.06532	0.00959	3272.06532	0.0021
3271.10096	0.00764	3271.10096	0.00959	3271.10096	0.00208
3270.1366	0.00741	3270.1366	0.00959	3270.1366	0.00206
3269.17224	0.00727	3269.17224	0.00959	3269.17224	0.00205
3268.20789	0.00726	3268.20789	0.00957	3268.20789	0.00204
3267.24353	0.00729	3267.24353	0.00955	3267.24353	0.00201
3266.27917	0.00735	3266.27917	0.00953	3266.27917	0.00199
3265.31481	0.00734	3265.31481	0.00952	3265.31481	0.00198
3264.35046	0.00721	3264.35046	0.00951	3264.35046	0.00198
3263.3861	0.0071	3263.3861	0.00952	3263.3861	0.00199
3262.42174	0.0071	3262.42174	0.00952	3262.42174	0.002
3261.45738	0.00713	3261.45738	0.00952	3261.45738	0.00202
3260.49302	0.00716	3260.49302	0.00953	3260.49302	0.00204
3259.52867	0.00716	3259.52867	0.00953	3259.52867	0.00204

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3258.56431	0.00714	3258.56431	0.00951	3258.56431	0.00203
3257.59995	0.00713	3257.59995	0.00949	3257.59995	0.002
3256.63559	0.0071	3256.63559	0.00948	3256.63559	0.00197
3255.67124	0.00707	3255.67124	0.00947	3255.67124	0.00195
3254.70688	0.00705	3254.70688	0.00947	3254.70688	0.00193
3253.74252	0.00703	3253.74252	0.00946	3253.74252	0.00192
3252.77816	0.00697	3252.77816	0.00947	3252.77816	0.00191
3251.81381	0.00686	3251.81381	0.00946	3251.81381	0.00189
3250.84945	0.00678	3250.84945	0.00945	3250.84945	0.00187
3249.88509	0.00684	3249.88509	0.00945	3249.88509	0.00188
3248.92073	0.0069	3248.92073	0.00946	3248.92073	0.0019
3247.95638	0.00685	3247.95638	0.00946	3247.95638	0.00191
3246.99202	0.00677	3246.99202	0.00944	3246.99202	0.00192
3246.02766	0.00669	3246.02766	0.00941	3246.02766	0.0019
3245.0633	0.0066	3245.0633	0.00937	3245.0633	0.00188
3244.09895	0.00659	3244.09895	0.00934	3244.09895	0.00186
3243.13459	0.00661	3243.13459	0.0093	3243.13459	0.00186
3242.17023	0.00652	3242.17023	0.00928	3242.17023	0.00186
3241.20587	0.00634	3241.20587	0.00927	3241.20587	0.00187
3240.24152	0.00623	3240.24152	0.00927	3240.24152	0.00186
3239.27716	0.00633	3239.27716	0.00928	3239.27716	0.00184
3238.3128	0.00652	3238.3128	0.00928	3238.3128	0.00182
3237.34844	0.00652	3237.34844	0.00929	3237.34844	0.00179
3236.38408	0.00645	3236.38408	0.00928	3236.38408	0.00177
3235.41973	0.00645	3235.41973	0.00927	3235.41973	0.00176
3234.45537	0.00633	3234.45537	0.00926	3234.45537	0.00176
3233.49101	0.0061	3233.49101	0.00925	3233.49101	0.00176
3232.52665	0.00601	3232.52665	0.00925	3232.52665	0.00176
3231.5623	0.00611	3231.5623	0.00924	3231.5623	0.00176
3230.59794	0.00621	3230.59794	0.00922	3230.59794	0.00176
3229.63358	0.00622	3229.63358	0.00918	3229.63358	0.00174
3228.66922	0.00614	3228.66922	0.00913	3228.66922	0.00172
3227.70487	0.00603	3227.70487	0.00909	3227.70487	0.00169
3226.74051	0.00594	3226.74051	0.00906	3226.74051	0.00167
3225.77615	0.00589	3225.77615	0.00904	3225.77615	0.00165
3224.81179	0.00585	3224.81179	0.00904	3224.81179	0.00165
3223.84744	0.00585	3223.84744	0.00903	3223.84744	0.00165
3222.88308	0.00587	3222.88308	0.00903	3222.88308	0.00165
3221.91872	0.00589	3221.91872	0.00902	3221.91872	0.00165
3220.95436	0.00586	3220.95436	0.00902	3220.95436	0.00165
3219.99001	0.0058	3219.99001	0.00903	3219.99001	0.00165

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3219.02565	0.00579	3219.02565	0.00904	3219.02565	0.00165
3218.06129	0.00585	3218.06129	0.00903	3218.06129	0.00165
3217.09693	0.00584	3217.09693	0.009	3217.09693	0.00164
3216.13258	0.00578	3216.13258	0.00896	3216.13258	0.00164
3215.16822	0.00575	3215.16822	0.00891	3215.16822	0.00163
3214.20386	0.00571	3214.20386	0.00887	3214.20386	0.00164
3213.2395	0.00566	3213.2395	0.00884	3213.2395	0.00164
3212.27514	0.00563	3212.27514	0.0088	3212.27514	0.00163
3211.31079	0.0056	3211.31079	0.00878	3211.31079	0.00162
3210.34643	0.00558	3210.34643	0.00875	3210.34643	0.00161
3209.38207	0.00556	3209.38207	0.00874	3209.38207	0.00158
3208.41771	0.00551	3208.41771	0.00873	3208.41771	0.00155
3207.45336	0.00543	3207.45336	0.00873	3207.45336	0.00153
3206.489	0.00537	3206.489	0.00872	3206.489	0.00151
3205.52464	0.00533	3205.52464	0.0087	3205.52464	0.0015
3204.56028	0.00532	3204.56028	0.00866	3204.56028	0.00149
3203.59593	0.00536	3203.59593	0.00864	3203.59593	0.00148
3202.63157	0.00537	3202.63157	0.00863	3202.63157	0.00148
3201.66721	0.0053	3201.66721	0.00862	3201.66721	0.00149
3200.70285	0.00521	3200.70285	0.00861	3200.70285	0.0015
3199.7385	0.00519	3199.7385	0.0086	3199.7385	0.0015
3198.77414	0.00522	3198.77414	0.00858	3198.77414	0.00151
3197.80978	0.00521	3197.80978	0.00856	3197.80978	0.0015
3196.84542	0.00521	3196.84542	0.00855	3196.84542	0.00148
3195.88107	0.00522	3195.88107	0.00852	3195.88107	0.00147
3194.91671	0.00517	3194.91671	0.00849	3194.91671	0.00147
3193.95235	0.00515	3193.95235	0.00845	3193.95235	0.00148
3192.98799	0.00517	3192.98799	0.0084	3192.98799	0.0015
3192.02364	0.00515	3192.02364	0.00837	3192.02364	0.00152
3191.05928	0.0051	3191.05928	0.00835	3191.05928	0.00154
3190.09492	0.00505	3190.09492	0.00835	3190.09492	0.00154
3189.13056	0.00497	3189.13056	0.00834	3189.13056	0.00152
3188.16621	0.00485	3188.16621	0.00833	3188.16621	0.00149
3187.20185	0.00479	3187.20185	0.00832	3187.20185	0.00146
3186.23749	0.00485	3186.23749	0.0083	3186.23749	0.00142
3185.27313	0.00483	3185.27313	0.00827	3185.27313	0.0014
3184.30877	0.00466	3184.30877	0.00824	3184.30877	0.0014
3183.34442	0.00454	3183.34442	0.0082	3183.34442	0.0014
3182.38006	0.00451	3182.38006	0.00815	3182.38006	0.00142
3181.4157	0.00451	3181.4157	0.00812	3181.4157	0.00144
3180.45134	0.0045	3180.45134	0.0081	3180.45134	0.00145

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3179.48699	0.00446	3179.48699	0.00808	3179.48699	0.00145
3178.52263	0.00437	3178.52263	0.00807	3178.52263	0.00143
3177.55827	0.00427	3177.55827	0.00805	3177.55827	0.0014
3176.59391	0.00423	3176.59391	0.00803	3176.59391	0.00137
3175.62956	0.00424	3175.62956	0.00802	3175.62956	0.00135
3174.6652	0.00424	3174.6652	0.00802	3174.6652	0.00133
3173.70084	0.00426	3173.70084	0.00801	3173.70084	0.00131
3172.73648	0.00427	3172.73648	0.00799	3172.73648	0.0013
3171.77213	0.0042	3171.77213	0.00796	3171.77213	0.00129
3170.80777	0.00411	3170.80777	0.00794	3170.80777	0.00128
3169.84341	0.00406	3169.84341	0.00791	3169.84341	0.00128
3168.87905	0.00402	3168.87905	0.00788	3168.87905	0.0013
3167.9147	0.00399	3167.9147	0.00784	3167.9147	0.0013
3166.95034	0.00404	3166.95034	0.0078	3166.95034	0.00129
3165.98598	0.00409	3165.98598	0.00777	3165.98598	0.00127
3165.02162	0.00408	3165.02162	0.00774	3165.02162	0.00125
3164.05727	0.00404	3164.05727	0.00772	3164.05727	0.00122
3163.09291	0.00395	3163.09291	0.00771	3163.09291	0.00121
3162.12855	0.00388	3162.12855	0.00769	3162.12855	0.00122
3161.16419	0.00389	3161.16419	0.00766	3161.16419	0.00123
3160.19983	0.00399	3160.19983	0.00762	3160.19983	0.00123
3159.23548	0.00418	3159.23548	0.00758	3159.23548	0.00123
3158.27112	0.00438	3158.27112	0.00755	3158.27112	0.00124
3157.30676	0.00445	3157.30676	0.00752	3157.30676	0.00124
3156.3424	0.00432	3156.3424	0.00749	3156.3424	0.00124
3155.37805	0.00414	3155.37805	0.00747	3155.37805	0.00124
3154.41369	0.00411	3154.41369	0.00746	3154.41369	0.00124
3153.44933	0.00422	3153.44933	0.00745	3153.44933	0.00124
3152.48497	0.00425	3152.48497	0.00744	3152.48497	0.00122
3151.52062	0.00412	3151.52062	0.00741	3151.52062	0.00122
3150.55626	0.00398	3150.55626	0.00738	3150.55626	0.00122
3149.5919	0.00386	3149.5919	0.00735	3149.5919	0.00124
3148.62754	0.00378	3148.62754	0.00731	3148.62754	0.00126
3147.66319	0.00381	3147.66319	0.00729	3147.66319	0.00128
3146.69883	0.00385	3146.69883	0.00728	3146.69883	0.00128
3145.73447	0.00381	3145.73447	0.00727	3145.73447	0.00127
3144.77011	0.00381	3144.77011	0.00726	3144.77011	0.00124
3143.80576	0.00387	3143.80576	0.00725	3143.80576	0.00122
3142.8414	0.00386	3142.8414	0.00723	3142.8414	0.00119
3141.87704	0.00379	3141.87704	0.00719	3141.87704	0.00118
3140.91268	0.00371	3140.91268	0.00714	3140.91268	0.00118

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3139.94833	0.00368	3139.94833	0.00709	3139.94833	0.00118
3138.98397	0.00372	3138.98397	0.00705	3138.98397	0.00119
3138.01961	0.00377	3138.01961	0.00702	3138.01961	0.00121
3137.05525	0.00381	3137.05525	0.007	3137.05525	0.00122
3136.0909	0.00377	3136.0909	0.00697	3136.0909	0.00121
3135.12654	0.00362	3135.12654	0.00695	3135.12654	0.00118
3134.16218	0.00352	3134.16218	0.00693	3134.16218	0.00115
3133.19782	0.00352	3133.19782	0.00689	3133.19782	0.00113
3132.23346	0.00356	3132.23346	0.00685	3132.23346	0.00112
3131.26911	0.00361	3131.26911	0.00681	3131.26911	0.00111
3130.30475	0.00359	3130.30475	0.00678	3130.30475	0.00111
3129.34039	0.00349	3129.34039	0.00676	3129.34039	0.00111
3128.37603	0.00343	3128.37603	0.00674	3128.37603	0.0011
3127.41168	0.00345	3127.41168	0.00673	3127.41168	0.00109
3126.44732	0.00342	3126.44732	0.00672	3126.44732	0.00107
3125.48296	0.00326	3125.48296	0.00669	3125.48296	0.00107
3124.5186	0.00311	3124.5186	0.00665	3124.5186	0.00108
3123.55425	0.00312	3123.55425	0.00662	3123.55425	0.00108
3122.58989	0.00325	3122.58989	0.0066	3122.58989	0.00109
3121.62553	0.00337	3121.62553	0.00658	3121.62553	0.00109
3120.66117	0.00347	3120.66117	0.00656	3120.66117	0.00108
3119.69682	0.00354	3119.69682	0.00655	3119.69682	0.00108
3118.73246	0.0035	3118.73246	0.00654	3118.73246	0.00107
3117.7681	0.00345	3117.7681	0.00652	3117.7681	0.00107
3116.80374	0.00346	3116.80374	0.00649	3116.80374	0.00107
3115.83939	0.00343	3115.83939	0.00647	3115.83939	0.00106
3114.87503	0.00338	3114.87503	0.00645	3114.87503	0.00106
3113.91067	0.00342	3113.91067	0.00641	3113.91067	0.00105
3112.94631	0.00349	3112.94631	0.00637	3112.94631	0.00105
3111.98196	0.00346	3111.98196	0.00633	3111.98196	0.00105
3111.0176	0.00336	3111.0176	0.00628	3111.0176	0.00104
3110.05324	0.00329	3110.05324	0.00624	3110.05324	0.00105
3109.08888	0.00323	3109.08888	0.00621	3109.08888	0.00105
3108.12452	0.00314	3108.12452	0.00618	3108.12452	0.00104
3107.16017	0.00301	3107.16017	0.00614	3107.16017	0.00102
3106.19581	0.00297	3106.19581	0.00611	3106.19581	0.00101
3105.23145	0.00309	3105.23145	0.00608	3105.23145	9.90E-04
3104.26709	0.00323	3104.26709	0.00606	3104.26709	9.70E-04
3103.30274	0.00322	3103.30274	0.00605	3103.30274	9.60E-04
3102.33838	0.00316	3102.33838	0.00606	3102.33838	9.80E-04
3101.37402	0.00317	3101.37402	0.00607	3101.37402	1.00E-03

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3100.40966	0.00322	3100.40966	0.00606	3100.40966	0.00103
3099.44531	0.00328	3099.44531	0.00603	3099.44531	0.00105
3098.48095	0.00333	3098.48095	0.006	3098.48095	0.00106
3097.51659	0.00334	3097.51659	0.00597	3097.51659	0.00105
3096.55223	0.00335	3096.55223	0.00596	3096.55223	0.00104
3095.58788	0.00339	3095.58788	0.00594	3095.58788	0.00102
3094.62352	0.00334	3094.62352	0.00593	3094.62352	1.00E-03
3093.65916	0.00324	3093.65916	0.00592	3093.65916	9.80E-04
3092.6948	0.0032	3092.6948	0.00588	3092.6948	9.80E-04
3091.73045	0.0032	3091.73045	0.00584	3091.73045	9.90E-04
3090.76609	0.0032	3090.76609	0.00581	3090.76609	0.00102
3089.80173	0.00325	3089.80173	0.00578	3089.80173	0.00104
3088.83737	0.00332	3088.83737	0.00575	3088.83737	0.00105
3087.87302	0.00327	3087.87302	0.00573	3087.87302	0.00105
3086.90866	0.00319	3086.90866	0.0057	3086.90866	0.00104
3085.9443	0.00324	3085.9443	0.00569	3085.9443	0.00102
3084.97994	0.0033	3084.97994	0.00568	3084.97994	0.00102
3084.01559	0.00331	3084.01559	0.00567	3084.01559	0.00104
3083.05123	0.00332	3083.05123	0.00564	3083.05123	0.00106
3082.08687	0.00335	3082.08687	0.00562	3082.08687	0.00107
3081.12251	0.00333	3081.12251	0.00558	3081.12251	0.00107
3080.15815	0.00327	3080.15815	0.00555	3080.15815	0.00107
3079.1938	0.00322	3079.1938	0.00552	3079.1938	0.00106
3078.22944	0.00319	3078.22944	0.0055	3078.22944	0.00105
3077.26508	0.0032	3077.26508	0.00548	3077.26508	0.00104
3076.30072	0.00321	3076.30072	0.00545	3076.30072	0.00103
3075.33637	0.00317	3075.33637	0.00542	3075.33637	0.00103
3074.37201	0.00316	3074.37201	0.00539	3074.37201	0.00104
3073.40765	0.0032	3073.40765	0.00537	3073.40765	0.00105
3072.44329	0.00323	3072.44329	0.00534	3072.44329	0.00105
3071.47894	0.00321	3071.47894	0.00532	3071.47894	0.00105
3070.51458	0.00315	3070.51458	0.0053	3070.51458	0.00105
3069.55022	0.00306	3069.55022	0.00529	3069.55022	0.00106
3068.58586	0.00302	3068.58586	0.00526	3068.58586	0.00107
3067.62151	0.00305	3067.62151	0.00524	3067.62151	0.00109
3066.65715	0.00316	3066.65715	0.00521	3066.65715	0.0011
3065.69279	0.00328	3065.69279	0.00518	3065.69279	0.00109
3064.72843	0.00327	3064.72843	0.00515	3064.72843	0.00106
3063.76408	0.00315	3063.76408	0.00512	3063.76408	0.00102
3062.79972	0.00298	3062.79972	0.00511	3062.79972	9.90E-04
3061.83536	0.00285	3061.83536	0.0051	3061.83536	9.80E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3060.871	0.0028	3060.871	0.00509	3060.871	9.80E-04
3059.90665	0.00278	3059.90665	0.00508	3059.90665	9.80E-04
3058.94229	0.00274	3058.94229	0.00506	3058.94229	9.90E-04
3057.97793	0.00266	3057.97793	0.00503	3057.97793	9.90E-04
3057.01357	0.00264	3057.01357	0.00499	3057.01357	9.90E-04
3056.04921	0.00276	3056.04921	0.00496	3056.04921	9.70E-04
3055.08486	0.00285	3055.08486	0.00494	3055.08486	9.50E-04
3054.1205	0.00281	3054.1205	0.00491	3054.1205	9.30E-04
3053.15614	0.00272	3053.15614	0.00488	3053.15614	9.10E-04
3052.19178	0.00266	3052.19178	0.00486	3052.19178	9.20E-04
3051.22743	0.00265	3051.22743	0.00486	3051.22743	9.30E-04
3050.26307	0.00269	3050.26307	0.00485	3050.26307	9.60E-04
3049.29871	0.00269	3049.29871	0.00485	3049.29871	9.80E-04
3048.33435	0.00265	3048.33435	0.00486	3048.33435	1.00E-03
3047.37	0.00263	3047.37	0.00487	3047.37	1.00E-03
3046.40564	0.00264	3046.40564	0.00486	3046.40564	1.00E-03
3045.44128	0.00263	3045.44128	0.00483	3045.44128	1.00E-03
3044.47692	0.00262	3044.47692	0.00479	3044.47692	1.00E-03
3043.51257	0.00263	3043.51257	0.00475	3043.51257	1.00E-03
3042.54821	0.00263	3042.54821	0.00471	3042.54821	9.90E-04
3041.58385	0.0026	3041.58385	0.00468	3041.58385	9.90E-04
3040.61949	0.00257	3040.61949	0.00465	3040.61949	9.80E-04
3039.65514	0.00257	3039.65514	0.00463	3039.65514	9.70E-04
3038.69078	0.0026	3038.69078	0.00461	3038.69078	9.60E-04
3037.72642	0.0026	3037.72642	0.00459	3037.72642	9.30E-04
3036.76206	0.00261	3036.76206	0.00457	3036.76206	9.00E-04
3035.79771	0.00265	3035.79771	0.00454	3035.79771	8.80E-04
3034.83335	0.00258	3034.83335	0.00451	3034.83335	8.70E-04
3033.86899	0.00246	3033.86899	0.00446	3033.86899	8.80E-04
3032.90463	0.00247	3032.90463	0.00443	3032.90463	8.90E-04
3031.94027	0.00253	3031.94027	0.00441	3031.94027	9.00E-04
3030.97592	0.0025	3030.97592	0.0044	3030.97592	8.90E-04
3030.01156	0.00245	3030.01156	0.0044	3030.01156	8.70E-04
3029.0472	0.00249	3029.0472	0.00441	3029.0472	8.40E-04
3028.08284	0.00256	3028.08284	0.00441	3028.08284	8.20E-04
3027.11849	0.00254	3027.11849	0.00439	3027.11849	8.30E-04
3026.15413	0.00239	3026.15413	0.00436	3026.15413	8.50E-04
3025.18977	0.00225	3025.18977	0.00432	3025.18977	8.90E-04
3024.22541	0.00222	3024.22541	0.00428	3024.22541	9.20E-04
3023.26106	0.00225	3023.26106	0.00424	3023.26106	9.20E-04
3022.2967	0.00225	3022.2967	0.00422	3022.2967	9.00E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3021.33234	0.00224	3021.33234	0.00422	3021.33234	8.70E-04
3020.36798	0.00226	3020.36798	0.00423	3020.36798	8.40E-04
3019.40363	0.00225	3019.40363	0.00423	3019.40363	8.20E-04
3018.43927	0.00217	3018.43927	0.00421	3018.43927	8.30E-04
3017.47491	0.00211	3017.47491	0.00418	3017.47491	8.50E-04
3016.51055	0.00216	3016.51055	0.00415	3016.51055	8.70E-04
3015.5462	0.00218	3015.5462	0.00412	3015.5462	8.70E-04
3014.58184	0.0021	3014.58184	0.00409	3014.58184	8.60E-04
3013.61748	0.00201	3013.61748	0.00408	3013.61748	8.50E-04
3012.65312	0.00197	3012.65312	0.00407	3012.65312	8.40E-04
3011.68877	0.00201	3011.68877	0.00407	3011.68877	8.40E-04
3010.72441	0.00206	3010.72441	0.00406	3010.72441	8.40E-04
3009.76005	0.00208	3009.76005	0.00406	3009.76005	8.50E-04
3008.79569	0.00208	3008.79569	0.00405	3008.79569	8.30E-04
3007.83134	0.00208	3007.83134	0.00404	3007.83134	8.10E-04
3006.86698	0.0021	3006.86698	0.00402	3006.86698	7.90E-04
3005.90262	0.00209	3005.90262	0.00399	3005.90262	7.70E-04
3004.93826	0.00204	3004.93826	0.00396	3004.93826	7.50E-04
3003.9739	0.00202	3003.9739	0.00393	3003.9739	7.40E-04
3003.00955	0.00203	3003.00955	0.00391	3003.00955	7.40E-04
3002.04519	0.00205	3002.04519	0.00388	3002.04519	7.40E-04
3001.08083	0.00205	3001.08083	0.00386	3001.08083	7.50E-04
3000.11647	0.00203	3000.11647	0.00385	3000.11647	7.70E-04
2999.15212	0.00196	2999.15212	0.00383	2999.15212	7.90E-04
2998.18776	0.00191	2998.18776	0.00383	2998.18776	8.10E-04
2997.2234	0.00197	2997.2234	0.00382	2997.2234	8.10E-04
2996.25904	0.0021	2996.25904	0.00382	2996.25904	8.00E-04
2995.29469	0.00219	2995.29469	0.00381	2995.29469	7.90E-04
2994.33033	0.00222	2994.33033	0.0038	2994.33033	7.90E-04
2993.36597	0.00222	2993.36597	0.00379	2993.36597	8.00E-04
2992.40161	0.00222	2992.40161	0.00378	2992.40161	8.20E-04
2991.43726	0.0022	2991.43726	0.00376	2991.43726	8.40E-04
2990.4729	0.00216	2990.4729	0.00374	2990.4729	8.50E-04
2989.50854	0.00212	2989.50854	0.00372	2989.50854	8.60E-04
2988.54418	0.00212	2988.54418	0.0037	2988.54418	8.60E-04
2987.57983	0.00214	2987.57983	0.00368	2987.57983	8.60E-04
2986.61547	0.00219	2986.61547	0.00366	2986.61547	8.70E-04
2985.65111	0.00226	2985.65111	0.00366	2985.65111	8.70E-04
2984.68675	0.00228	2984.68675	0.00366	2984.68675	8.60E-04
2983.7224	0.00227	2983.7224	0.00366	2983.7224	8.60E-04
2982.75804	0.00232	2982.75804	0.00365	2982.75804	8.60E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2981.79368	0.0024	2981.79368	0.00364	2981.79368	8.70E-04
2980.82932	0.00247	2980.82932	0.00364	2980.82932	8.70E-04
2979.86496	0.00254	2979.86496	0.00363	2979.86496	8.80E-04
2978.90061	0.00259	2978.90061	0.0036	2978.90061	8.70E-04
2977.93625	0.00263	2977.93625	0.00357	2977.93625	8.70E-04
2976.97189	0.00272	2976.97189	0.00355	2976.97189	8.90E-04
2976.00753	0.00285	2976.00753	0.00354	2976.00753	9.20E-04
2975.04318	0.00295	2975.04318	0.00354	2975.04318	9.50E-04
2974.07882	0.00299	2974.07882	0.00356	2974.07882	9.60E-04
2973.11446	0.00306	2973.11446	0.00358	2973.11446	9.70E-04
2972.1501	0.0032	2972.1501	0.0036	2972.1501	9.60E-04
2971.18575	0.00333	2971.18575	0.0036	2971.18575	9.50E-04
2970.22139	0.00338	2970.22139	0.0036	2970.22139	9.40E-04
2969.25703	0.00343	2969.25703	0.00359	2969.25703	9.50E-04
2968.29267	0.00348	2968.29267	0.00358	2968.29267	9.60E-04
2967.32832	0.00353	2967.32832	0.00358	2967.32832	9.80E-04
2966.36396	0.00363	2966.36396	0.00358	2966.36396	1.00E-03
2965.3996	0.00379	2965.3996	0.00358	2965.3996	0.00102
2964.43524	0.00397	2964.43524	0.00359	2964.43524	0.00106
2963.47089	0.0041	2963.47089	0.00361	2963.47089	0.00109
2962.50653	0.00419	2962.50653	0.00363	2962.50653	0.00113
2961.54217	0.00425	2961.54217	0.00364	2961.54217	0.00114
2960.57781	0.00429	2960.57781	0.00365	2960.57781	0.00114
2959.61346	0.00435	2959.61346	0.00365	2959.61346	0.00114
2958.6491	0.00446	2958.6491	0.00365	2958.6491	0.00113
2957.68474	0.00462	2957.68474	0.00365	2957.68474	0.00113
2956.72038	0.00474	2956.72038	0.00365	2956.72038	0.00114
2955.75603	0.0048	2955.75603	0.00367	2955.75603	0.00115
2954.79167	0.00491	2954.79167	0.00368	2954.79167	0.00116
2953.82731	0.00507	2953.82731	0.0037	2953.82731	0.00117
2952.86295	0.00517	2952.86295	0.0037	2952.86295	0.00118
2951.89859	0.0052	2951.89859	0.0037	2951.89859	0.0012
2950.93424	0.00523	2950.93424	0.0037	2950.93424	0.00122
2949.96988	0.00528	2949.96988	0.0037	2949.96988	0.00124
2949.00552	0.00527	2949.00552	0.0037	2949.00552	0.00125
2948.04116	0.00524	2948.04116	0.00371	2948.04116	0.00126
2947.07681	0.00525	2947.07681	0.00373	2947.07681	0.00126
2946.11245	0.00531	2946.11245	0.00375	2946.11245	0.00127
2945.14809	0.00542	2945.14809	0.00377	2945.14809	0.00128
2944.18373	0.00552	2944.18373	0.00379	2944.18373	0.00127
2943.21938	0.00556	2943.21938	0.00381	2943.21938	0.00127

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2942.25502	0.00553	2942.25502	0.00381	2942.25502	0.00125
2941.29066	0.00545	2941.29066	0.00381	2941.29066	0.00123
2940.3263	0.00541	2940.3263	0.00381	2940.3263	0.0012
2939.36195	0.00549	2939.36195	0.00382	2939.36195	0.00119
2938.39759	0.00563	2938.39759	0.00383	2938.39759	0.0012
2937.43323	0.00574	2937.43323	0.00384	2937.43323	0.00121
2936.46887	0.00581	2936.46887	0.00386	2936.46887	0.00124
2935.50452	0.00585	2935.50452	0.00387	2935.50452	0.00127
2934.54016	0.00594	2934.54016	0.00386	2934.54016	0.00129
2933.5758	0.0061	2933.5758	0.00385	2933.5758	0.00129
2932.61144	0.0063	2932.61144	0.00385	2932.61144	0.0013
2931.64709	0.00645	2931.64709	0.00386	2931.64709	0.0013
2930.68273	0.00654	2930.68273	0.00387	2930.68273	0.00129
2929.71837	0.00663	2929.71837	0.00388	2929.71837	0.00127
2928.75401	0.00675	2928.75401	0.00387	2928.75401	0.00125
2927.78965	0.00682	2927.78965	0.00386	2927.78965	0.00124
2926.8253	0.00682	2926.8253	0.00385	2926.8253	0.00123
2925.86094	0.00686	2925.86094	0.00384	2925.86094	0.00122
2924.89658	0.00693	2924.89658	0.00385	2924.89658	0.00121
2923.93222	0.00692	2923.93222	0.00385	2923.93222	0.0012
2922.96787	0.00689	2922.96787	0.00385	2922.96787	0.00117
2922.00351	0.00685	2922.00351	0.00385	2922.00351	0.00115
2921.03915	0.00672	2921.03915	0.00384	2921.03915	0.00113
2920.07479	0.00658	2920.07479	0.00383	2920.07479	0.00113
2919.11044	0.00653	2919.11044	0.00381	2919.11044	0.00113
2918.14608	0.00645	2918.14608	0.00378	2918.14608	0.00113
2917.18172	0.00631	2917.18172	0.00376	2917.18172	0.00112
2916.21736	0.00619	2916.21736	0.00373	2916.21736	0.00111
2915.25301	0.0061	2915.25301	0.0037	2915.25301	0.00111
2914.28865	0.00595	2914.28865	0.00368	2914.28865	0.00112
2913.32429	0.00579	2913.32429	0.00366	2913.32429	0.00113
2912.35993	0.00566	2912.35993	0.00364	2912.35993	0.00115
2911.39558	0.00555	2911.39558	0.00362	2911.39558	0.00114
2910.43122	0.00544	2910.43122	0.0036	2910.43122	0.00113
2909.46686	0.0054	2909.46686	0.00359	2909.46686	0.00111
2908.5025	0.0054	2908.5025	0.00358	2908.5025	0.0011
2907.53815	0.00532	2907.53815	0.00356	2907.53815	0.00108
2906.57379	0.00519	2906.57379	0.00354	2906.57379	0.00107
2905.60943	0.0051	2905.60943	0.00351	2905.60943	0.00106
2904.64507	0.00505	2904.64507	0.00349	2904.64507	0.00105
2903.68071	0.00492	2903.68071	0.00348	2903.68071	0.00103

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2902.71636	0.00473	2902.71636	0.00347	2902.71636	0.00102
2901.752	0.00459	2901.752	0.00347	2901.752	1.00E-03
2900.78764	0.00453	2900.78764	0.00347	2900.78764	9.80E-04
2899.82328	0.0045	2899.82328	0.00347	2899.82328	9.70E-04
2898.85893	0.00441	2898.85893	0.00347	2898.85893	9.70E-04
2897.89457	0.00427	2897.89457	0.00347	2897.89457	9.70E-04
2896.93021	0.00422	2896.93021	0.00346	2896.93021	9.60E-04
2895.96585	0.00425	2895.96585	0.00343	2895.96585	9.50E-04
2895.0015	0.00421	2895.0015	0.0034	2895.0015	9.30E-04
2894.03714	0.00407	2894.03714	0.00339	2894.03714	9.10E-04
2893.07278	0.00391	2893.07278	0.00338	2893.07278	8.80E-04
2892.10842	0.00381	2892.10842	0.00338	2892.10842	8.70E-04
2891.14407	0.00375	2891.14407	0.00337	2891.14407	8.50E-04
2890.17971	0.00367	2890.17971	0.00337	2890.17971	8.50E-04
2889.21535	0.00359	2889.21535	0.00336	2889.21535	8.50E-04
2888.25099	0.00355	2888.25099	0.00335	2888.25099	8.50E-04
2887.28664	0.00352	2887.28664	0.00334	2887.28664	8.50E-04
2886.32228	0.00348	2886.32228	0.00334	2886.32228	8.40E-04
2885.35792	0.00345	2885.35792	0.00334	2885.35792	8.40E-04
2884.39356	0.00334	2884.39356	0.00335	2884.39356	8.30E-04
2883.42921	0.0032	2883.42921	0.00335	2883.42921	8.30E-04
2882.46485	0.00314	2882.46485	0.00335	2882.46485	8.30E-04
2881.50049	0.00317	2881.50049	0.00333	2881.50049	8.40E-04
2880.53613	0.00322	2880.53613	0.0033	2880.53613	8.40E-04
2879.57178	0.00329	2879.57178	0.00327	2879.57178	8.40E-04
2878.60742	0.00336	2878.60742	0.00325	2878.60742	8.30E-04
2877.64306	0.00339	2877.64306	0.00323	2877.64306	8.30E-04
2876.6787	0.00341	2876.6787	0.0032	2876.6787	8.30E-04
2875.71434	0.00342	2875.71434	0.00318	2875.71434	8.20E-04
2874.74999	0.0034	2874.74999	0.00316	2874.74999	8.20E-04
2873.78563	0.0033	2873.78563	0.00316	2873.78563	8.10E-04
2872.82127	0.00321	2872.82127	0.00315	2872.82127	8.20E-04
2871.85691	0.00323	2871.85691	0.00315	2871.85691	8.30E-04
2870.89256	0.00333	2870.89256	0.00314	2870.89256	8.30E-04
2869.9282	0.00338	2869.9282	0.00312	2869.9282	8.30E-04
2868.96384	0.00339	2868.96384	0.0031	2868.96384	8.20E-04
2867.99948	0.00346	2867.99948	0.00308	2867.99948	8.10E-04
2867.03513	0.0035	2867.03513	0.00306	2867.03513	7.90E-04
2866.07077	0.00343	2866.07077	0.00306	2866.07077	7.70E-04
2865.10641	0.00334	2865.10641	0.00305	2865.10641	7.60E-04
2864.14205	0.00335	2864.14205	0.00303	2864.14205	7.60E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2863.1777	0.00345	2863.1777	0.00302	2863.1777	7.50E-04
2862.21334	0.00353	2862.21334	0.003	2862.21334	7.50E-04
2861.24898	0.00356	2861.24898	0.00298	2861.24898	7.50E-04
2860.28462	0.00357	2860.28462	0.00295	2860.28462	7.40E-04
2859.32027	0.00357	2859.32027	0.00294	2859.32027	7.30E-04
2858.35591	0.00359	2858.35591	0.00293	2858.35591	7.20E-04
2857.39155	0.00364	2857.39155	0.00292	2857.39155	7.10E-04
2856.42719	0.00371	2856.42719	0.00292	2856.42719	7.10E-04
2855.46284	0.0038	2855.46284	0.00292	2855.46284	7.20E-04
2854.49848	0.00384	2854.49848	0.00291	2854.49848	7.30E-04
2853.53412	0.00376	2853.53412	0.0029	2853.53412	7.20E-04
2852.56976	0.00364	2852.56976	0.0029	2852.56976	7.20E-04
2851.6054	0.0036	2851.6054	0.0029	2851.6054	7.00E-04
2850.64105	0.00359	2850.64105	0.00289	2850.64105	7.00E-04
2849.67669	0.00355	2849.67669	0.00287	2849.67669	6.90E-04
2848.71233	0.00349	2848.71233	0.00284	2848.71233	6.80E-04
2847.74797	0.00343	2847.74797	0.00279	2847.74797	6.60E-04
2846.78362	0.00331	2846.78362	0.00274	2846.78362	6.20E-04
2845.81926	0.00315	2845.81926	0.0027	2845.81926	5.90E-04
2844.8549	0.00302	2844.8549	0.00267	2844.8549	5.70E-04
2843.89054	0.00295	2843.89054	0.00265	2843.89054	5.80E-04
2842.92619	0.00289	2842.92619	0.00265	2842.92619	6.00E-04
2841.96183	0.00282	2841.96183	0.00266	2841.96183	6.20E-04
2840.99747	0.00274	2840.99747	0.00266	2840.99747	6.20E-04
2840.03311	0.00261	2840.03311	0.00265	2840.03311	6.20E-04
2839.06876	0.00241	2839.06876	0.00263	2839.06876	6.00E-04
2838.1044	0.00225	2838.1044	0.00261	2838.1044	5.70E-04
2837.14004	0.00216	2837.14004	0.00258	2837.14004	5.50E-04
2836.17568	0.00214	2836.17568	0.00255	2836.17568	5.30E-04
2835.21133	0.00215	2835.21133	0.00252	2835.21133	5.30E-04
2834.24697	0.00214	2834.24697	0.00251	2834.24697	5.30E-04
2833.28261	0.00205	2833.28261	0.0025	2833.28261	5.40E-04
2832.31825	0.00191	2832.31825	0.0025	2832.31825	5.50E-04
2831.3539	0.0018	2831.3539	0.0025	2831.3539	5.60E-04
2830.38954	0.00178	2830.38954	0.0025	2830.38954	5.70E-04
2829.42518	0.00181	2829.42518	0.00249	2829.42518	5.70E-04
2828.46082	0.00181	2828.46082	0.00249	2828.46082	5.60E-04
2827.49647	0.00176	2827.49647	0.00247	2827.49647	5.50E-04
2826.53211	0.00171	2826.53211	0.00245	2826.53211	5.40E-04
2825.56775	0.00168	2825.56775	0.00242	2825.56775	5.30E-04
2824.60339	0.00167	2824.60339	0.0024	2824.60339	5.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2823.63903	0.00171	2823.63903	0.00238	2823.63903	5.10E-04
2822.67468	0.00174	2822.67468	0.00236	2822.67468	5.10E-04
2821.71032	0.00174	2821.71032	0.00234	2821.71032	5.20E-04
2820.74596	0.00174	2820.74596	0.00234	2820.74596	5.30E-04
2819.7816	0.00175	2819.7816	0.00234	2819.7816	5.30E-04
2818.81725	0.00174	2818.81725	0.00235	2818.81725	5.30E-04
2817.85289	0.00167	2817.85289	0.00236	2817.85289	5.30E-04
2816.88853	0.0016	2816.88853	0.00237	2816.88853	5.20E-04
2815.92417	0.0016	2815.92417	0.00237	2815.92417	5.10E-04
2814.95982	0.00164	2814.95982	0.00236	2814.95982	5.00E-04
2813.99546	0.00163	2813.99546	0.00234	2813.99546	4.90E-04
2813.0311	0.00153	2813.0311	0.00232	2813.0311	5.00E-04
2812.06674	0.00144	2812.06674	0.00232	2812.06674	5.00E-04
2811.10239	0.00144	2811.10239	0.00231	2811.10239	5.00E-04
2810.13803	0.00154	2810.13803	0.0023	2810.13803	4.90E-04
2809.17367	0.00159	2809.17367	0.00229	2809.17367	4.90E-04
2808.20931	0.00154	2808.20931	0.00228	2808.20931	4.80E-04
2807.24496	0.00148	2807.24496	0.00227	2807.24496	4.70E-04
2806.2806	0.00146	2806.2806	0.00226	2806.2806	4.70E-04
2805.31624	0.00144	2805.31624	0.00226	2805.31624	4.80E-04
2804.35188	0.00141	2804.35188	0.00226	2804.35188	4.90E-04
2803.38753	0.00143	2803.38753	0.00226	2803.38753	5.10E-04
2802.42317	0.00147	2802.42317	0.00226	2802.42317	5.20E-04
2801.45881	0.00148	2801.45881	0.00225	2801.45881	5.30E-04
2800.49445	0.00146	2800.49445	0.00224	2800.49445	5.20E-04
2799.53009	0.00144	2799.53009	0.00224	2799.53009	5.10E-04
2798.56574	0.00145	2798.56574	0.00224	2798.56574	4.90E-04
2797.60138	0.00149	2797.60138	0.00224	2797.60138	4.90E-04
2796.63702	0.00148	2796.63702	0.00224	2796.63702	4.90E-04
2795.67266	0.00142	2795.67266	0.00224	2795.67266	4.90E-04
2794.70831	0.00138	2794.70831	0.00224	2794.70831	5.00E-04
2793.74395	0.00138	2793.74395	0.00222	2793.74395	5.00E-04
2792.77959	0.00135	2792.77959	0.00219	2792.77959	4.80E-04
2791.81523	0.00132	2791.81523	0.00218	2791.81523	4.70E-04
2790.85088	0.0013	2790.85088	0.00216	2790.85088	4.60E-04
2789.88652	0.00127	2789.88652	0.00216	2789.88652	4.60E-04
2788.92216	0.00121	2788.92216	0.00216	2788.92216	4.60E-04
2787.9578	0.00116	2787.9578	0.00217	2787.9578	4.70E-04
2786.99345	0.00118	2786.99345	0.00217	2786.99345	4.70E-04
2786.02909	0.00122	2786.02909	0.00217	2786.02909	4.70E-04
2785.06473	0.00125	2785.06473	0.00216	2785.06473	4.60E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2784.10037	0.00128	2784.10037	0.00216	2784.10037	4.50E-04
2783.13602	0.00126	2783.13602	0.00216	2783.13602	4.60E-04
2782.17166	0.00117	2782.17166	0.00217	2782.17166	4.80E-04
2781.2073	0.00107	2781.2073	0.00217	2781.2073	5.00E-04
2780.24294	0.00105	2780.24294	0.00216	2780.24294	5.10E-04
2779.27859	0.0011	2779.27859	0.00214	2779.27859	5.10E-04
2778.31423	0.00113	2778.31423	0.00212	2778.31423	4.90E-04
2777.34987	0.00109	2777.34987	0.00212	2777.34987	4.70E-04
2776.38551	0.00109	2776.38551	0.00211	2776.38551	4.60E-04
2775.42115	0.00114	2775.42115	0.00212	2775.42115	4.50E-04
2774.4568	0.00122	2774.4568	0.00212	2774.4568	4.50E-04
2773.49244	0.00125	2773.49244	0.00212	2773.49244	4.60E-04
2772.52808	0.0012	2772.52808	0.00211	2772.52808	4.50E-04
2771.56372	0.00115	2771.56372	0.00209	2771.56372	4.50E-04
2770.59937	0.00113	2770.59937	0.00209	2770.59937	4.40E-04
2769.63501	0.00112	2769.63501	0.00209	2769.63501	4.30E-04
2768.67065	0.00108	2768.67065	0.00209	2768.67065	4.30E-04
2767.70629	0.00106	2767.70629	0.0021	2767.70629	4.40E-04
2766.74194	0.00108	2766.74194	0.00212	2766.74194	4.30E-04
2765.77758	0.00112	2765.77758	0.00213	2765.77758	4.30E-04
2764.81322	0.00114	2764.81322	0.00213	2764.81322	4.40E-04
2763.84886	0.00111	2763.84886	0.00212	2763.84886	4.40E-04
2762.88451	0.00104	2762.88451	0.00211	2762.88451	4.40E-04
2761.92015	1.00E-03	2761.92015	0.0021	2761.92015	4.40E-04
2760.95579	0.00102	2760.95579	0.00209	2760.95579	4.40E-04
2759.99143	0.00105	2759.99143	0.0021	2759.99143	4.40E-04
2759.02708	0.00105	2759.02708	0.00211	2759.02708	4.40E-04
2758.06272	0.00103	2758.06272	0.00212	2758.06272	4.40E-04
2757.09836	0.00103	2757.09836	0.00212	2757.09836	4.40E-04
2756.134	0.00105	2756.134	0.00211	2756.134	4.50E-04
2755.16965	0.00103	2755.16965	0.0021	2755.16965	4.50E-04
2754.20529	0.00104	2754.20529	0.00208	2754.20529	4.60E-04
2753.24093	0.0011	2753.24093	0.00207	2753.24093	4.60E-04
2752.27657	0.00113	2752.27657	0.00206	2752.27657	4.60E-04
2751.31222	0.00111	2751.31222	0.00206	2751.31222	4.60E-04
2750.34786	0.00112	2750.34786	0.00206	2750.34786	4.50E-04
2749.3835	0.00113	2749.3835	0.00206	2749.3835	4.60E-04
2748.41914	0.00111	2748.41914	0.00207	2748.41914	4.60E-04
2747.45478	0.00113	2747.45478	0.00208	2747.45478	4.50E-04
2746.49043	0.00118	2746.49043	0.00209	2746.49043	4.30E-04
2745.52607	0.0012	2745.52607	0.00209	2745.52607	4.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2744.56171	0.00115	2744.56171	0.00209	2744.56171	4.10E-04
2743.59735	0.00107	2743.59735	0.0021	2743.59735	4.30E-04
2742.633	0.00104	2742.633	0.0021	2742.633	4.50E-04
2741.66864	0.00103	2741.66864	0.00209	2741.66864	4.60E-04
2740.70428	0.00103	2740.70428	0.00208	2740.70428	4.50E-04
2739.73992	0.00104	2739.73992	0.00207	2739.73992	4.30E-04
2738.77557	0.00101	2738.77557	0.00205	2738.77557	4.00E-04
2737.81121	9.90E-04	2737.81121	0.00204	2737.81121	3.80E-04
2736.84685	0.00101	2736.84685	0.00204	2736.84685	3.80E-04
2735.88249	0.00106	2735.88249	0.00205	2735.88249	4.00E-04
2734.91814	0.0011	2734.91814	0.00205	2734.91814	4.20E-04
2733.95378	0.0011	2733.95378	0.00206	2733.95378	4.30E-04
2732.98942	0.00109	2732.98942	0.00205	2732.98942	4.30E-04
2732.02506	0.00112	2732.02506	0.00205	2732.02506	4.10E-04
2731.06071	0.0011	2731.06071	0.00205	2731.06071	4.00E-04
2730.09635	0.00103	2730.09635	0.00206	2730.09635	3.80E-04
2729.13199	0.00101	2729.13199	0.00207	2729.13199	3.80E-04
2728.16763	0.00103	2728.16763	0.00207	2728.16763	3.70E-04
2727.20328	0.00101	2727.20328	0.00207	2727.20328	3.70E-04
2726.23892	9.80E-04	2726.23892	0.00207	2726.23892	3.70E-04
2725.27456	1.00E-03	2725.27456	0.00207	2725.27456	3.70E-04
2724.3102	0.00103	2724.3102	0.00206	2724.3102	3.90E-04
2723.34584	0.00104	2723.34584	0.00206	2723.34584	3.90E-04
2722.38149	0.00103	2722.38149	0.00206	2722.38149	4.00E-04
2721.41713	0.00101	2721.41713	0.00205	2721.41713	4.00E-04
2720.45277	9.80E-04	2720.45277	0.00204	2720.45277	4.00E-04
2719.48841	9.20E-04	2719.48841	0.00203	2719.48841	4.00E-04
2718.52406	8.50E-04	2718.52406	0.00203	2718.52406	3.90E-04
2717.5597	8.10E-04	2717.5597	0.00203	2717.5597	3.70E-04
2716.59534	8.20E-04	2716.59534	0.00203	2716.59534	3.60E-04
2715.63098	8.70E-04	2715.63098	0.00203	2715.63098	3.40E-04
2714.66663	9.10E-04	2714.66663	0.00203	2714.66663	3.20E-04
2713.70227	8.90E-04	2713.70227	0.00203	2713.70227	3.20E-04
2712.73791	8.50E-04	2712.73791	0.00204	2712.73791	3.20E-04
2711.77355	8.20E-04	2711.77355	0.00205	2711.77355	3.40E-04
2710.8092	7.80E-04	2710.8092	0.00205	2710.8092	3.60E-04
2709.84484	7.40E-04	2709.84484	0.00204	2709.84484	3.70E-04
2708.88048	7.40E-04	2708.88048	0.00202	2708.88048	3.80E-04
2707.91612	8.10E-04	2707.91612	0.00201	2707.91612	3.90E-04
2706.95177	8.80E-04	2706.95177	0.002	2706.95177	3.90E-04
2705.98741	9.10E-04	2705.98741	0.00199	2705.98741	3.70E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2705.02305	9.10E-04	2705.02305	0.00199	2705.02305	3.50E-04
2704.05869	9.00E-04	2704.05869	0.00199	2704.05869	3.40E-04
2703.09434	8.90E-04	2703.09434	0.00197	2703.09434	3.40E-04
2702.12998	8.60E-04	2702.12998	0.00196	2702.12998	3.50E-04
2701.16562	8.40E-04	2701.16562	0.00195	2701.16562	3.70E-04
2700.20126	8.40E-04	2700.20126	0.00194	2700.20126	3.70E-04
2699.23691	8.40E-04	2699.23691	0.00193	2699.23691	3.70E-04
2698.27255	8.20E-04	2698.27255	0.00192	2698.27255	3.50E-04
2697.30819	7.90E-04	2697.30819	0.0019	2697.30819	3.40E-04
2696.34383	7.50E-04	2696.34383	0.00188	2696.34383	3.30E-04
2695.37947	7.20E-04	2695.37947	0.00185	2695.37947	3.40E-04
2694.41512	7.70E-04	2694.41512	0.00184	2694.41512	3.60E-04
2693.45076	8.30E-04	2693.45076	0.00183	2693.45076	3.80E-04
2692.4864	8.50E-04	2692.4864	0.00184	2692.4864	3.90E-04
2691.52204	8.70E-04	2691.52204	0.00186	2691.52204	3.90E-04
2690.55769	8.80E-04	2690.55769	0.00187	2690.55769	3.90E-04
2689.59333	8.40E-04	2689.59333	0.00188	2689.59333	3.80E-04
2688.62897	8.00E-04	2688.62897	0.00188	2688.62897	3.80E-04
2687.66461	8.10E-04	2687.66461	0.00188	2687.66461	3.70E-04
2686.70026	8.30E-04	2686.70026	0.00187	2686.70026	3.60E-04
2685.7359	8.40E-04	2685.7359	0.00187	2685.7359	3.50E-04
2684.77154	8.60E-04	2684.77154	0.00186	2684.77154	3.50E-04
2683.80718	8.90E-04	2683.80718	0.00185	2683.80718	3.50E-04
2682.84283	8.90E-04	2682.84283	0.00182	2682.84283	3.60E-04
2681.87847	8.90E-04	2681.87847	0.00179	2681.87847	3.70E-04
2680.91411	9.00E-04	2680.91411	0.00177	2680.91411	3.70E-04
2679.94975	9.20E-04	2679.94975	0.00176	2679.94975	3.60E-04
2678.9854	9.10E-04	2678.9854	0.00175	2678.9854	3.60E-04
2678.02104	8.60E-04	2678.02104	0.00175	2678.02104	3.60E-04
2677.05668	8.40E-04	2677.05668	0.00174	2677.05668	3.50E-04
2676.09232	8.10E-04	2676.09232	0.00172	2676.09232	3.60E-04
2675.12797	8.00E-04	2675.12797	0.00171	2675.12797	3.70E-04
2674.16361	8.40E-04	2674.16361	0.0017	2674.16361	3.80E-04
2673.19925	8.80E-04	2673.19925	0.00169	2673.19925	3.80E-04
2672.23489	8.70E-04	2672.23489	0.00169	2672.23489	3.80E-04
2671.27053	8.10E-04	2671.27053	0.00169	2671.27053	3.80E-04
2670.30618	7.80E-04	2670.30618	0.00169	2670.30618	3.70E-04
2669.34182	8.00E-04	2669.34182	0.00168	2669.34182	3.50E-04
2668.37746	8.30E-04	2668.37746	0.00167	2668.37746	3.40E-04
2667.4131	8.30E-04	2667.4131	0.00167	2667.4131	3.30E-04
2666.44875	8.30E-04	2666.44875	0.00167	2666.44875	3.40E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2665.48439	8.20E-04	2665.48439	0.00167	2665.48439	3.50E-04
2664.52003	8.20E-04	2664.52003	0.00167	2664.52003	3.60E-04
2663.55567	8.30E-04	2663.55567	0.00167	2663.55567	3.60E-04
2662.59132	8.30E-04	2662.59132	0.00166	2662.59132	3.50E-04
2661.62696	8.10E-04	2661.62696	0.00165	2661.62696	3.40E-04
2660.6626	7.90E-04	2660.6626	0.00162	2660.6626	3.30E-04
2659.69824	7.80E-04	2659.69824	0.0016	2659.69824	3.30E-04
2658.73389	7.70E-04	2658.73389	0.00158	2658.73389	3.20E-04
2657.76953	7.70E-04	2657.76953	0.00157	2657.76953	3.20E-04
2656.80517	7.80E-04	2656.80517	0.00157	2656.80517	3.20E-04
2655.84081	7.80E-04	2655.84081	0.00158	2655.84081	3.20E-04
2654.87646	8.00E-04	2654.87646	0.0016	2654.87646	3.30E-04
2653.9121	8.10E-04	2653.9121	0.00161	2653.9121	3.30E-04
2652.94774	7.70E-04	2652.94774	0.00162	2652.94774	3.40E-04
2651.98338	7.10E-04	2651.98338	0.00162	2651.98338	3.50E-04
2651.01903	6.60E-04	2651.01903	0.00161	2651.01903	3.70E-04
2650.05467	6.40E-04	2650.05467	0.0016	2650.05467	3.70E-04
2649.09031	6.70E-04	2649.09031	0.00158	2649.09031	3.70E-04
2648.12595	7.50E-04	2648.12595	0.00157	2648.12595	3.60E-04
2647.1616	8.40E-04	2647.1616	0.00156	2647.1616	3.50E-04
2646.19724	8.60E-04	2646.19724	0.00154	2646.19724	3.50E-04
2645.23288	7.70E-04	2645.23288	0.00153	2645.23288	3.50E-04
2644.26852	7.00E-04	2644.26852	0.00152	2644.26852	3.60E-04
2643.30416	6.90E-04	2643.30416	0.00151	2643.30416	3.70E-04
2642.33981	6.80E-04	2642.33981	0.0015	2642.33981	3.70E-04
2641.37545	6.80E-04	2641.37545	0.0015	2641.37545	3.70E-04
2640.41109	7.00E-04	2640.41109	0.0015	2640.41109	3.70E-04
2639.44673	7.50E-04	2639.44673	0.0015	2639.44673	3.50E-04
2638.48238	7.70E-04	2638.48238	0.0015	2638.48238	3.40E-04
2637.51802	7.60E-04	2637.51802	0.00149	2637.51802	3.20E-04
2636.55366	7.70E-04	2636.55366	0.00149	2636.55366	3.10E-04
2635.5893	7.90E-04	2635.5893	0.00148	2635.5893	3.10E-04
2634.62495	8.10E-04	2634.62495	0.00147	2634.62495	3.20E-04
2633.66059	8.30E-04	2633.66059	0.00146	2633.66059	3.40E-04
2632.69623	8.10E-04	2632.69623	0.00145	2632.69623	3.50E-04
2631.73187	7.40E-04	2631.73187	0.00145	2631.73187	3.50E-04
2630.76752	6.90E-04	2630.76752	0.00145	2630.76752	3.40E-04
2629.80316	7.00E-04	2629.80316	0.00145	2629.80316	3.30E-04
2628.8388	6.90E-04	2628.8388	0.00145	2628.8388	3.20E-04
2627.87444	6.80E-04	2627.87444	0.00144	2627.87444	3.20E-04
2626.91009	7.20E-04	2626.91009	0.00144	2626.91009	3.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2625.94573	8.10E-04	2625.94573	0.00143	2625.94573	3.20E-04
2624.98137	8.50E-04	2624.98137	0.00143	2624.98137	3.10E-04
2624.01701	8.30E-04	2624.01701	0.00142	2624.01701	3.00E-04
2623.05266	8.00E-04	2623.05266	0.00142	2623.05266	3.00E-04
2622.0883	8.00E-04	2622.0883	0.00141	2622.0883	3.00E-04
2621.12394	8.00E-04	2621.12394	0.00141	2621.12394	3.20E-04
2620.15958	7.90E-04	2620.15958	0.0014	2620.15958	3.30E-04
2619.19522	7.70E-04	2619.19522	0.0014	2619.19522	3.40E-04
2618.23087	7.90E-04	2618.23087	0.00139	2618.23087	3.50E-04
2617.26651	7.80E-04	2617.26651	0.00138	2617.26651	3.50E-04
2616.30215	7.50E-04	2616.30215	0.00137	2616.30215	3.40E-04
2615.33779	7.70E-04	2615.33779	0.00137	2615.33779	3.20E-04
2614.37344	8.00E-04	2614.37344	0.00137	2614.37344	3.00E-04
2613.40908	8.40E-04	2613.40908	0.00138	2613.40908	3.00E-04
2612.44472	8.60E-04	2612.44472	0.00139	2612.44472	3.00E-04
2611.48036	8.40E-04	2611.48036	0.00138	2611.48036	3.10E-04
2610.51601	7.50E-04	2610.51601	0.00136	2610.51601	3.30E-04
2609.55165	6.70E-04	2609.55165	0.00135	2609.55165	3.30E-04
2608.58729	6.30E-04	2608.58729	0.00133	2608.58729	3.30E-04
2607.62293	6.40E-04	2607.62293	0.00133	2607.62293	3.20E-04
2606.65858	6.90E-04	2606.65858	0.00134	2606.65858	3.10E-04
2605.69422	7.40E-04	2605.69422	0.00134	2605.69422	3.10E-04
2604.72986	7.70E-04	2604.72986	0.00134	2604.72986	3.10E-04
2603.7655	7.60E-04	2603.7655	0.00133	2603.7655	3.10E-04
2602.80115	7.20E-04	2602.80115	0.00131	2602.80115	3.10E-04
2601.83679	6.90E-04	2601.83679	0.0013	2601.83679	3.10E-04
2600.87243	6.90E-04	2600.87243	0.00129	2600.87243	3.10E-04
2599.90807	7.20E-04	2599.90807	0.00128	2599.90807	3.10E-04
2598.94372	7.40E-04	2598.94372	0.00128	2598.94372	3.10E-04
2597.97936	7.20E-04	2597.97936	0.00127	2597.97936	3.10E-04
2597.015	7.10E-04	2597.015	0.00127	2597.015	3.20E-04
2596.05064	7.50E-04	2596.05064	0.00126	2596.05064	3.20E-04
2595.08628	7.60E-04	2595.08628	0.00126	2595.08628	3.20E-04
2594.12193	7.50E-04	2594.12193	0.00126	2594.12193	3.30E-04
2593.15757	7.50E-04	2593.15757	0.00126	2593.15757	3.20E-04
2592.19321	7.20E-04	2592.19321	0.00125	2592.19321	3.10E-04
2591.22885	6.70E-04	2591.22885	0.00124	2591.22885	3.00E-04
2590.2645	6.60E-04	2590.2645	0.00123	2590.2645	2.80E-04
2589.30014	6.80E-04	2589.30014	0.00123	2589.30014	2.70E-04
2588.33578	6.80E-04	2588.33578	0.00122	2588.33578	2.70E-04
2587.37142	6.50E-04	2587.37142	0.00122	2587.37142	2.70E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2586.40707	6.30E-04	2586.40707	0.00121	2586.40707	2.70E-04
2585.44271	6.70E-04	2585.44271	0.00121	2585.44271	2.60E-04
2584.47835	7.20E-04	2584.47835	0.0012	2584.47835	2.60E-04
2583.51399	7.00E-04	2583.51399	0.00119	2583.51399	2.50E-04
2582.54964	6.40E-04	2582.54964	0.00118	2582.54964	2.50E-04
2581.58528	5.80E-04	2581.58528	0.00119	2581.58528	2.60E-04
2580.62092	5.80E-04	2580.62092	0.00119	2580.62092	2.80E-04
2579.65656	6.00E-04	2579.65656	0.0012	2579.65656	2.90E-04
2578.69221	6.10E-04	2578.69221	0.0012	2578.69221	2.80E-04
2577.72785	6.00E-04	2577.72785	0.00119	2577.72785	2.80E-04
2576.76349	6.20E-04	2576.76349	0.00119	2576.76349	2.70E-04
2575.79913	6.80E-04	2575.79913	0.00119	2575.79913	2.60E-04
2574.83478	7.20E-04	2574.83478	0.0012	2574.83478	2.60E-04
2573.87042	6.80E-04	2573.87042	0.0012	2573.87042	2.60E-04
2572.90606	6.20E-04	2572.90606	0.00119	2572.90606	2.60E-04
2571.9417	6.00E-04	2571.9417	0.00119	2571.9417	2.60E-04
2570.97735	6.20E-04	2570.97735	0.00117	2570.97735	2.60E-04
2570.01299	6.20E-04	2570.01299	0.00116	2570.01299	2.70E-04
2569.04863	5.90E-04	2569.04863	0.00115	2569.04863	2.60E-04
2568.08427	5.50E-04	2568.08427	0.00115	2568.08427	2.50E-04
2567.11991	5.50E-04	2567.11991	0.00115	2567.11991	2.40E-04
2566.15556	5.90E-04	2566.15556	0.00115	2566.15556	2.30E-04
2565.1912	6.20E-04	2565.1912	0.00115	2565.1912	2.30E-04
2564.22684	6.50E-04	2564.22684	0.00115	2564.22684	2.30E-04
2563.26248	6.80E-04	2563.26248	0.00116	2563.26248	2.40E-04
2562.29813	7.00E-04	2562.29813	0.00115	2562.29813	2.50E-04
2561.33377	7.20E-04	2561.33377	0.00114	2561.33377	2.70E-04
2560.36941	7.30E-04	2560.36941	0.00113	2560.36941	2.70E-04
2559.40505	7.00E-04	2559.40505	0.00112	2559.40505	2.70E-04
2558.4407	6.10E-04	2558.4407	0.00111	2558.4407	2.60E-04
2557.47634	5.00E-04	2557.47634	0.00112	2557.47634	2.50E-04
2556.51198	4.70E-04	2556.51198	0.00114	2556.51198	2.50E-04
2555.54762	5.50E-04	2555.54762	0.00114	2555.54762	2.50E-04
2554.58327	6.70E-04	2554.58327	0.00114	2554.58327	2.60E-04
2553.61891	7.40E-04	2553.61891	0.00113	2553.61891	2.70E-04
2552.65455	7.30E-04	2552.65455	0.00111	2552.65455	2.70E-04
2551.69019	7.00E-04	2551.69019	0.0011	2551.69019	2.70E-04
2550.72584	6.70E-04	2550.72584	0.00111	2550.72584	2.60E-04
2549.76148	6.70E-04	2549.76148	0.00112	2549.76148	2.60E-04
2548.79712	6.50E-04	2548.79712	0.00114	2548.79712	2.60E-04
2547.83276	6.10E-04	2547.83276	0.00113	2547.83276	2.60E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2546.86841	5.70E-04	2546.86841	0.00111	2546.86841	2.60E-04
2545.90405	5.50E-04	2545.90405	0.00109	2545.90405	2.50E-04
2544.93969	4.90E-04	2544.93969	0.00107	2544.93969	2.50E-04
2543.97533	4.70E-04	2543.97533	0.00106	2543.97533	2.40E-04
2543.01097	5.40E-04	2543.01097	0.00106	2543.01097	2.40E-04
2542.04662	5.90E-04	2542.04662	0.00106	2542.04662	2.30E-04
2541.08226	6.00E-04	2541.08226	0.00107	2541.08226	2.30E-04
2540.1179	5.70E-04	2540.1179	0.00106	2540.1179	2.30E-04
2539.15354	5.50E-04	2539.15354	0.00104	2539.15354	2.20E-04
2538.18919	5.70E-04	2538.18919	0.00104	2538.18919	2.20E-04
2537.22483	5.80E-04	2537.22483	0.00104	2537.22483	2.20E-04
2536.26047	5.30E-04	2536.26047	0.00104	2536.26047	2.30E-04
2535.29611	4.80E-04	2535.29611	0.00105	2535.29611	2.50E-04
2534.33176	4.80E-04	2534.33176	0.00105	2534.33176	2.70E-04
2533.3674	4.70E-04	2533.3674	0.00105	2533.3674	2.80E-04
2532.40304	4.40E-04	2532.40304	0.00104	2532.40304	2.80E-04
2531.43868	4.30E-04	2531.43868	0.00102	2531.43868	2.80E-04
2530.47433	4.40E-04	2530.47433	1.00E-03	2530.47433	2.80E-04
2529.50997	4.40E-04	2529.50997	9.90E-04	2529.50997	2.70E-04
2528.54561	4.40E-04	2528.54561	9.70E-04	2528.54561	2.60E-04
2527.58125	4.30E-04	2527.58125	9.70E-04	2527.58125	2.60E-04
2526.6169	4.30E-04	2526.6169	9.80E-04	2526.6169	2.40E-04
2525.65254	4.40E-04	2525.65254	9.90E-04	2525.65254	2.20E-04
2524.68818	4.40E-04	2524.68818	0.00101	2524.68818	2.10E-04
2523.72382	4.20E-04	2523.72382	0.00103	2523.72382	2.10E-04
2522.75947	4.30E-04	2522.75947	0.00102	2522.75947	2.20E-04
2521.79511	4.70E-04	2521.79511	0.00101	2521.79511	2.30E-04
2520.83075	4.90E-04	2520.83075	9.90E-04	2520.83075	2.40E-04
2519.86639	4.90E-04	2519.86639	9.80E-04	2519.86639	2.40E-04
2518.90204	4.80E-04	2518.90204	9.80E-04	2518.90204	2.40E-04
2517.93768	4.40E-04	2517.93768	9.70E-04	2517.93768	2.40E-04
2516.97332	4.20E-04	2516.97332	9.70E-04	2516.97332	2.40E-04
2516.00896	4.40E-04	2516.00896	9.70E-04	2516.00896	2.50E-04
2515.0446	4.50E-04	2515.0446	9.70E-04	2515.0446	2.50E-04
2514.08025	4.40E-04	2514.08025	9.60E-04	2514.08025	2.50E-04
2513.11589	4.20E-04	2513.11589	9.50E-04	2513.11589	2.40E-04
2512.15153	3.70E-04	2512.15153	9.30E-04	2512.15153	2.30E-04
2511.18717	3.20E-04	2511.18717	9.20E-04	2511.18717	2.30E-04
2510.22282	3.50E-04	2510.22282	9.10E-04	2510.22282	2.30E-04
2509.25846	4.10E-04	2509.25846	9.00E-04	2509.25846	2.40E-04
2508.2941	4.00E-04	2508.2941	9.10E-04	2508.2941	2.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2507.32974	3.50E-04	2507.32974	9.20E-04	2507.32974	2.30E-04
2506.36539	3.70E-04	2506.36539	9.20E-04	2506.36539	2.30E-04
2505.40103	4.10E-04	2505.40103	9.30E-04	2505.40103	2.30E-04
2504.43667	4.30E-04	2504.43667	9.20E-04	2504.43667	2.30E-04
2503.47231	4.60E-04	2503.47231	9.20E-04	2503.47231	2.30E-04
2502.50796	5.10E-04	2502.50796	9.20E-04	2502.50796	2.30E-04
2501.5436	5.30E-04	2501.5436	9.20E-04	2501.5436	2.30E-04
2500.57924	5.00E-04	2500.57924	9.30E-04	2500.57924	2.30E-04
2499.61488	4.60E-04	2499.61488	9.40E-04	2499.61488	2.30E-04
2498.65053	4.30E-04	2498.65053	9.50E-04	2498.65053	2.20E-04
2497.68617	4.10E-04	2497.68617	9.50E-04	2497.68617	2.20E-04
2496.72181	4.20E-04	2496.72181	9.30E-04	2496.72181	2.20E-04
2495.75745	4.40E-04	2495.75745	9.10E-04	2495.75745	2.20E-04
2494.7931	4.40E-04	2494.7931	8.80E-04	2494.7931	2.30E-04
2493.82874	4.10E-04	2493.82874	8.70E-04	2493.82874	2.40E-04
2492.86438	3.50E-04	2492.86438	8.60E-04	2492.86438	2.40E-04
2491.90002	3.50E-04	2491.90002	8.70E-04	2491.90002	2.30E-04
2490.93566	4.10E-04	2490.93566	8.80E-04	2490.93566	2.30E-04
2489.97131	4.40E-04	2489.97131	8.80E-04	2489.97131	2.20E-04
2489.00695	4.10E-04	2489.00695	8.80E-04	2489.00695	2.30E-04
2488.04259	3.80E-04	2488.04259	8.80E-04	2488.04259	2.30E-04
2487.07823	4.10E-04	2487.07823	8.80E-04	2487.07823	2.30E-04
2486.11388	4.70E-04	2486.11388	8.70E-04	2486.11388	2.30E-04
2485.14952	5.00E-04	2485.14952	8.70E-04	2485.14952	2.20E-04
2484.18516	4.70E-04	2484.18516	8.60E-04	2484.18516	2.10E-04
2483.2208	4.30E-04	2483.2208	8.60E-04	2483.2208	2.10E-04
2482.25645	4.00E-04	2482.25645	8.50E-04	2482.25645	2.20E-04
2481.29209	3.60E-04	2481.29209	8.50E-04	2481.29209	2.20E-04
2480.32773	3.50E-04	2480.32773	8.50E-04	2480.32773	2.20E-04
2479.36337	3.90E-04	2479.36337	8.50E-04	2479.36337	2.10E-04
2478.39902	4.30E-04	2478.39902	8.40E-04	2478.39902	2.00E-04
2477.43466	4.20E-04	2477.43466	8.40E-04	2477.43466	1.90E-04
2476.4703	4.20E-04	2476.4703	8.30E-04	2476.4703	1.90E-04
2475.50594	4.10E-04	2475.50594	8.30E-04	2475.50594	2.00E-04
2474.54159	3.90E-04	2474.54159	8.40E-04	2474.54159	2.10E-04
2473.57723	4.20E-04	2473.57723	8.40E-04	2473.57723	2.20E-04
2472.61287	5.00E-04	2472.61287	8.30E-04	2472.61287	2.30E-04
2471.64851	5.50E-04	2471.64851	8.30E-04	2471.64851	2.30E-04
2470.68416	5.20E-04	2470.68416	8.20E-04	2470.68416	2.30E-04
2469.7198	4.50E-04	2469.7198	8.10E-04	2469.7198	2.30E-04
2468.75544	4.10E-04	2468.75544	8.00E-04	2468.75544	2.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2467.79108	3.70E-04	2467.79108	8.00E-04	2467.79108	2.30E-04
2466.82672	3.50E-04	2466.82672	7.90E-04	2466.82672	2.20E-04
2465.86237	3.80E-04	2465.86237	7.90E-04	2465.86237	2.20E-04
2464.89801	4.20E-04	2464.89801	7.90E-04	2464.89801	2.20E-04
2463.93365	4.50E-04	2463.93365	7.90E-04	2463.93365	2.10E-04
2462.96929	4.70E-04	2462.96929	7.90E-04	2462.96929	2.10E-04
2462.00494	4.60E-04	2462.00494	7.90E-04	2462.00494	2.00E-04
2461.04058	4.60E-04	2461.04058	7.90E-04	2461.04058	2.00E-04
2460.07622	4.60E-04	2460.07622	8.00E-04	2460.07622	2.00E-04
2459.11186	4.30E-04	2459.11186	8.00E-04	2459.11186	2.10E-04
2458.14751	3.90E-04	2458.14751	8.00E-04	2458.14751	2.20E-04
2457.18315	3.90E-04	2457.18315	8.00E-04	2457.18315	2.20E-04
2456.21879	4.40E-04	2456.21879	8.00E-04	2456.21879	2.10E-04
2455.25443	4.80E-04	2455.25443	7.90E-04	2455.25443	2.00E-04
2454.29008	4.80E-04	2454.29008	7.90E-04	2454.29008	1.90E-04
2453.32572	4.30E-04	2453.32572	7.90E-04	2453.32572	1.90E-04
2452.36136	4.20E-04	2452.36136	7.90E-04	2452.36136	1.90E-04
2451.397	4.30E-04	2451.397	7.90E-04	2451.397	2.00E-04
2450.43265	4.20E-04	2450.43265	8.00E-04	2450.43265	2.10E-04
2449.46829	4.10E-04	2449.46829	8.00E-04	2449.46829	2.10E-04
2448.50393	4.30E-04	2448.50393	8.00E-04	2448.50393	2.00E-04
2447.53957	4.80E-04	2447.53957	7.90E-04	2447.53957	1.90E-04
2446.57522	5.20E-04	2446.57522	7.80E-04	2446.57522	1.80E-04
2445.61086	5.00E-04	2445.61086	7.70E-04	2445.61086	1.70E-04
2444.6465	4.40E-04	2444.6465	7.60E-04	2444.6465	1.70E-04
2443.68214	4.00E-04	2443.68214	7.60E-04	2443.68214	1.70E-04
2442.71779	4.10E-04	2442.71779	7.60E-04	2442.71779	1.70E-04
2441.75343	4.10E-04	2441.75343	7.70E-04	2441.75343	1.70E-04
2440.78907	4.10E-04	2440.78907	7.60E-04	2440.78907	1.80E-04
2439.82471	4.50E-04	2439.82471	7.50E-04	2439.82471	1.80E-04
2438.86035	4.50E-04	2438.86035	7.40E-04	2438.86035	1.80E-04
2437.896	3.90E-04	2437.896	7.30E-04	2437.896	1.70E-04
2436.93164	3.50E-04	2436.93164	7.30E-04	2436.93164	1.60E-04
2435.96728	3.70E-04	2435.96728	7.30E-04	2435.96728	1.50E-04
2435.00292	4.20E-04	2435.00292	7.30E-04	2435.00292	1.50E-04
2434.03857	4.40E-04	2434.03857	7.40E-04	2434.03857	1.50E-04
2433.07421	4.30E-04	2433.07421	7.40E-04	2433.07421	1.50E-04
2432.10985	4.10E-04	2432.10985	7.50E-04	2432.10985	1.60E-04
2431.14549	3.90E-04	2431.14549	7.60E-04	2431.14549	1.70E-04
2430.18114	3.90E-04	2430.18114	7.60E-04	2430.18114	1.70E-04
2429.21678	4.10E-04	2429.21678	7.50E-04	2429.21678	1.80E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2428.25242	4.30E-04	2428.25242	7.40E-04	2428.25242	1.90E-04
2427.28806	4.40E-04	2427.28806	7.40E-04	2427.28806	1.90E-04
2426.32371	4.20E-04	2426.32371	7.40E-04	2426.32371	2.00E-04
2425.35935	4.00E-04	2425.35935	7.30E-04	2425.35935	2.00E-04
2424.39499	3.90E-04	2424.39499	7.20E-04	2424.39499	2.00E-04
2423.43063	4.00E-04	2423.43063	7.10E-04	2423.43063	2.00E-04
2422.46628	4.50E-04	2422.46628	7.00E-04	2422.46628	2.10E-04
2421.50192	4.90E-04	2421.50192	6.90E-04	2421.50192	2.10E-04
2420.53756	4.90E-04	2420.53756	6.90E-04	2420.53756	2.10E-04
2419.5732	4.40E-04	2419.5732	7.00E-04	2419.5732	2.10E-04
2418.60885	4.10E-04	2418.60885	7.00E-04	2418.60885	2.10E-04
2417.64449	3.90E-04	2417.64449	7.00E-04	2417.64449	2.10E-04
2416.68013	3.70E-04	2416.68013	7.00E-04	2416.68013	2.10E-04
2415.71577	3.80E-04	2415.71577	6.90E-04	2415.71577	2.00E-04
2414.75141	4.00E-04	2414.75141	6.90E-04	2414.75141	1.90E-04
2413.78706	3.80E-04	2413.78706	6.90E-04	2413.78706	1.80E-04
2412.8227	3.60E-04	2412.8227	7.00E-04	2412.8227	1.80E-04
2411.85834	3.40E-04	2411.85834	7.00E-04	2411.85834	1.80E-04
2410.89398	3.00E-04	2410.89398	7.00E-04	2410.89398	1.70E-04
2409.92963	2.60E-04	2409.92963	7.00E-04	2409.92963	1.70E-04
2408.96527	2.80E-04	2408.96527	7.00E-04	2408.96527	1.60E-04
2408.00091	3.20E-04	2408.00091	6.90E-04	2408.00091	1.50E-04
2407.03655	3.60E-04	2407.03655	7.00E-04	2407.03655	1.30E-04
2406.0722	3.80E-04	2406.0722	7.00E-04	2406.0722	1.30E-04
2405.10784	3.60E-04	2405.10784	7.10E-04	2405.10784	1.30E-04
2404.14348	3.10E-04	2404.14348	7.20E-04	2404.14348	1.40E-04
2403.17912	3.10E-04	2403.17912	7.20E-04	2403.17912	1.60E-04
2402.21477	3.30E-04	2402.21477	7.20E-04	2402.21477	1.70E-04
2401.25041	3.30E-04	2401.25041	7.10E-04	2401.25041	1.80E-04
2400.28605	3.10E-04	2400.28605	7.20E-04	2400.28605	1.70E-04
2399.32169	3.10E-04	2399.32169	7.30E-04	2399.32169	1.70E-04
2398.35734	3.20E-04	2398.35734	7.40E-04	2398.35734	1.60E-04
2397.39298	3.40E-04	2397.39298	7.50E-04	2397.39298	1.70E-04
2396.42862	3.70E-04	2396.42862	7.50E-04	2396.42862	1.70E-04
2395.46426	3.90E-04	2395.46426	7.40E-04	2395.46426	1.80E-04
2394.49991	4.00E-04	2394.49991	7.10E-04	2394.49991	1.80E-04
2393.53555	4.20E-04	2393.53555	6.90E-04	2393.53555	1.90E-04
2392.57119	4.10E-04	2392.57119	6.90E-04	2392.57119	2.00E-04
2391.60683	3.70E-04	2391.60683	7.00E-04	2391.60683	2.00E-04
2390.64248	3.20E-04	2390.64248	7.10E-04	2390.64248	2.00E-04
2389.67812	2.80E-04	2389.67812	7.30E-04	2389.67812	1.90E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2388.71376	2.90E-04	2388.71376	7.30E-04	2388.71376	1.80E-04
2387.7494	3.30E-04	2387.7494	7.30E-04	2387.7494	1.80E-04
2386.78504	3.70E-04	2386.78504	7.30E-04	2386.78504	1.80E-04
2385.82069	3.90E-04	2385.82069	7.30E-04	2385.82069	1.90E-04
2384.85633	3.80E-04	2384.85633	7.30E-04	2384.85633	2.00E-04
2383.89197	4.10E-04	2383.89197	7.20E-04	2383.89197	2.20E-04
2382.92761	4.90E-04	2382.92761	7.10E-04	2382.92761	2.30E-04
2381.96326	5.40E-04	2381.96326	6.90E-04	2381.96326	2.60E-04
2380.9989	5.80E-04	2380.9989	6.80E-04	2380.9989	2.80E-04
2380.03454	6.90E-04	2380.03454	6.80E-04	2380.03454	3.00E-04
2379.07018	8.10E-04	2379.07018	6.80E-04	2379.07018	3.10E-04
2378.10583	8.40E-04	2378.10583	6.80E-04	2378.10583	3.40E-04
2377.14147	8.00E-04	2377.14147	6.70E-04	2377.14147	3.90E-04
2376.17711	9.20E-04	2376.17711	6.50E-04	2376.17711	4.60E-04
2375.21275	0.00125	2375.21275	6.10E-04	2375.21275	5.40E-04
2374.2484	0.00148	2374.2484	5.80E-04	2374.2484	5.90E-04
2373.28404	0.00142	2373.28404	5.60E-04	2373.28404	6.10E-04
2372.31968	0.00138	2372.31968	5.60E-04	2372.31968	6.10E-04
2371.35532	0.00154	2371.35532	5.50E-04	2371.35532	6.00E-04
2370.39097	0.00175	2370.39097	5.00E-04	2370.39097	5.90E-04
2369.42661	0.00202	2369.42661	4.20E-04	2369.42661	5.90E-04
2368.46225	0.00227	2368.46225	3.20E-04	2368.46225	5.90E-04
2367.49789	0.00226	2367.49789	2.40E-04	2367.49789	5.80E-04
2366.53354	0.00216	2366.53354	2.00E-04	2366.53354	5.70E-04
2365.56918	0.00227	2365.56918	2.20E-04	2365.56918	5.60E-04
2364.60482	0.00245	2364.60482	2.90E-04	2364.60482	5.80E-04
2363.64046	0.00249	2363.64046	3.80E-04	2363.64046	6.00E-04
2362.6761	0.00243	2362.6761	4.20E-04	2362.6761	6.40E-04
2361.71175	0.00231	2361.71175	4.00E-04	2361.71175	6.70E-04
2360.74739	0.00208	2360.74739	3.20E-04	2360.74739	6.80E-04
2359.78303	0.00199	2359.78303	2.10E-04	2359.78303	6.80E-04
2358.81867	0.00219	2358.81867	1.00E-04	2358.81867	6.70E-04
2357.85432	0.00243	2357.85432	3.00E-05	2357.85432	6.60E-04
2356.88996	0.00241	2356.88996	1.00E-05	2356.88996	6.20E-04
2355.9256	0.00216	2355.9256	5.00E-05	2355.9256	5.80E-04
2354.96124	0.00192	2354.96124	1.10E-04	2354.96124	5.50E-04
2353.99689	0.00187	2353.99689	1.80E-04	2353.99689	5.20E-04
2353.03253	0.00189	2353.03253	2.50E-04	2353.03253	4.70E-04
2352.06817	0.0017	2352.06817	3.10E-04	2352.06817	4.10E-04
2351.10381	0.00137	2351.10381	3.70E-04	2351.10381	3.90E-04
2350.13946	0.00114	2350.13946	4.40E-04	2350.13946	4.20E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2349.1751	0.00112	2349.1751	5.20E-04	2349.1751	4.60E-04
2348.21074	0.00123	2348.21074	5.90E-04	2348.21074	5.20E-04
2347.24638	0.00141	2347.24638	6.10E-04	2347.24638	5.70E-04
2346.28203	0.00158	2346.28203	5.80E-04	2346.28203	6.00E-04
2345.31767	0.00174	2345.31767	5.30E-04	2345.31767	5.90E-04
2344.35331	0.00187	2344.35331	4.90E-04	2344.35331	5.60E-04
2343.38895	0.0019	2343.38895	4.50E-04	2343.38895	5.50E-04
2342.4246	0.00182	2342.4246	4.30E-04	2342.4246	5.60E-04
2341.46024	0.00175	2341.46024	4.10E-04	2341.46024	5.90E-04
2340.49588	0.00175	2340.49588	3.80E-04	2340.49588	6.10E-04
2339.53152	0.00171	2339.53152	3.50E-04	2339.53152	6.00E-04
2338.56716	0.00158	2338.56716	3.20E-04	2338.56716	5.60E-04
2337.60281	0.00159	2337.60281	3.10E-04	2337.60281	5.30E-04
2336.63845	0.00174	2336.63845	3.40E-04	2336.63845	5.10E-04
2335.67409	0.00184	2335.67409	3.60E-04	2335.67409	5.00E-04
2334.70973	0.00187	2334.70973	3.60E-04	2334.70973	4.70E-04
2333.74538	0.00187	2333.74538	3.40E-04	2333.74538	4.50E-04
2332.78102	0.00179	2332.78102	3.10E-04	2332.78102	4.10E-04
2331.81666	0.00166	2331.81666	3.00E-04	2331.81666	3.80E-04
2330.8523	0.00151	2330.8523	3.00E-04	2330.8523	3.60E-04
2329.88795	0.00143	2329.88795	3.20E-04	2329.88795	3.70E-04
2328.92359	0.00149	2328.92359	3.50E-04	2328.92359	3.80E-04
2327.95923	0.00158	2327.95923	3.70E-04	2327.95923	3.80E-04
2326.99487	0.00157	2326.99487	3.80E-04	2326.99487	3.80E-04
2326.03052	0.00154	2326.03052	3.80E-04	2326.03052	3.60E-04
2325.06616	0.00151	2325.06616	3.60E-04	2325.06616	3.50E-04
2324.1018	0.00141	2324.1018	3.60E-04	2324.1018	3.60E-04
2323.13744	0.00134	2323.13744	3.80E-04	2323.13744	3.70E-04
2322.17309	0.00128	2322.17309	4.00E-04	2322.17309	3.70E-04
2321.20873	0.00109	2321.20873	4.20E-04	2321.20873	3.60E-04
2320.24437	8.90E-04	2320.24437	4.60E-04	2320.24437	3.30E-04
2319.28001	8.60E-04	2319.28001	4.80E-04	2319.28001	3.10E-04
2318.31566	9.10E-04	2318.31566	4.90E-04	2318.31566	2.90E-04
2317.3513	8.70E-04	2317.3513	4.90E-04	2317.3513	2.70E-04
2316.38694	8.10E-04	2316.38694	5.00E-04	2316.38694	2.40E-04
2315.42258	8.20E-04	2315.42258	5.00E-04	2315.42258	2.10E-04
2314.45823	8.80E-04	2314.45823	5.00E-04	2314.45823	1.80E-04
2313.49387	8.90E-04	2313.49387	5.10E-04	2313.49387	1.60E-04
2312.52951	7.80E-04	2312.52951	5.20E-04	2312.52951	1.50E-04
2311.56515	6.80E-04	2311.56515	5.30E-04	2311.56515	1.40E-04
2310.60079	6.50E-04	2310.60079	5.20E-04	2310.60079	1.40E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2309.63644	6.50E-04	2309.63644	5.20E-04	2309.63644	1.40E-04
2308.67208	6.20E-04	2308.67208	5.30E-04	2308.67208	1.40E-04
2307.70772	5.70E-04	2307.70772	5.20E-04	2307.70772	1.30E-04
2306.74336	5.10E-04	2306.74336	5.30E-04	2306.74336	1.20E-04
2305.77901	4.40E-04	2305.77901	5.40E-04	2305.77901	1.10E-04
2304.81465	4.30E-04	2304.81465	5.50E-04	2304.81465	9.00E-05
2303.85029	4.90E-04	2303.85029	5.70E-04	2303.85029	9.00E-05
2302.88593	5.40E-04	2302.88593	5.80E-04	2302.88593	1.00E-04
2301.92158	5.50E-04	2301.92158	6.00E-04	2301.92158	1.10E-04
2300.95722	5.40E-04	2300.95722	6.10E-04	2300.95722	1.40E-04
2299.99286	4.80E-04	2299.99286	6.20E-04	2299.99286	1.60E-04
2299.0285	4.10E-04	2299.0285	6.10E-04	2299.0285	1.70E-04
2298.06415	4.00E-04	2298.06415	6.10E-04	2298.06415	1.70E-04
2297.09979	4.20E-04	2297.09979	6.00E-04	2297.09979	1.70E-04
2296.13543	4.30E-04	2296.13543	5.90E-04	2296.13543	1.60E-04
2295.17107	4.30E-04	2295.17107	5.90E-04	2295.17107	1.50E-04
2294.20672	4.20E-04	2294.20672	6.00E-04	2294.20672	1.50E-04
2293.24236	4.30E-04	2293.24236	6.10E-04	2293.24236	1.50E-04
2292.278	4.30E-04	2292.278	6.20E-04	2292.278	1.40E-04
2291.31364	4.00E-04	2291.31364	6.20E-04	2291.31364	1.30E-04
2290.34929	3.40E-04	2290.34929	6.20E-04	2290.34929	1.30E-04
2289.38493	2.90E-04	2289.38493	6.30E-04	2289.38493	1.30E-04
2288.42057	2.70E-04	2288.42057	6.20E-04	2288.42057	1.20E-04
2287.45621	3.00E-04	2287.45621	6.30E-04	2287.45621	1.10E-04
2286.49185	3.20E-04	2286.49185	6.40E-04	2286.49185	1.10E-04
2285.5275	2.70E-04	2285.5275	6.50E-04	2285.5275	1.00E-04
2284.56314	2.10E-04	2284.56314	6.60E-04	2284.56314	9.00E-05
2283.59878	1.80E-04	2283.59878	6.60E-04	2283.59878	9.00E-05
2282.63442	1.90E-04	2282.63442	6.70E-04	2282.63442	1.00E-04
2281.67007	2.00E-04	2281.67007	6.60E-04	2281.67007	1.00E-04
2280.70571	2.10E-04	2280.70571	6.50E-04	2280.70571	1.10E-04
2279.74135	2.50E-04	2279.74135	6.40E-04	2279.74135	1.10E-04
2278.77699	2.90E-04	2278.77699	6.40E-04	2278.77699	1.10E-04
2277.81264	3.20E-04	2277.81264	6.50E-04	2277.81264	1.10E-04
2276.84828	3.70E-04	2276.84828	6.60E-04	2276.84828	1.10E-04
2275.88392	3.90E-04	2275.88392	6.60E-04	2275.88392	1.20E-04
2274.91956	3.60E-04	2274.91956	6.60E-04	2274.91956	1.20E-04
2273.95521	3.20E-04	2273.95521	6.60E-04	2273.95521	1.20E-04
2272.99085	3.00E-04	2272.99085	6.50E-04	2272.99085	1.20E-04
2272.02649	2.60E-04	2272.02649	6.50E-04	2272.02649	1.20E-04
2271.06213	2.00E-04	2271.06213	6.60E-04	2271.06213	1.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2270.09778	1.70E-04	2270.09778	6.70E-04	2270.09778	1.30E-04
2269.13342	1.90E-04	2269.13342	6.80E-04	2269.13342	1.40E-04
2268.16906	2.10E-04	2268.16906	6.80E-04	2268.16906	1.60E-04
2267.2047	2.50E-04	2267.2047	6.90E-04	2267.2047	1.60E-04
2266.24035	2.90E-04	2266.24035	7.00E-04	2266.24035	1.60E-04
2265.27599	3.10E-04	2265.27599	7.00E-04	2265.27599	1.60E-04
2264.31163	3.00E-04	2264.31163	6.90E-04	2264.31163	1.50E-04
2263.34727	2.60E-04	2263.34727	6.70E-04	2263.34727	1.50E-04
2262.38292	2.40E-04	2262.38292	6.60E-04	2262.38292	1.40E-04
2261.41856	2.90E-04	2261.41856	6.50E-04	2261.41856	1.30E-04
2260.4542	3.10E-04	2260.4542	6.50E-04	2260.4542	1.30E-04
2259.48984	2.70E-04	2259.48984	6.60E-04	2259.48984	1.40E-04
2258.52548	2.50E-04	2258.52548	6.60E-04	2258.52548	1.50E-04
2257.56113	2.60E-04	2257.56113	6.60E-04	2257.56113	1.60E-04
2256.59677	2.60E-04	2256.59677	6.60E-04	2256.59677	1.60E-04
2255.63241	2.30E-04	2255.63241	6.50E-04	2255.63241	1.50E-04
2254.66805	2.20E-04	2254.66805	6.40E-04	2254.66805	1.40E-04
2253.7037	2.30E-04	2253.7037	6.30E-04	2253.7037	1.30E-04
2252.73934	2.20E-04	2252.73934	6.30E-04	2252.73934	1.20E-04
2251.77498	2.10E-04	2251.77498	6.40E-04	2251.77498	1.20E-04
2250.81062	2.00E-04	2250.81062	6.50E-04	2250.81062	1.20E-04
2249.84627	2.10E-04	2249.84627	6.70E-04	2249.84627	1.20E-04
2248.88191	2.10E-04	2248.88191	6.80E-04	2248.88191	1.30E-04
2247.91755	2.10E-04	2247.91755	6.80E-04	2247.91755	1.40E-04
2246.95319	2.00E-04	2246.95319	6.70E-04	2246.95319	1.50E-04
2245.98884	1.80E-04	2245.98884	6.60E-04	2245.98884	1.50E-04
2245.02448	1.50E-04	2245.02448	6.50E-04	2245.02448	1.40E-04
2244.06012	1.40E-04	2244.06012	6.50E-04	2244.06012	1.30E-04
2243.09576	1.50E-04	2243.09576	6.60E-04	2243.09576	1.10E-04
2242.13141	1.50E-04	2242.13141	6.80E-04	2242.13141	1.00E-04
2241.16705	1.50E-04	2241.16705	7.00E-04	2241.16705	1.00E-04
2240.20269	1.90E-04	2240.20269	7.00E-04	2240.20269	1.00E-04
2239.23833	2.30E-04	2239.23833	7.00E-04	2239.23833	1.10E-04
2238.27398	2.40E-04	2238.27398	7.00E-04	2238.27398	1.20E-04
2237.30962	2.40E-04	2237.30962	6.80E-04	2237.30962	1.20E-04
2236.34526	2.10E-04	2236.34526	6.70E-04	2236.34526	1.20E-04
2235.3809	1.80E-04	2235.3809	6.70E-04	2235.3809	1.10E-04
2234.41654	1.80E-04	2234.41654	6.70E-04	2234.41654	1.00E-04
2233.45219	1.90E-04	2233.45219	6.70E-04	2233.45219	1.10E-04
2232.48783	1.70E-04	2232.48783	6.80E-04	2232.48783	1.10E-04
2231.52347	1.50E-04	2231.52347	6.80E-04	2231.52347	1.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2230.55911	1.60E-04	2230.55911	6.80E-04	2230.55911	1.40E-04
2229.59476	1.80E-04	2229.59476	6.80E-04	2229.59476	1.50E-04
2228.6304	1.90E-04	2228.6304	6.70E-04	2228.6304	1.50E-04
2227.66604	1.80E-04	2227.66604	6.70E-04	2227.66604	1.50E-04
2226.70168	1.90E-04	2226.70168	6.70E-04	2226.70168	1.40E-04
2225.73733	2.30E-04	2225.73733	6.70E-04	2225.73733	1.30E-04
2224.77297	2.40E-04	2224.77297	6.70E-04	2224.77297	1.10E-04
2223.80861	2.00E-04	2223.80861	6.80E-04	2223.80861	1.10E-04
2222.84425	1.60E-04	2222.84425	6.90E-04	2222.84425	1.10E-04
2221.8799	1.60E-04	2221.8799	7.00E-04	2221.8799	1.20E-04
2220.91554	1.60E-04	2220.91554	7.00E-04	2220.91554	1.40E-04
2219.95118	1.40E-04	2219.95118	6.90E-04	2219.95118	1.60E-04
2218.98682	1.40E-04	2218.98682	6.80E-04	2218.98682	1.70E-04
2218.02247	1.60E-04	2218.02247	6.70E-04	2218.02247	1.70E-04
2217.05811	1.70E-04	2217.05811	6.50E-04	2217.05811	1.60E-04
2216.09375	1.80E-04	2216.09375	6.40E-04	2216.09375	1.50E-04
2215.12939	1.80E-04	2215.12939	6.40E-04	2215.12939	1.30E-04
2214.16504	1.80E-04	2214.16504	6.50E-04	2214.16504	1.20E-04
2213.20068	1.60E-04	2213.20068	6.60E-04	2213.20068	1.00E-04
2212.23632	1.40E-04	2212.23632	6.60E-04	2212.23632	9.00E-05
2211.27196	1.40E-04	2211.27196	6.60E-04	2211.27196	9.00E-05
2210.30761	1.70E-04	2210.30761	6.60E-04	2210.30761	9.00E-05
2209.34325	1.50E-04	2209.34325	6.60E-04	2209.34325	1.00E-04
2208.37889	1.00E-04	2208.37889	6.60E-04	2208.37889	1.10E-04
2207.41453	8.00E-05	2207.41453	6.60E-04	2207.41453	1.20E-04
2206.45017	1.20E-04	2206.45017	6.70E-04	2206.45017	1.30E-04
2205.48582	1.50E-04	2205.48582	6.70E-04	2205.48582	1.30E-04
2204.52146	1.30E-04	2204.52146	6.60E-04	2204.52146	1.20E-04
2203.5571	1.20E-04	2203.5571	6.60E-04	2203.5571	1.20E-04
2202.59274	1.40E-04	2202.59274	6.50E-04	2202.59274	1.10E-04
2201.62839	1.90E-04	2201.62839	6.50E-04	2201.62839	1.10E-04
2200.66403	2.10E-04	2200.66403	6.50E-04	2200.66403	1.20E-04
2199.69967	2.00E-04	2199.69967	6.70E-04	2199.69967	1.30E-04
2198.73531	1.80E-04	2198.73531	6.80E-04	2198.73531	1.30E-04
2197.77096	1.70E-04	2197.77096	7.00E-04	2197.77096	1.30E-04
2196.8066	1.80E-04	2196.8066	7.10E-04	2196.8066	1.20E-04
2195.84224	1.90E-04	2195.84224	7.20E-04	2195.84224	1.10E-04
2194.87788	1.80E-04	2194.87788	7.10E-04	2194.87788	1.00E-04
2193.91353	1.70E-04	2193.91353	7.00E-04	2193.91353	1.00E-04
2192.94917	1.80E-04	2192.94917	6.90E-04	2192.94917	1.10E-04
2191.98481	1.90E-04	2191.98481	6.80E-04	2191.98481	1.10E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2191.02045	1.60E-04	2191.02045	6.70E-04	2191.02045	1.20E-04
2190.0561	1.50E-04	2190.0561	6.80E-04	2190.0561	1.20E-04
2189.09174	1.80E-04	2189.09174	6.80E-04	2189.09174	1.20E-04
2188.12738	1.90E-04	2188.12738	6.80E-04	2188.12738	1.20E-04
2187.16302	1.60E-04	2187.16302	6.70E-04	2187.16302	1.20E-04
2186.19867	1.40E-04	2186.19867	6.70E-04	2186.19867	1.10E-04
2185.23431	1.50E-04	2185.23431	6.70E-04	2185.23431	1.10E-04
2184.26995	1.40E-04	2184.26995	6.70E-04	2184.26995	1.00E-04
2183.30559	1.20E-04	2183.30559	6.80E-04	2183.30559	1.00E-04
2182.34123	1.20E-04	2182.34123	6.80E-04	2182.34123	1.00E-04
2181.37688	1.20E-04	2181.37688	6.90E-04	2181.37688	1.10E-04
2180.41252	9.00E-05	2180.41252	6.90E-04	2180.41252	1.20E-04
2179.44816	6.00E-05	2179.44816	6.80E-04	2179.44816	1.20E-04
2178.4838	7.00E-05	2178.4838	6.70E-04	2178.4838	1.10E-04
2177.51945	1.10E-04	2177.51945	6.60E-04	2177.51945	1.10E-04
2176.55509	1.60E-04	2176.55509	6.60E-04	2176.55509	1.00E-04
2175.59073	1.70E-04	2175.59073	6.60E-04	2175.59073	1.00E-04
2174.62637	1.80E-04	2174.62637	6.70E-04	2174.62637	1.10E-04
2173.66202	1.80E-04	2173.66202	6.80E-04	2173.66202	1.10E-04
2172.69766	1.60E-04	2172.69766	6.80E-04	2172.69766	1.20E-04
2171.7333	1.20E-04	2171.7333	6.80E-04	2171.7333	1.20E-04
2170.76894	1.00E-04	2170.76894	6.80E-04	2170.76894	1.20E-04
2169.80459	8.00E-05	2169.80459	6.70E-04	2169.80459	1.20E-04
2168.84023	6.00E-05	2168.84023	6.70E-04	2168.84023	1.20E-04
2167.87587	6.00E-05	2167.87587	6.70E-04	2167.87587	1.20E-04
2166.91151	8.00E-05	2166.91151	6.60E-04	2166.91151	1.20E-04
2165.94716	1.10E-04	2165.94716	6.50E-04	2165.94716	1.20E-04
2164.9828	1.20E-04	2164.9828	6.40E-04	2164.9828	1.10E-04
2164.01844	1.20E-04	2164.01844	6.40E-04	2164.01844	1.00E-04
2163.05408	1.40E-04	2163.05408	6.40E-04	2163.05408	9.00E-05
2162.08973	1.20E-04	2162.08973	6.40E-04	2162.08973	9.00E-05
2161.12537	1.00E-04	2161.12537	6.50E-04	2161.12537	9.00E-05
2160.16101	1.00E-04	2160.16101	6.50E-04	2160.16101	1.00E-04
2159.19665	1.10E-04	2159.19665	6.60E-04	2159.19665	1.10E-04
2158.23229	1.10E-04	2158.23229	6.60E-04	2158.23229	1.10E-04
2157.26794	1.30E-04	2157.26794	6.50E-04	2157.26794	1.10E-04
2156.30358	1.10E-04	2156.30358	6.50E-04	2156.30358	1.10E-04
2155.33922	1.10E-04	2155.33922	6.50E-04	2155.33922	1.00E-04
2154.37486	1.40E-04	2154.37486	6.40E-04	2154.37486	1.00E-04
2153.41051	1.80E-04	2153.41051	6.30E-04	2153.41051	1.10E-04
2152.44615	2.00E-04	2152.44615	6.20E-04	2152.44615	1.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2151.48179	2.00E-04	2151.48179	6.10E-04	2151.48179	1.20E-04
2150.51743	2.00E-04	2150.51743	6.10E-04	2150.51743	1.20E-04
2149.55308	1.50E-04	2149.55308	6.10E-04	2149.55308	1.20E-04
2148.58872	7.00E-05	2148.58872	6.10E-04	2148.58872	1.20E-04
2147.62436	4.00E-05	2147.62436	6.20E-04	2147.62436	1.20E-04
2146.66	8.00E-05	2146.66	6.30E-04	2146.66	1.20E-04
2145.69565	1.50E-04	2145.69565	6.40E-04	2145.69565	1.20E-04
2144.73129	1.80E-04	2144.73129	6.50E-04	2144.73129	1.20E-04
2143.76693	1.70E-04	2143.76693	6.50E-04	2143.76693	1.10E-04
2142.80257	1.50E-04	2142.80257	6.40E-04	2142.80257	1.10E-04
2141.83822	1.60E-04	2141.83822	6.30E-04	2141.83822	1.10E-04
2140.87386	1.80E-04	2140.87386	6.20E-04	2140.87386	1.10E-04
2139.9095	1.50E-04	2139.9095	6.20E-04	2139.9095	1.10E-04
2138.94514	1.10E-04	2138.94514	6.10E-04	2138.94514	1.10E-04
2137.98079	1.00E-04	2137.98079	6.10E-04	2137.98079	1.20E-04
2137.01643	1.10E-04	2137.01643	6.00E-04	2137.01643	1.40E-04
2136.05207	1.40E-04	2136.05207	5.90E-04	2136.05207	1.40E-04
2135.08771	1.40E-04	2135.08771	5.90E-04	2135.08771	1.50E-04
2134.12336	1.20E-04	2134.12336	5.90E-04	2134.12336	1.50E-04
2133.159	1.00E-04	2133.159	5.90E-04	2133.159	1.40E-04
2132.19464	9.00E-05	2132.19464	6.00E-04	2132.19464	1.20E-04
2131.23028	9.00E-05	2131.23028	6.00E-04	2131.23028	1.20E-04
2130.26592	1.00E-04	2130.26592	6.00E-04	2130.26592	1.10E-04
2129.30157	1.10E-04	2129.30157	5.90E-04	2129.30157	1.10E-04
2128.33721	1.20E-04	2128.33721	5.80E-04	2128.33721	1.20E-04
2127.37285	1.30E-04	2127.37285	5.80E-04	2127.37285	1.20E-04
2126.40849	1.50E-04	2126.40849	5.80E-04	2126.40849	1.20E-04
2125.44414	1.50E-04	2125.44414	5.90E-04	2125.44414	1.20E-04
2124.47978	1.30E-04	2124.47978	6.00E-04	2124.47978	1.20E-04
2123.51542	1.20E-04	2123.51542	6.10E-04	2123.51542	1.30E-04
2122.55106	1.20E-04	2122.55106	6.00E-04	2122.55106	1.30E-04
2121.58671	1.30E-04	2121.58671	5.80E-04	2121.58671	1.30E-04
2120.62235	1.00E-04	2120.62235	5.70E-04	2120.62235	1.20E-04
2119.65799	8.00E-05	2119.65799	5.60E-04	2119.65799	1.20E-04
2118.69363	8.00E-05	2118.69363	5.60E-04	2118.69363	1.00E-04
2117.72928	1.10E-04	2117.72928	5.50E-04	2117.72928	9.00E-05
2116.76492	1.20E-04	2116.76492	5.50E-04	2116.76492	8.00E-05
2115.80056	1.50E-04	2115.80056	5.50E-04	2115.80056	8.00E-05
2114.8362	1.70E-04	2114.8362	5.50E-04	2114.8362	9.00E-05
2113.87185	1.60E-04	2113.87185	5.50E-04	2113.87185	1.10E-04
2112.90749	1.60E-04	2112.90749	5.50E-04	2112.90749	1.20E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2111.94313	1.70E-04	2111.94313	5.50E-04	2111.94313	1.40E-04
2110.97877	1.50E-04	2110.97877	5.40E-04	2110.97877	1.40E-04
2110.01442	1.20E-04	2110.01442	5.30E-04	2110.01442	1.30E-04
2109.05006	1.30E-04	2109.05006	5.30E-04	2109.05006	1.20E-04
2108.0857	1.50E-04	2108.0857	5.30E-04	2108.0857	1.10E-04
2107.12134	1.70E-04	2107.12134	5.30E-04	2107.12134	1.10E-04
2106.15698	1.80E-04	2106.15698	5.20E-04	2106.15698	1.00E-04
2105.19263	1.90E-04	2105.19263	5.20E-04	2105.19263	9.00E-05
2104.22827	1.80E-04	2104.22827	5.10E-04	2104.22827	9.00E-05
2103.26391	1.50E-04	2103.26391	5.10E-04	2103.26391	1.00E-04
2102.29955	1.40E-04	2102.29955	5.00E-04	2102.29955	1.10E-04
2101.3352	1.40E-04	2101.3352	5.00E-04	2101.3352	1.10E-04
2100.37084	1.60E-04	2100.37084	5.00E-04	2100.37084	1.20E-04
2099.40648	1.90E-04	2099.40648	4.90E-04	2099.40648	1.20E-04
2098.44212	1.90E-04	2098.44212	4.80E-04	2098.44212	1.10E-04
2097.47777	1.60E-04	2097.47777	4.80E-04	2097.47777	1.10E-04
2096.51341	1.00E-04	2096.51341	4.80E-04	2096.51341	1.20E-04
2095.54905	8.00E-05	2095.54905	4.80E-04	2095.54905	1.20E-04
2094.58469	7.00E-05	2094.58469	4.90E-04	2094.58469	1.30E-04
2093.62034	5.00E-05	2093.62034	5.00E-04	2093.62034	1.40E-04
2092.65598	6.00E-05	2092.65598	5.00E-04	2092.65598	1.50E-04
2091.69162	9.00E-05	2091.69162	4.90E-04	2091.69162	1.50E-04
2090.72726	1.30E-04	2090.72726	4.80E-04	2090.72726	1.40E-04
2089.76291	1.50E-04	2089.76291	4.70E-04	2089.76291	1.30E-04
2088.79855	1.80E-04	2088.79855	4.60E-04	2088.79855	1.20E-04
2087.83419	2.20E-04	2087.83419	4.50E-04	2087.83419	1.10E-04
2086.86983	2.10E-04	2086.86983	4.50E-04	2086.86983	1.00E-04
2085.90548	1.40E-04	2085.90548	4.50E-04	2085.90548	1.00E-04
2084.94112	8.00E-05	2084.94112	4.50E-04	2084.94112	9.00E-05
2083.97676	8.00E-05	2083.97676	4.50E-04	2083.97676	9.00E-05
2083.0124	1.30E-04	2083.0124	4.40E-04	2083.0124	9.00E-05
2082.04805	1.70E-04	2082.04805	4.40E-04	2082.04805	9.00E-05
2081.08369	1.80E-04	2081.08369	4.40E-04	2081.08369	8.00E-05
2080.11933	1.50E-04	2080.11933	4.30E-04	2080.11933	8.00E-05
2079.15497	1.50E-04	2079.15497	4.30E-04	2079.15497	9.00E-05
2078.19061	2.00E-04	2078.19061	4.30E-04	2078.19061	1.00E-04
2077.22626	2.40E-04	2077.22626	4.30E-04	2077.22626	1.00E-04
2076.2619	2.10E-04	2076.2619	4.20E-04	2076.2619	1.00E-04
2075.29754	1.60E-04	2075.29754	4.10E-04	2075.29754	1.00E-04
2074.33318	1.60E-04	2074.33318	4.10E-04	2074.33318	1.00E-04
2073.36883	1.80E-04	2073.36883	4.00E-04	2073.36883	1.10E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2072.40447	1.80E-04	2072.40447	4.00E-04	2072.40447	1.20E-04
2071.44011	1.70E-04	2071.44011	4.00E-04	2071.44011	1.20E-04
2070.47575	1.40E-04	2070.47575	4.00E-04	2070.47575	1.20E-04
2069.5114	1.10E-04	2069.5114	4.00E-04	2069.5114	1.00E-04
2068.54704	1.00E-04	2068.54704	4.00E-04	2068.54704	8.00E-05
2067.58268	1.10E-04	2067.58268	4.00E-04	2067.58268	7.00E-05
2066.61832	1.20E-04	2066.61832	4.00E-04	2066.61832	7.00E-05
2065.65397	1.30E-04	2065.65397	4.00E-04	2065.65397	7.00E-05
2064.68961	1.20E-04	2064.68961	4.00E-04	2064.68961	9.00E-05
2063.72525	6.00E-05	2063.72525	4.00E-04	2063.72525	1.10E-04
2062.76089	3.00E-05	2062.76089	3.90E-04	2062.76089	1.20E-04
2061.79654	6.00E-05	2061.79654	3.80E-04	2061.79654	1.20E-04
2060.83218	1.00E-04	2060.83218	3.80E-04	2060.83218	1.10E-04
2059.86782	1.00E-04	2059.86782	3.70E-04	2059.86782	1.00E-04
2058.90346	9.00E-05	2058.90346	3.70E-04	2058.90346	9.00E-05
2057.93911	1.10E-04	2057.93911	3.60E-04	2057.93911	8.00E-05
2056.97475	1.50E-04	2056.97475	3.60E-04	2056.97475	9.00E-05
2056.01039	1.80E-04	2056.01039	3.60E-04	2056.01039	1.00E-04
2055.04603	2.00E-04	2055.04603	3.60E-04	2055.04603	1.20E-04
2054.08167	2.10E-04	2054.08167	3.60E-04	2054.08167	1.20E-04
2053.11732	1.90E-04	2053.11732	3.60E-04	2053.11732	1.20E-04
2052.15296	1.70E-04	2052.15296	3.60E-04	2052.15296	1.10E-04
2051.1886	1.90E-04	2051.1886	3.50E-04	2051.1886	1.00E-04
2050.22424	2.20E-04	2050.22424	3.40E-04	2050.22424	9.00E-05
2049.25989	2.30E-04	2049.25989	3.30E-04	2049.25989	9.00E-05
2048.29553	2.20E-04	2048.29553	3.30E-04	2048.29553	8.00E-05
2047.33117	2.00E-04	2047.33117	3.40E-04	2047.33117	8.00E-05
2046.36681	1.60E-04	2046.36681	3.40E-04	2046.36681	8.00E-05
2045.40246	1.20E-04	2045.40246	3.50E-04	2045.40246	9.00E-05
2044.4381	1.10E-04	2044.4381	3.50E-04	2044.4381	1.00E-04
2043.47374	1.20E-04	2043.47374	3.40E-04	2043.47374	1.10E-04
2042.50938	1.40E-04	2042.50938	3.30E-04	2042.50938	1.30E-04
2041.54503	1.60E-04	2041.54503	3.20E-04	2041.54503	1.40E-04
2040.58067	1.70E-04	2040.58067	3.10E-04	2040.58067	1.40E-04
2039.61631	1.60E-04	2039.61631	3.10E-04	2039.61631	1.40E-04
2038.65195	1.40E-04	2038.65195	3.20E-04	2038.65195	1.30E-04
2037.6876	1.40E-04	2037.6876	3.30E-04	2037.6876	1.30E-04
2036.72324	1.80E-04	2036.72324	3.30E-04	2036.72324	1.30E-04
2035.75888	1.90E-04	2035.75888	3.40E-04	2035.75888	1.30E-04
2034.79452	1.80E-04	2034.79452	3.40E-04	2034.79452	1.30E-04
2033.83017	1.80E-04	2033.83017	3.30E-04	2033.83017	1.20E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2032.86581	1.80E-04	2032.86581	3.20E-04	2032.86581	1.20E-04
2031.90145	1.70E-04	2031.90145	3.10E-04	2031.90145	1.10E-04
2030.93709	1.40E-04	2030.93709	3.00E-04	2030.93709	1.10E-04
2029.97273	1.10E-04	2029.97273	3.00E-04	2029.97273	1.00E-04
2029.00838	1.20E-04	2029.00838	3.00E-04	2029.00838	1.00E-04
2028.04402	1.40E-04	2028.04402	3.00E-04	2028.04402	9.00E-05
2027.07966	1.30E-04	2027.07966	3.00E-04	2027.07966	8.00E-05
2026.1153	1.00E-04	2026.1153	3.00E-04	2026.1153	8.00E-05
2025.15095	8.00E-05	2025.15095	2.90E-04	2025.15095	8.00E-05
2024.18659	8.00E-05	2024.18659	2.80E-04	2024.18659	8.00E-05
2023.22223	1.00E-04	2023.22223	2.60E-04	2023.22223	8.00E-05
2022.25787	1.20E-04	2022.25787	2.50E-04	2022.25787	7.00E-05
2021.29352	1.50E-04	2021.29352	2.50E-04	2021.29352	7.00E-05
2020.32916	1.50E-04	2020.32916	2.60E-04	2020.32916	7.00E-05
2019.3648	1.30E-04	2019.3648	2.60E-04	2019.3648	7.00E-05
2018.40044	1.30E-04	2018.40044	2.80E-04	2018.40044	8.00E-05
2017.43609	1.40E-04	2017.43609	2.90E-04	2017.43609	8.00E-05
2016.47173	1.50E-04	2016.47173	2.90E-04	2016.47173	8.00E-05
2015.50737	1.50E-04	2015.50737	2.80E-04	2015.50737	9.00E-05
2014.54301	1.30E-04	2014.54301	2.60E-04	2014.54301	9.00E-05
2013.57866	1.10E-04	2013.57866	2.50E-04	2013.57866	1.00E-04
2012.6143	1.20E-04	2012.6143	2.40E-04	2012.6143	1.10E-04
2011.64994	1.40E-04	2011.64994	2.30E-04	2011.64994	1.20E-04
2010.68558	1.00E-04	2010.68558	2.30E-04	2010.68558	1.20E-04
2009.72123	5.00E-05	2009.72123	2.30E-04	2009.72123	1.20E-04
2008.75687	4.00E-05	2008.75687	2.40E-04	2008.75687	1.10E-04
2007.79251	5.00E-05	2007.79251	2.40E-04	2007.79251	1.10E-04
2006.82815	5.00E-05	2006.82815	2.40E-04	2006.82815	1.10E-04
2005.8638	5.00E-05	2005.8638	2.40E-04	2005.8638	1.10E-04
2004.89944	7.00E-05	2004.89944	2.30E-04	2004.89944	1.10E-04
2003.93508	6.00E-05	2003.93508	2.30E-04	2003.93508	1.10E-04
2002.97072	4.00E-05	2002.97072	2.20E-04	2002.97072	1.10E-04
2002.00636	3.00E-05	2002.00636	2.20E-04	2002.00636	1.00E-04
2001.04201	2.00E-05	2001.04201	2.10E-04	2001.04201	9.00E-05
2000.07765	3.00E-05	2000.07765	2.10E-04	2000.07765	8.00E-05
1999.11329	6.00E-05	1999.11329	2.10E-04	1999.11329	7.00E-05
1998.14893	9.00E-05	1998.14893	2.00E-04	1998.14893	7.00E-05
1997.18458	1.30E-04	1997.18458	2.10E-04	1997.18458	6.00E-05
1996.22022	1.20E-04	1996.22022	2.10E-04	1996.22022	6.00E-05
1995.25586	9.00E-05	1995.25586	2.20E-04	1995.25586	7.00E-05
1994.2915	7.00E-05	1994.2915	2.20E-04	1994.2915	8.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1993.32715	7.00E-05	1993.32715	2.20E-04	1993.32715	8.00E-05
1992.36279	7.00E-05	1992.36279	2.10E-04	1992.36279	9.00E-05
1991.39843	8.00E-05	1991.39843	2.00E-04	1991.39843	9.00E-05
1990.43407	7.00E-05	1990.43407	1.90E-04	1990.43407	9.00E-05
1989.46972	0	1989.46972	1.90E-04	1989.46972	9.00E-05
1988.50536	-3.00E-05	1988.50536	1.90E-04	1988.50536	9.00E-05
1987.541	2.00E-05	1987.541	1.90E-04	1987.541	1.00E-04
1986.57664	1.00E-04	1986.57664	1.90E-04	1986.57664	1.10E-04
1985.61229	1.30E-04	1985.61229	1.80E-04	1985.61229	1.00E-04
1984.64793	1.10E-04	1984.64793	1.80E-04	1984.64793	1.00E-04
1983.68357	7.00E-05	1983.68357	1.90E-04	1983.68357	1.00E-04
1982.71921	5.00E-05	1982.71921	2.00E-04	1982.71921	9.00E-05
1981.75486	4.00E-05	1981.75486	2.00E-04	1981.75486	1.00E-04
1980.7905	4.00E-05	1980.7905	2.10E-04	1980.7905	1.00E-04
1979.82614	7.00E-05	1979.82614	2.00E-04	1979.82614	1.00E-04
1978.86178	1.10E-04	1978.86178	1.90E-04	1978.86178	9.00E-05
1977.89742	1.20E-04	1977.89742	1.80E-04	1977.89742	9.00E-05
1976.93307	9.00E-05	1976.93307	1.70E-04	1976.93307	8.00E-05
1975.96871	4.00E-05	1975.96871	1.70E-04	1975.96871	8.00E-05
1975.00435	2.00E-05	1975.00435	1.70E-04	1975.00435	8.00E-05
1974.03999	6.00E-05	1974.03999	1.80E-04	1974.03999	8.00E-05
1973.07564	8.00E-05	1973.07564	1.90E-04	1973.07564	8.00E-05
1972.11128	9.00E-05	1972.11128	2.00E-04	1972.11128	9.00E-05
1971.14692	7.00E-05	1971.14692	2.10E-04	1971.14692	8.00E-05
1970.18256	3.00E-05	1970.18256	2.20E-04	1970.18256	8.00E-05
1969.21821	0	1969.21821	2.20E-04	1969.21821	7.00E-05
1968.25385	2.00E-05	1968.25385	2.10E-04	1968.25385	6.00E-05
1967.28949	6.00E-05	1967.28949	1.90E-04	1967.28949	5.00E-05
1966.32513	8.00E-05	1966.32513	1.80E-04	1966.32513	4.00E-05
1965.36078	7.00E-05	1965.36078	1.70E-04	1965.36078	3.00E-05
1964.39642	8.00E-05	1964.39642	1.70E-04	1964.39642	4.00E-05
1963.43206	9.00E-05	1963.43206	1.80E-04	1963.43206	5.00E-05
1962.4677	7.00E-05	1962.4677	1.90E-04	1962.4677	6.00E-05
1961.50335	5.00E-05	1961.50335	1.90E-04	1961.50335	8.00E-05
1960.53899	7.00E-05	1960.53899	1.90E-04	1960.53899	8.00E-05
1959.57463	1.00E-04	1959.57463	1.80E-04	1959.57463	9.00E-05
1958.61027	9.00E-05	1958.61027	1.70E-04	1958.61027	8.00E-05
1957.64592	6.00E-05	1957.64592	1.70E-04	1957.64592	8.00E-05
1956.68156	7.00E-05	1956.68156	1.70E-04	1956.68156	8.00E-05
1955.7172	9.00E-05	1955.7172	1.70E-04	1955.7172	8.00E-05
1954.75284	1.00E-04	1954.75284	1.70E-04	1954.75284	8.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1953.78849	9.00E-05	1953.78849	1.70E-04	1953.78849	8.00E-05
1952.82413	6.00E-05	1952.82413	1.60E-04	1952.82413	8.00E-05
1951.85977	5.00E-05	1951.85977	1.40E-04	1951.85977	9.00E-05
1950.89541	7.00E-05	1950.89541	1.30E-04	1950.89541	9.00E-05
1949.93105	9.00E-05	1949.93105	1.20E-04	1949.93105	9.00E-05
1948.9667	9.00E-05	1948.9667	1.20E-04	1948.9667	9.00E-05
1948.00234	1.00E-04	1948.00234	1.20E-04	1948.00234	8.00E-05
1947.03798	1.10E-04	1947.03798	1.30E-04	1947.03798	8.00E-05
1946.07362	1.40E-04	1946.07362	1.50E-04	1946.07362	8.00E-05
1945.10927	1.70E-04	1945.10927	1.50E-04	1945.10927	9.00E-05
1944.14491	1.90E-04	1944.14491	1.40E-04	1944.14491	1.00E-04
1943.18055	1.60E-04	1943.18055	1.30E-04	1943.18055	1.00E-04
1942.21619	1.00E-04	1942.21619	1.10E-04	1942.21619	9.00E-05
1941.25184	4.00E-05	1941.25184	9.00E-05	1941.25184	8.00E-05
1940.28748	4.00E-05	1940.28748	9.00E-05	1940.28748	7.00E-05
1939.32312	8.00E-05	1939.32312	1.00E-04	1939.32312	7.00E-05
1938.35876	1.50E-04	1938.35876	1.20E-04	1938.35876	8.00E-05
1937.39441	2.10E-04	1937.39441	1.30E-04	1937.39441	9.00E-05
1936.43005	2.10E-04	1936.43005	1.20E-04	1936.43005	1.00E-04
1935.46569	1.70E-04	1935.46569	1.20E-04	1935.46569	1.00E-04
1934.50133	1.20E-04	1934.50133	1.20E-04	1934.50133	9.00E-05
1933.53698	1.00E-04	1933.53698	1.30E-04	1933.53698	9.00E-05
1932.57262	1.00E-04	1932.57262	1.30E-04	1932.57262	9.00E-05
1931.60826	1.00E-04	1931.60826	1.40E-04	1931.60826	9.00E-05
1930.6439	8.00E-05	1930.6439	1.30E-04	1930.6439	9.00E-05
1929.67955	7.00E-05	1929.67955	1.20E-04	1929.67955	1.00E-04
1928.71519	7.00E-05	1928.71519	1.10E-04	1928.71519	1.00E-04
1927.75083	9.00E-05	1927.75083	1.00E-04	1927.75083	1.10E-04
1926.78647	1.10E-04	1926.78647	1.00E-04	1926.78647	1.10E-04
1925.82211	1.00E-04	1925.82211	1.00E-04	1925.82211	1.10E-04
1924.85776	9.00E-05	1924.85776	1.10E-04	1924.85776	1.10E-04
1923.8934	1.10E-04	1923.8934	1.10E-04	1923.8934	1.00E-04
1922.92904	1.40E-04	1922.92904	1.10E-04	1922.92904	1.00E-04
1921.96468	1.50E-04	1921.96468	1.10E-04	1921.96468	1.10E-04
1921.00033	1.40E-04	1921.00033	1.20E-04	1921.00033	1.30E-04
1920.03597	1.60E-04	1920.03597	1.20E-04	1920.03597	1.40E-04
1919.07161	1.80E-04	1919.07161	1.30E-04	1919.07161	1.40E-04
1918.10725	1.50E-04	1918.10725	1.30E-04	1918.10725	1.30E-04
1917.1429	1.20E-04	1917.1429	1.20E-04	1917.1429	1.20E-04
1916.17854	1.40E-04	1916.17854	1.00E-04	1916.17854	1.10E-04
1915.21418	1.70E-04	1915.21418	9.00E-05	1915.21418	9.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1914.24982	1.90E-04	1914.24982	9.00E-05	1914.24982	8.00E-05
1913.28547	2.00E-04	1913.28547	9.00E-05	1913.28547	8.00E-05
1912.32111	2.20E-04	1912.32111	9.00E-05	1912.32111	9.00E-05
1911.35675	2.50E-04	1911.35675	9.00E-05	1911.35675	1.00E-04
1910.39239	2.50E-04	1910.39239	8.00E-05	1910.39239	1.20E-04
1909.42804	2.10E-04	1909.42804	8.00E-05	1909.42804	1.40E-04
1908.46368	1.90E-04	1908.46368	9.00E-05	1908.46368	1.40E-04
1907.49932	2.00E-04	1907.49932	1.00E-04	1907.49932	1.30E-04
1906.53496	2.20E-04	1906.53496	1.00E-04	1906.53496	1.20E-04
1905.57061	2.30E-04	1905.57061	1.00E-04	1905.57061	1.00E-04
1904.60625	2.30E-04	1904.60625	9.00E-05	1904.60625	9.00E-05
1903.64189	2.60E-04	1903.64189	8.00E-05	1903.64189	9.00E-05
1902.67753	2.90E-04	1902.67753	7.00E-05	1902.67753	9.00E-05
1901.71317	3.10E-04	1901.71317	8.00E-05	1901.71317	9.00E-05
1900.74882	2.90E-04	1900.74882	8.00E-05	1900.74882	9.00E-05
1899.78446	2.50E-04	1899.78446	8.00E-05	1899.78446	9.00E-05
1898.8201	2.20E-04	1898.8201	8.00E-05	1898.8201	9.00E-05
1897.85574	2.20E-04	1897.85574	8.00E-05	1897.85574	1.00E-04
1896.89139	2.10E-04	1896.89139	8.00E-05	1896.89139	1.10E-04
1895.92703	2.00E-04	1895.92703	8.00E-05	1895.92703	1.20E-04
1894.96267	2.00E-04	1894.96267	7.00E-05	1894.96267	1.20E-04
1893.99831	2.20E-04	1893.99831	6.00E-05	1893.99831	1.30E-04
1893.03396	2.30E-04	1893.03396	6.00E-05	1893.03396	1.30E-04
1892.0696	2.20E-04	1892.0696	6.00E-05	1892.0696	1.30E-04
1891.10524	2.00E-04	1891.10524	6.00E-05	1891.10524	1.30E-04
1890.14088	1.90E-04	1890.14088	7.00E-05	1890.14088	1.20E-04
1889.17653	1.70E-04	1889.17653	8.00E-05	1889.17653	1.10E-04
1888.21217	1.70E-04	1888.21217	9.00E-05	1888.21217	9.00E-05
1887.24781	1.50E-04	1887.24781	9.00E-05	1887.24781	7.00E-05
1886.28345	1.40E-04	1886.28345	9.00E-05	1886.28345	7.00E-05
1885.3191	1.50E-04	1885.3191	8.00E-05	1885.3191	7.00E-05
1884.35474	1.60E-04	1884.35474	7.00E-05	1884.35474	7.00E-05
1883.39038	1.60E-04	1883.39038	6.00E-05	1883.39038	8.00E-05
1882.42602	1.60E-04	1882.42602	5.00E-05	1882.42602	8.00E-05
1881.46167	1.50E-04	1881.46167	6.00E-05	1881.46167	8.00E-05
1880.49731	1.30E-04	1880.49731	7.00E-05	1880.49731	9.00E-05
1879.53295	1.10E-04	1879.53295	8.00E-05	1879.53295	9.00E-05
1878.56859	1.40E-04	1878.56859	8.00E-05	1878.56859	9.00E-05
1877.60424	1.80E-04	1877.60424	8.00E-05	1877.60424	9.00E-05
1876.63988	1.60E-04	1876.63988	7.00E-05	1876.63988	9.00E-05
1875.67552	1.10E-04	1875.67552	7.00E-05	1875.67552	9.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1874.71116	8.00E-05	1874.71116	6.00E-05	1874.71116	7.00E-05
1873.7468	8.00E-05	1873.7468	7.00E-05	1873.7468	7.00E-05
1872.78245	8.00E-05	1872.78245	8.00E-05	1872.78245	8.00E-05
1871.81809	1.00E-04	1871.81809	1.00E-04	1871.81809	1.00E-04
1870.85373	1.40E-04	1870.85373	1.00E-04	1870.85373	1.10E-04
1869.88937	1.80E-04	1869.88937	8.00E-05	1869.88937	1.10E-04
1868.92502	1.80E-04	1868.92502	6.00E-05	1868.92502	1.10E-04
1867.96066	1.40E-04	1867.96066	4.00E-05	1867.96066	9.00E-05
1866.9963	1.00E-04	1866.9963	2.00E-05	1866.9963	6.00E-05
1866.03194	8.00E-05	1866.03194	2.00E-05	1866.03194	4.00E-05
1865.06759	8.00E-05	1865.06759	3.00E-05	1865.06759	3.00E-05
1864.10323	9.00E-05	1864.10323	5.00E-05	1864.10323	4.00E-05
1863.13887	1.00E-04	1863.13887	6.00E-05	1863.13887	4.00E-05
1862.17451	1.10E-04	1862.17451	7.00E-05	1862.17451	4.00E-05
1861.21016	9.00E-05	1861.21016	6.00E-05	1861.21016	4.00E-05
1860.2458	8.00E-05	1860.2458	5.00E-05	1860.2458	4.00E-05
1859.28144	8.00E-05	1859.28144	5.00E-05	1859.28144	5.00E-05
1858.31708	8.00E-05	1858.31708	4.00E-05	1858.31708	5.00E-05
1857.35273	4.00E-05	1857.35273	4.00E-05	1857.35273	6.00E-05
1856.38837	2.00E-05	1856.38837	4.00E-05	1856.38837	7.00E-05
1855.42401	5.00E-05	1855.42401	4.00E-05	1855.42401	8.00E-05
1854.45965	8.00E-05	1854.45965	5.00E-05	1854.45965	7.00E-05
1853.4953	9.00E-05	1853.4953	5.00E-05	1853.4953	7.00E-05
1852.53094	9.00E-05	1852.53094	4.00E-05	1852.53094	6.00E-05
1851.56658	7.00E-05	1851.56658	4.00E-05	1851.56658	6.00E-05
1850.60222	6.00E-05	1850.60222	4.00E-05	1850.60222	7.00E-05
1849.63786	7.00E-05	1849.63786	4.00E-05	1849.63786	8.00E-05
1848.67351	1.00E-04	1848.67351	5.00E-05	1848.67351	9.00E-05
1847.70915	1.10E-04	1847.70915	7.00E-05	1847.70915	1.10E-04
1846.74479	1.20E-04	1846.74479	8.00E-05	1846.74479	1.20E-04
1845.78043	1.40E-04	1845.78043	8.00E-05	1845.78043	1.20E-04
1844.81608	1.00E-04	1844.81608	6.00E-05	1844.81608	1.00E-04
1843.85172	6.00E-05	1843.85172	5.00E-05	1843.85172	7.00E-05
1842.88736	7.00E-05	1842.88736	4.00E-05	1842.88736	4.00E-05
1841.923	8.00E-05	1841.923	3.00E-05	1841.923	2.00E-05
1840.95865	7.00E-05	1840.95865	3.00E-05	1840.95865	2.00E-05
1839.99429	7.00E-05	1839.99429	5.00E-05	1839.99429	4.00E-05
1839.02993	9.00E-05	1839.02993	6.00E-05	1839.02993	6.00E-05
1838.06557	9.00E-05	1838.06557	5.00E-05	1838.06557	7.00E-05
1837.10122	1.00E-04	1837.10122	4.00E-05	1837.10122	8.00E-05
1836.13686	1.00E-04	1836.13686	4.00E-05	1836.13686	7.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1835.1725	9.00E-05	1835.1725	4.00E-05	1835.1725	6.00E-05
1834.20814	6.00E-05	1834.20814	6.00E-05	1834.20814	7.00E-05
1833.24379	3.00E-05	1833.24379	9.00E-05	1833.24379	8.00E-05
1832.27943	3.00E-05	1832.27943	1.10E-04	1832.27943	9.00E-05
1831.31507	6.00E-05	1831.31507	1.00E-04	1831.31507	8.00E-05
1830.35071	1.00E-04	1830.35071	8.00E-05	1830.35071	6.00E-05
1829.38636	1.20E-04	1829.38636	6.00E-05	1829.38636	5.00E-05
1828.422	1.10E-04	1828.422	4.00E-05	1828.422	5.00E-05
1827.45764	9.00E-05	1827.45764	3.00E-05	1827.45764	5.00E-05
1826.49328	1.00E-04	1826.49328	4.00E-05	1826.49328	6.00E-05
1825.52893	1.10E-04	1825.52893	5.00E-05	1825.52893	7.00E-05
1824.56457	9.00E-05	1824.56457	4.00E-05	1824.56457	6.00E-05
1823.60021	7.00E-05	1823.60021	3.00E-05	1823.60021	4.00E-05
1822.63585	3.00E-05	1822.63585	2.00E-05	1822.63585	2.00E-05
1821.67149	0	1821.67149	2.00E-05	1821.67149	1.00E-05
1820.70714	1.00E-05	1820.70714	3.00E-05	1820.70714	1.00E-05
1819.74278	3.00E-05	1819.74278	4.00E-05	1819.74278	2.00E-05
1818.77842	5.00E-05	1818.77842	4.00E-05	1818.77842	2.00E-05
1817.81406	8.00E-05	1817.81406	4.00E-05	1817.81406	2.00E-05
1816.84971	9.00E-05	1816.84971	3.00E-05	1816.84971	2.00E-05
1815.88535	6.00E-05	1815.88535	2.00E-05	1815.88535	1.00E-05
1814.92099	2.00E-05	1814.92099	2.00E-05	1814.92099	1.00E-05
1813.95663	1.00E-05	1813.95663	1.00E-05	1813.95663	1.00E-05
1812.99228	1.00E-05	1812.99228	1.00E-05	1812.99228	2.00E-05
1812.02792	3.00E-05	1812.02792	1.00E-05	1812.02792	3.00E-05
1811.06356	2.00E-05	1811.06356	0	1811.06356	3.00E-05
1810.0992	2.00E-05	1810.0992	0	1810.0992	2.00E-05
1809.13485	5.00E-05	1809.13485	-1.00E-05	1809.13485	1.00E-05
1808.17049	8.00E-05	1808.17049	0	1808.17049	0
1807.20613	8.00E-05	1807.20613	1.00E-05	1807.20613	-1.00E-05
1806.24177	6.00E-05	1806.24177	3.00E-05	1806.24177	-1.00E-05
1805.27742	5.00E-05	1805.27742	4.00E-05	1805.27742	-1.00E-05
1804.31306	4.00E-05	1804.31306	4.00E-05	1804.31306	-1.00E-05
1803.3487	4.00E-05	1803.3487	4.00E-05	1803.3487	0
1802.38434	5.00E-05	1802.38434	4.00E-05	1802.38434	1.00E-05
1801.41999	6.00E-05	1801.41999	3.00E-05	1801.41999	1.00E-05
1800.45563	7.00E-05	1800.45563	2.00E-05	1800.45563	1.00E-05
1799.49127	8.00E-05	1799.49127	2.00E-05	1799.49127	1.00E-05
1798.52691	1.10E-04	1798.52691	2.00E-05	1798.52691	1.00E-05
1797.56255	1.10E-04	1797.56255	1.00E-05	1797.56255	1.00E-05
1796.5982	7.00E-05	1796.5982	2.00E-05	1796.5982	2.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1795.63384	4.00E-05	1795.63384	3.00E-05	1795.63384	4.00E-05
1794.66948	6.00E-05	1794.66948	3.00E-05	1794.66948	6.00E-05
1793.70512	1.00E-04	1793.70512	3.00E-05	1793.70512	5.00E-05
1792.74077	1.10E-04	1792.74077	1.00E-05	1792.74077	3.00E-05
1791.77641	9.00E-05	1791.77641	1.00E-05	1791.77641	1.00E-05
1790.81205	6.00E-05	1790.81205	0	1790.81205	-2.00E-05
1789.84769	4.00E-05	1789.84769	-1.00E-05	1789.84769	-3.00E-05
1788.88334	4.00E-05	1788.88334	0	1788.88334	-1.00E-05
1787.91898	2.00E-05	1787.91898	2.00E-05	1787.91898	2.00E-05
1786.95462	0	1786.95462	3.00E-05	1786.95462	4.00E-05
1785.99026	2.00E-05	1785.99026	3.00E-05	1785.99026	4.00E-05
1785.02591	5.00E-05	1785.02591	2.00E-05	1785.02591	4.00E-05
1784.06155	7.00E-05	1784.06155	2.00E-05	1784.06155	4.00E-05
1783.09719	1.00E-04	1783.09719	2.00E-05	1783.09719	4.00E-05
1782.13283	1.20E-04	1782.13283	2.00E-05	1782.13283	4.00E-05
1781.16848	1.10E-04	1781.16848	2.00E-05	1781.16848	3.00E-05
1780.20412	1.00E-04	1780.20412	1.00E-05	1780.20412	3.00E-05
1779.23976	1.30E-04	1779.23976	1.00E-05	1779.23976	2.00E-05
1778.2754	1.70E-04	1778.2754	0	1778.2754	1.00E-05
1777.31105	1.80E-04	1777.31105	0	1777.31105	2.00E-05
1776.34669	1.60E-04	1776.34669	1.00E-05	1776.34669	5.00E-05
1775.38233	1.50E-04	1775.38233	2.00E-05	1775.38233	8.00E-05
1774.41797	1.60E-04	1774.41797	2.00E-05	1774.41797	9.00E-05
1773.45362	1.70E-04	1773.45362	0	1773.45362	8.00E-05
1772.48926	1.60E-04	1772.48926	-2.00E-05	1772.48926	7.00E-05
1771.5249	1.40E-04	1771.5249	-2.00E-05	1771.5249	5.00E-05
1770.56054	1.40E-04	1770.56054	-3.00E-05	1770.56054	3.00E-05
1769.59618	1.70E-04	1769.59618	-3.00E-05	1769.59618	0
1768.63183	1.80E-04	1768.63183	-2.00E-05	1768.63183	-1.00E-05
1767.66747	1.50E-04	1767.66747	0	1767.66747	-1.00E-05
1766.70311	1.30E-04	1766.70311	1.00E-05	1766.70311	-2.00E-05
1765.73875	1.20E-04	1765.73875	1.00E-05	1765.73875	-1.00E-05
1764.7744	9.00E-05	1764.7744	3.00E-05	1764.7744	2.00E-05
1763.81004	9.00E-05	1763.81004	4.00E-05	1763.81004	5.00E-05
1762.84568	1.70E-04	1762.84568	5.00E-05	1762.84568	5.00E-05
1761.88132	2.20E-04	1761.88132	6.00E-05	1761.88132	5.00E-05
1760.91697	1.80E-04	1760.91697	7.00E-05	1760.91697	5.00E-05
1759.95261	1.50E-04	1759.95261	9.00E-05	1759.95261	5.00E-05
1758.98825	1.80E-04	1758.98825	1.10E-04	1758.98825	5.00E-05
1758.02389	2.20E-04	1758.02389	1.20E-04	1758.02389	6.00E-05
1757.05954	2.20E-04	1757.05954	1.40E-04	1757.05954	6.00E-05

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1756.09518	2.30E-04	1756.09518	1.40E-04	1756.09518	7.00E-05
1755.13082	2.60E-04	1755.13082	1.60E-04	1755.13082	8.00E-05
1754.16646	2.80E-04	1754.16646	1.90E-04	1754.16646	1.20E-04
1753.20211	2.70E-04	1753.20211	2.00E-04	1753.20211	1.70E-04
1752.23775	2.80E-04	1752.23775	2.20E-04	1752.23775	2.10E-04
1751.27339	3.00E-04	1751.27339	2.30E-04	1751.27339	2.60E-04
1750.30903	3.60E-04	1750.30903	2.40E-04	1750.30903	2.80E-04
1749.34468	4.40E-04	1749.34468	2.40E-04	1749.34468	2.90E-04
1748.38032	4.70E-04	1748.38032	2.60E-04	1748.38032	3.00E-04
1747.41596	4.50E-04	1747.41596	3.10E-04	1747.41596	3.10E-04
1746.4516	4.10E-04	1746.4516	3.50E-04	1746.4516	3.40E-04
1745.48724	4.20E-04	1745.48724	3.80E-04	1745.48724	3.50E-04
1744.52289	4.50E-04	1744.52289	4.20E-04	1744.52289	3.80E-04
1743.55853	4.50E-04	1743.55853	4.60E-04	1743.55853	4.30E-04
1742.59417	4.60E-04	1742.59417	4.90E-04	1742.59417	4.90E-04
1741.62981	5.20E-04	1741.62981	5.00E-04	1741.62981	5.30E-04
1740.66546	5.80E-04	1740.66546	5.00E-04	1740.66546	5.50E-04
1739.7011	5.70E-04	1739.7011	5.00E-04	1739.7011	5.60E-04
1738.73674	5.60E-04	1738.73674	5.40E-04	1738.73674	5.80E-04
1737.77238	5.90E-04	1737.77238	6.00E-04	1737.77238	6.30E-04
1736.80803	6.50E-04	1736.80803	6.70E-04	1736.80803	7.00E-04
1735.84367	7.40E-04	1735.84367	7.10E-04	1735.84367	7.50E-04
1734.87931	8.40E-04	1734.87931	7.00E-04	1734.87931	7.70E-04
1733.91495	8.70E-04	1733.91495	6.80E-04	1733.91495	7.70E-04
1732.9506	8.40E-04	1732.9506	6.50E-04	1732.9506	7.60E-04
1731.98624	8.30E-04	1731.98624	6.40E-04	1731.98624	7.30E-04
1731.02188	8.40E-04	1731.02188	6.70E-04	1731.02188	7.20E-04
1730.05752	8.40E-04	1730.05752	7.30E-04	1730.05752	7.50E-04
1729.09317	8.60E-04	1729.09317	7.90E-04	1729.09317	7.90E-04
1728.12881	8.90E-04	1728.12881	8.20E-04	1728.12881	8.00E-04
1727.16445	9.10E-04	1727.16445	8.40E-04	1727.16445	8.00E-04
1726.20009	9.50E-04	1726.20009	8.70E-04	1726.20009	8.20E-04
1725.23574	9.90E-04	1725.23574	9.00E-04	1725.23574	8.40E-04
1724.27138	1.00E-03	1724.27138	9.10E-04	1724.27138	8.40E-04
1723.30702	1.00E-03	1723.30702	9.20E-04	1723.30702	8.40E-04
1722.34266	0.00105	1722.34266	9.40E-04	1722.34266	8.50E-04
1721.3783	0.00112	1721.3783	9.90E-04	1721.3783	9.00E-04
1720.41395	0.0012	1720.41395	0.00104	1720.41395	9.50E-04
1719.44959	0.00128	1719.44959	0.00107	1719.44959	9.70E-04
1718.48523	0.00133	1718.48523	0.0011	1718.48523	9.80E-04
1717.52087	0.00133	1717.52087	0.00111	1717.52087	9.80E-04



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1716.55652	0.00136	1716.55652	0.0011	1716.55652	9.50E-04
1715.59216	0.0014	1715.59216	0.00109	1715.59216	9.10E-04
1714.6278	0.00141	1714.6278	0.00111	1714.6278	9.00E-04
1713.66344	0.00143	1713.66344	0.00117	1713.66344	9.20E-04
1712.69909	0.00145	1712.69909	0.00122	1712.69909	9.40E-04
1711.73473	0.00146	1711.73473	0.00128	1711.73473	9.40E-04
1710.77037	0.00146	1710.77037	0.00134	1710.77037	9.50E-04
1709.80601	0.0015	1709.80601	0.00142	1709.80601	9.90E-04
1708.84166	0.00158	1708.84166	0.00149	1708.84166	0.00104
1707.8773	0.00167	1707.8773	0.00154	1707.8773	0.0011
1706.91294	0.00175	1706.91294	0.00159	1706.91294	0.00115
1705.94858	0.00183	1705.94858	0.00163	1705.94858	0.00119
1704.98423	0.00192	1704.98423	0.00168	1704.98423	0.00123
1704.01987	0.00204	1704.01987	0.00178	1704.01987	0.00132
1703.05551	0.00216	1703.05551	0.00188	1703.05551	0.00143
1702.09115	0.00231	1702.09115	0.00195	1702.09115	0.00152
1701.1268	0.00249	1701.1268	0.00199	1701.1268	0.0016
1700.16244	0.00262	1700.16244	0.00205	1700.16244	0.00169
1699.19808	0.0027	1699.19808	0.00212	1699.19808	0.00181
1698.23372	0.00283	1698.23372	0.00219	1698.23372	0.00192
1697.26937	0.00302	1697.26937	0.00228	1697.26937	0.00203
1696.30501	0.00325	1696.30501	0.00242	1696.30501	0.00219
1695.34065	0.00352	1695.34065	0.00255	1695.34065	0.00234
1694.37629	0.00379	1694.37629	0.00265	1694.37629	0.00247
1693.41193	0.00407	1693.41193	0.00277	1693.41193	0.00261
1692.44758	0.00438	1692.44758	0.00291	1692.44758	0.0028
1691.48322	0.0047	1691.48322	0.00307	1691.48322	0.00303
1690.51886	0.00506	1690.51886	0.00322	1690.51886	0.00327
1689.5545	0.00549	1689.5545	0.00335	1689.5545	0.0035
1688.59015	0.00594	1688.59015	0.00353	1688.59015	0.00374
1687.62579	0.00638	1687.62579	0.00373	1687.62579	0.00402
1686.66143	0.00682	1686.66143	0.00392	1686.66143	0.0043
1685.69707	0.00723	1685.69707	0.00406	1685.69707	0.00455
1684.73272	0.0077	1684.73272	0.0042	1684.73272	0.00479
1683.76836	0.00821	1683.76836	0.00433	1683.76836	0.00501
1682.804	0.00859	1682.804	0.00447	1682.804	0.00521
1681.83964	0.00892	1681.83964	0.00464	1681.83964	0.00541
1680.87529	0.00925	1680.87529	0.00485	1680.87529	0.00561
1679.91093	0.0096	1679.91093	0.0051	1679.91093	0.00584
1678.94657	0.00994	1678.94657	0.00534	1678.94657	0.00608
1677.98221	0.01026	1677.98221	0.00556	1677.98221	0.00631

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1677.01786	0.01056	1677.01786	0.00576	1677.01786	0.00652
1676.0535	0.01083	1676.0535	0.00596	1676.0535	0.00672
1675.08914	0.0111	1675.08914	0.00616	1675.08914	0.00692
1674.12478	0.01136	1674.12478	0.00637	1674.12478	0.0071
1673.16043	0.01157	1673.16043	0.00661	1673.16043	0.00729
1672.19607	0.01175	1672.19607	0.00688	1672.19607	0.0075
1671.23171	0.01194	1671.23171	0.00717	1671.23171	0.00771
1670.26735	0.01218	1670.26735	0.00743	1670.26735	0.00791
1669.30299	0.01236	1669.30299	0.00767	1669.30299	0.00809
1668.33864	0.01241	1668.33864	0.0079	1668.33864	0.00825
1667.37428	0.01245	1667.37428	0.00815	1667.37428	0.00841
1666.40992	0.01251	1666.40992	0.00842	1666.40992	0.00859
1665.44556	0.01256	1665.44556	0.00873	1665.44556	0.00879
1664.48121	0.01261	1664.48121	0.00903	1664.48121	0.00899
1663.51685	0.01262	1663.51685	0.00933	1663.51685	0.00916
1662.55249	0.01256	1662.55249	0.00963	1662.55249	0.00931
1661.58813	0.01253	1661.58813	0.00993	1661.58813	0.00944
1660.62378	0.01252	1660.62378	0.01024	1660.62378	0.00953
1659.65942	0.01248	1659.65942	0.01055	1659.65942	0.00961
1658.69506	0.01241	1658.69506	0.01087	1658.69506	0.00968
1657.7307	0.01231	1657.7307	0.01123	1657.7307	0.00977
1656.76635	0.0122	1656.76635	0.01163	1656.76635	0.00991
1655.80199	0.01211	1655.80199	0.01204	1655.80199	0.01004
1654.83763	0.01206	1654.83763	0.01239	1654.83763	0.01006
1653.87327	0.01196	1653.87327	0.01268	1653.87327	0.00997
1652.90892	0.01155	1652.90892	0.01296	1652.90892	0.00981
1651.94456	0.0112	1651.94456	0.01324	1651.94456	0.0096
1650.9802	0.01104	1650.9802	0.01354	1650.9802	0.00939
1650.01584	0.01088	1650.01584	0.01391	1650.01584	0.00924
1649.05149	0.0107	1649.05149	0.01435	1649.05149	0.00917
1648.08713	0.01053	1648.08713	0.01477	1648.08713	0.00907
1647.12277	0.01033	1647.12277	0.01514	1647.12277	0.00888
1646.15841	0.01005	1646.15841	0.01551	1646.15841	0.00864
1645.19406	0.00975	1645.19406	0.01589	1645.19406	0.00841
1644.2297	0.00953	1644.2297	0.01629	1644.2297	0.00819
1643.26534	0.00933	1643.26534	0.01671	1643.26534	0.00799
1642.30098	0.00914	1642.30098	0.01715	1642.30098	0.00782
1641.33662	0.00897	1641.33662	0.01759	1641.33662	0.00767
1640.37227	0.00878	1640.37227	0.01803	1640.37227	0.00751
1639.40791	0.00861	1639.40791	0.01849	1639.40791	0.00739
1638.44355	0.00848	1638.44355	0.01896	1638.44355	0.00729

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1637.47919	0.00839	1637.47919	0.0194	1637.47919	0.00715
1636.51484	0.00833	1636.51484	0.01981	1636.51484	0.00695
1635.55048	0.00812	1635.55048	0.02022	1635.55048	0.00674
1634.58612	0.00786	1634.58612	0.02064	1634.58612	0.00651
1633.62176	0.00775	1633.62176	0.02107	1633.62176	0.0063
1632.65741	0.00766	1632.65741	0.02154	1632.65741	0.00613
1631.69305	0.00757	1631.69305	0.02206	1631.69305	0.00603
1630.72869	0.00754	1630.72869	0.0226	1630.72869	0.00596
1629.76433	0.00756	1629.76433	0.02309	1629.76433	0.00585
1628.79998	0.0076	1628.79998	0.02356	1628.79998	0.00573
1627.83562	0.00768	1627.83562	0.02406	1627.83562	0.00563
1626.87126	0.0078	1626.87126	0.02458	1626.87126	0.00556
1625.9069	0.00793	1625.9069	0.02511	1625.9069	0.0055
1624.94255	0.00809	1624.94255	0.02563	1624.94255	0.00544
1623.97819	0.00833	1623.97819	0.02617	1623.97819	0.00539
1623.01383	0.00867	1623.01383	0.02671	1623.01383	0.00535
1622.04947	0.00904	1622.04947	0.02724	1622.04947	0.00531
1621.08512	0.00942	1621.08512	0.02781	1621.08512	0.00529
1620.12076	0.00984	1620.12076	0.02844	1620.12076	0.00534
1619.1564	0.0103	1619.1564	0.02909	1619.1564	0.00542
1618.19204	0.01077	1618.19204	0.02969	1618.19204	0.00549
1617.22768	0.01134	1617.22768	0.03025	1617.22768	0.00555
1616.26333	0.01207	1616.26333	0.03081	1616.26333	0.00561
1615.29897	0.01267	1615.29897	0.03137	1615.29897	0.00568
1614.33461	0.01314	1614.33461	0.03195	1614.33461	0.00573
1613.37025	0.01356	1613.37025	0.03256	1613.37025	0.00579
1612.4059	0.01393	1612.4059	0.03319	1612.4059	0.00586
1611.44154	0.01423	1611.44154	0.03379	1611.44154	0.00589
1610.47718	0.01442	1610.47718	0.03435	1610.47718	0.00587
1609.51282	0.01446	1609.51282	0.03488	1609.51282	0.00581
1608.54847	0.01434	1608.54847	0.03539	1608.54847	0.00571
1607.58411	0.01405	1607.58411	0.03588	1607.58411	0.0056
1606.61975	0.01364	1606.61975	0.03634	1606.61975	0.00546
1605.65539	0.01319	1605.65539	0.03677	1605.65539	0.00532
1604.69104	0.01274	1604.69104	0.03715	1604.69104	0.00517
1603.72668	0.01224	1603.72668	0.0375	1603.72668	0.00501
1602.76232	0.0117	1602.76232	0.03781	1602.76232	0.00486
1601.79796	0.01116	1601.79796	0.03805	1601.79796	0.00471
1600.83361	0.01069	1600.83361	0.03823	1600.83361	0.00457
1599.86925	0.01028	1599.86925	0.03836	1599.86925	0.00445
1598.90489	0.00995	1598.90489	0.03843	1598.90489	0.00435

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1597.94053	0.00974	1597.94053	0.03843	1597.94053	0.00428
1596.97618	0.00964	1596.97618	0.03837	1596.97618	0.00423
1596.01182	0.00965	1596.01182	0.03823	1596.01182	0.00423
1595.04746	0.00978	1595.04746	0.03801	1595.04746	0.00427
1594.0831	0.01006	1594.0831	0.03773	1594.0831	0.00436
1593.11874	0.01045	1593.11874	0.03737	1593.11874	0.00449
1592.15439	0.01094	1592.15439	0.03695	1592.15439	0.00465
1591.19003	0.01149	1591.19003	0.03646	1591.19003	0.00483
1590.22567	0.01205	1590.22567	0.03591	1590.22567	0.005
1589.26131	0.01255	1589.26131	0.03527	1589.26131	0.00517
1588.29696	0.0129	1588.29696	0.03456	1588.29696	0.00531
1587.3326	0.01306	1587.3326	0.03378	1587.3326	0.00539
1586.36824	0.01298	1586.36824	0.03292	1586.36824	0.0054
1585.40388	0.01268	1585.40388	0.032	1585.40388	0.00532
1584.43953	0.01221	1584.43953	0.03104	1584.43953	0.00518
1583.47517	0.01161	1583.47517	0.03004	1583.47517	0.00498
1582.51081	0.01093	1582.51081	0.029	1582.51081	0.00476
1581.54645	0.01025	1581.54645	0.02792	1581.54645	0.00454
1580.5821	0.0096	1580.5821	0.02688	1580.5821	0.00436
1579.61774	0.00896	1579.61774	0.02592	1579.61774	0.00422
1578.65338	0.00838	1578.65338	0.0249	1578.65338	0.00408
1577.68902	0.00792	1577.68902	0.02376	1577.68902	0.00393
1576.72467	0.00742	1576.72467	0.0226	1576.72467	0.00376
1575.76031	0.00678	1575.76031	0.02143	1575.76031	0.0036
1574.79595	0.00634	1574.79595	0.02029	1574.79595	0.00346
1573.83159	0.00611	1573.83159	0.01924	1573.83159	0.00337
1572.86724	0.00597	1572.86724	0.01839	1572.86724	0.00336
1571.90288	0.00595	1571.90288	0.01764	1571.90288	0.0034
1570.93852	0.00601	1570.93852	0.0168	1570.93852	0.00345
1569.97416	0.00608	1569.97416	0.01592	1569.97416	0.00349
1569.00981	0.00618	1569.00981	0.0151	1569.00981	0.00354
1568.04545	0.00635	1568.04545	0.01433	1568.04545	0.00361
1567.08109	0.00654	1567.08109	0.01359	1567.08109	0.00371
1566.11673	0.00676	1566.11673	0.01293	1566.11673	0.00385
1565.15237	0.00706	1565.15237	0.01233	1565.15237	0.004
1564.18802	0.00742	1564.18802	0.01178	1564.18802	0.00417
1563.22366	0.00779	1563.22366	0.01132	1563.22366	0.00436
1562.2593	0.00814	1562.2593	0.01093	1562.2593	0.0046
1561.29494	0.0085	1561.29494	0.01053	1561.29494	0.00487
1560.33059	0.0089	1560.33059	0.01004	1560.33059	0.00512
1559.36623	0.00943	1559.36623	0.00947	1559.36623	0.00533

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1558.40187	0.01001	1558.40187	0.00889	1558.40187	0.00552
1557.43751	0.01046	1557.43751	0.00838	1557.43751	0.00569
1556.47316	0.01077	1556.47316	0.00796	1556.47316	0.00586
1555.5088	0.01105	1555.5088	0.00764	1555.5088	0.00605
1554.54444	0.01143	1554.54444	0.00741	1554.54444	0.00627
1553.58008	0.01188	1553.58008	0.00716	1553.58008	0.00652
1552.61573	0.01228	1552.61573	0.00687	1552.61573	0.00676
1551.65137	0.01266	1551.65137	0.00657	1551.65137	0.00698
1550.68701	0.01307	1550.68701	0.00632	1550.68701	0.00719
1549.72265	0.01351	1549.72265	0.00609	1549.72265	0.00741
1548.7583	0.01389	1548.7583	0.00586	1548.7583	0.00763
1547.79394	0.01423	1547.79394	0.00562	1547.79394	0.00783
1546.82958	0.01457	1546.82958	0.0054	1546.82958	0.00802
1545.86522	0.01491	1545.86522	0.00521	1545.86522	0.00821
1544.90087	0.0152	1544.90087	0.00504	1544.90087	0.00837
1543.93651	0.01541	1543.93651	0.00485	1543.93651	0.0085
1542.97215	0.01558	1542.97215	0.00468	1542.97215	0.00861
1542.00779	0.0157	1542.00779	0.00449	1542.00779	0.00868
1541.04343	0.01579	1541.04343	0.00425	1541.04343	0.00868
1540.07908	0.01578	1540.07908	0.004	1540.07908	0.00859
1539.11472	0.01553	1539.11472	0.00377	1539.11472	0.00847
1538.15036	0.01522	1538.15036	0.0036	1538.15036	0.00833
1537.186	0.01498	1537.186	0.0035	1537.186	0.00821
1536.22165	0.01473	1536.22165	0.00343	1536.22165	0.00811
1535.25729	0.01447	1535.25729	0.00336	1535.25729	0.00801
1534.29293	0.01414	1534.29293	0.00325	1534.29293	0.00787
1533.32857	0.01361	1533.32857	0.00308	1533.32857	0.00767
1532.36422	0.01308	1532.36422	0.00292	1532.36422	0.00744
1531.39986	0.01266	1531.39986	0.00277	1531.39986	0.00722
1530.4355	0.01224	1530.4355	0.00266	1530.4355	0.00702
1529.47114	0.0118	1529.47114	0.00257	1529.47114	0.00684
1528.50679	0.01132	1528.50679	0.00249	1528.50679	0.00667
1527.54243	0.01081	1527.54243	0.00238	1527.54243	0.00647
1526.57807	0.01034	1526.57807	0.00228	1526.57807	0.00626
1525.61371	0.00986	1525.61371	0.00221	1525.61371	0.00609
1524.64936	0.0094	1524.64936	0.00216	1524.64936	0.00595
1523.685	0.00911	1523.685	0.0021	1523.685	0.00581
1522.72064	0.00886	1522.72064	0.00201	1522.72064	0.00563
1521.75628	0.00849	1521.75628	0.00191	1521.75628	0.00546
1520.79193	0.00801	1520.79193	0.00184	1520.79193	0.00531
1519.82757	0.00764	1519.82757	0.00176	1519.82757	0.00517

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1518.86321	0.00743	1518.86321	0.00167	1518.86321	0.00504
1517.89885	0.00727	1517.89885	0.00161	1517.89885	0.00494
1516.9345	0.00711	1516.9345	0.00156	1516.9345	0.00486
1515.97014	0.00704	1515.97014	0.0015	1515.97014	0.00477
1515.00578	0.00706	1515.00578	0.00144	1515.00578	0.00468
1514.04142	0.00715	1514.04142	0.00139	1514.04142	0.0046
1513.07706	0.00733	1513.07706	0.00137	1513.07706	0.00458
1512.11271	0.00768	1512.11271	0.00136	1512.11271	0.00462
1511.14835	0.00818	1511.14835	0.00134	1511.14835	0.00472
1510.18399	0.00877	1510.18399	0.00135	1510.18399	0.00491
1509.21963	0.00951	1509.21963	0.00135	1509.21963	0.00519
1508.25528	0.01037	1508.25528	0.00133	1508.25528	0.0055
1507.29092	0.01145	1507.29092	0.00128	1507.29092	0.00578
1506.32656	0.01268	1506.32656	0.00121	1506.32656	0.00599
1505.3622	0.01344	1505.3622	0.00114	1505.3622	0.00611
1504.39785	0.01369	1504.39785	0.0011	1504.39785	0.00614
1503.43349	0.01365	1503.43349	0.00109	1503.43349	0.00607
1502.46913	0.01338	1502.46913	0.00112	1502.46913	0.00594
1501.50477	0.01294	1501.50477	0.00115	1501.50477	0.00577
1500.54042	0.01252	1500.54042	0.00117	1500.54042	0.00557
1499.57606	0.0122	1499.57606	0.00117	1499.57606	0.00539
1498.6117	0.01203	1498.6117	0.00118	1498.6117	0.00527
1497.64734	0.01208	1497.64734	0.00117	1497.64734	0.00525
1496.68299	0.01248	1496.68299	0.00116	1496.68299	0.00536
1495.71863	0.01338	1495.71863	0.00116	1495.71863	0.00561
1494.75427	0.01462	1494.75427	0.00121	1494.75427	0.00603
1493.78991	0.01619	1493.78991	0.00128	1493.78991	0.00663
1492.82556	0.01818	1492.82556	0.00136	1492.82556	0.00737
1491.8612	0.02042	1491.8612	0.00144	1491.8612	0.00821
1490.89684	0.02287	1490.89684	0.00152	1490.89684	0.00903
1489.93248	0.02521	1489.93248	0.00158	1489.93248	0.00967
1488.96812	0.02654	1488.96812	0.00163	1488.96812	0.01
1488.00377	0.02658	1488.00377	0.00167	1488.00377	0.00995
1487.03941	0.02533	1487.03941	0.0017	1487.03941	0.00953
1486.07505	0.02326	1486.07505	0.00174	1486.07505	0.00884
1485.11069	0.02101	1485.11069	0.00176	1485.11069	0.00802
1484.14634	0.01874	1484.14634	0.00177	1484.14634	0.00719
1483.18198	0.01669	1483.18198	0.00177	1483.18198	0.00643
1482.21762	0.01501	1482.21762	0.00179	1482.21762	0.00578
1481.25326	0.01354	1481.25326	0.00182	1481.25326	0.00523
1480.28891	0.01223	1480.28891	0.00186	1480.28891	0.00479

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1479.32455	0.01115	1479.32455	0.00193	1479.32455	0.00445
1478.36019	0.01027	1478.36019	0.00199	1478.36019	0.00416
1477.39583	0.00952	1477.39583	0.00206	1477.39583	0.00392
1476.43148	0.00878	1476.43148	0.00213	1476.43148	0.00375
1475.46712	0.00815	1475.46712	0.00221	1475.46712	0.00361
1474.50276	0.00773	1474.50276	0.00226	1474.50276	0.00347
1473.5384	0.00732	1473.5384	0.00231	1473.5384	0.00333
1472.57405	0.00686	1472.57405	0.00239	1472.57405	0.00323
1471.60969	0.00652	1471.60969	0.00248	1471.60969	0.00314
1470.64533	0.00633	1470.64533	0.00258	1470.64533	0.00306
1469.68097	0.00623	1469.68097	0.00269	1469.68097	0.00301
1468.71662	0.00618	1468.71662	0.00285	1468.71662	0.00301
1467.75226	0.00619	1467.75226	0.00301	1467.75226	0.00305
1466.7879	0.00625	1466.7879	0.00314	1466.7879	0.00308
1465.82354	0.00634	1465.82354	0.00327	1465.82354	0.00312
1464.85918	0.00641	1464.85918	0.0034	1464.85918	0.00315
1463.89483	0.00646	1463.89483	0.00356	1463.89483	0.00319
1462.93047	0.00653	1462.93047	0.00372	1462.93047	0.00322
1461.96611	0.0066	1461.96611	0.00389	1461.96611	0.00326
1461.00175	0.00671	1461.00175	0.00411	1461.00175	0.00335
1460.0374	0.0069	1460.0374	0.00436	1460.0374	0.00349
1459.07304	0.00711	1459.07304	0.00461	1459.07304	0.0036
1458.10868	0.00728	1458.10868	0.00486	1458.10868	0.00368
1457.14432	0.0074	1457.14432	0.00511	1457.14432	0.00372
1456.17997	0.00757	1456.17997	0.00535	1456.17997	0.00374
1455.21561	0.00775	1455.21561	0.0056	1455.21561	0.00377
1454.25125	0.00787	1454.25125	0.00586	1454.25125	0.00382
1453.28689	0.00797	1453.28689	0.00617	1453.28689	0.00389
1452.32254	0.00813	1452.32254	0.00653	1452.32254	0.00399
1451.35818	0.00831	1451.35818	0.0069	1451.35818	0.00407
1450.39382	0.00842	1450.39382	0.00727	1450.39382	0.0041
1449.42946	0.00843	1449.42946	0.00763	1449.42946	0.0041
1448.46511	0.00836	1448.46511	0.00799	1448.46511	0.00411
1447.50075	0.00828	1447.50075	0.00837	1447.50075	0.00411
1446.53639	0.0083	1446.53639	0.00878	1446.53639	0.0041
1445.57203	0.00833	1445.57203	0.00922	1445.57203	0.00408
1444.60768	0.00825	1444.60768	0.00969	1444.60768	0.00405
1443.64332	0.00817	1443.64332	0.01018	1443.64332	0.004
1442.67896	0.00811	1442.67896	0.01068	1442.67896	0.00393
1441.7146	0.00802	1441.7146	0.01118	1441.7146	0.00385
1440.75025	0.00792	1440.75025	0.01171	1440.75025	0.00381

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1439.78589	0.00779	1439.78589	0.01226	1439.78589	0.00379
1438.82153	0.0076	1438.82153	0.0128	1438.82153	0.00377
1437.85717	0.00741	1437.85717	0.01332	1437.85717	0.00372
1436.89281	0.0072	1436.89281	0.01384	1436.89281	0.00366
1435.92846	0.00703	1435.92846	0.01436	1435.92846	0.00358
1434.9641	0.00695	1434.9641	0.0149	1434.9641	0.00349
1433.99974	0.00689	1433.99974	0.01546	1433.99974	0.0034
1433.03538	0.00685	1433.03538	0.01602	1433.03538	0.00335
1432.07103	0.00684	1432.07103	0.01657	1432.07103	0.00333
1431.10667	0.00684	1431.10667	0.01708	1431.10667	0.00329
1430.14231	0.0068	1430.14231	0.01755	1430.14231	0.00325
1429.17795	0.00673	1429.17795	0.018	1429.17795	0.00323
1428.2136	0.0067	1428.2136	0.01843	1428.2136	0.00321
1427.24924	0.00669	1427.24924	0.01886	1427.24924	0.00321
1426.28488	0.00673	1426.28488	0.01926	1426.28488	0.00323
1425.32052	0.00681	1425.32052	0.0196	1425.32052	0.00326
1424.35617	0.00694	1424.35617	0.01991	1424.35617	0.00329
1423.39181	0.00709	1423.39181	0.02022	1423.39181	0.00336
1422.42745	0.00723	1422.42745	0.0205	1422.42745	0.00345
1421.46309	0.00738	1421.46309	0.02072	1421.46309	0.00353
1420.49874	0.00756	1420.49874	0.02088	1420.49874	0.00358
1419.53438	0.00777	1419.53438	0.02098	1419.53438	0.00362
1418.57002	0.00789	1418.57002	0.02101	1418.57002	0.00364
1417.60566	0.00793	1417.60566	0.02096	1417.60566	0.00367
1416.64131	0.00795	1416.64131	0.02087	1416.64131	0.0037
1415.67695	0.00796	1415.67695	0.02079	1415.67695	0.00376
1414.71259	0.00792	1414.71259	0.02067	1414.71259	0.00381
1413.74823	0.00783	1413.74823	0.0205	1413.74823	0.00382
1412.78387	0.00768	1412.78387	0.02028	1412.78387	0.00378
1411.81952	0.00744	1411.81952	0.02001	1411.81952	0.00371
1410.85516	0.00713	1410.85516	0.0197	1410.85516	0.00362
1409.8908	0.00679	1409.8908	0.01934	1409.8908	0.00351
1408.92644	0.00642	1408.92644	0.01896	1408.92644	0.00341
1407.96209	0.00605	1407.96209	0.01857	1407.96209	0.00331
1406.99773	0.00577	1406.99773	0.01815	1406.99773	0.00322
1406.03337	0.00554	1406.03337	0.01771	1406.03337	0.00312
1405.06901	0.00522	1405.06901	0.01724	1405.06901	0.00301
1404.10466	0.00484	1404.10466	0.01674	1404.10466	0.0029
1403.1403	0.00451	1403.1403	0.01625	1403.1403	0.00281
1402.17594	0.00425	1402.17594	0.01577	1402.17594	0.00275
1401.21158	0.00406	1401.21158	0.01529	1401.21158	0.00269



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1400.24723	0.00387	1400.24723	0.0148	1400.24723	0.00263
1399.28287	0.00358	1399.28287	0.0143	1399.28287	0.00256
1398.31851	0.00331	1398.31851	0.0138	1398.31851	0.00248
1397.35415	0.0032	1397.35415	0.01327	1397.35415	0.00239
1396.3898	0.00313	1396.3898	0.01271	1396.3898	0.0023
1395.42544	0.003	1395.42544	0.01217	1395.42544	0.00223
1394.46108	0.00285	1394.46108	0.01165	1394.46108	0.00218
1393.49672	0.00277	1393.49672	0.01113	1393.49672	0.00213
1392.53237	0.00276	1392.53237	0.01063	1392.53237	0.0021
1391.56801	0.00278	1391.56801	0.01018	1391.56801	0.00209
1390.60365	0.00284	1390.60365	0.00978	1390.60365	0.00213
1389.63929	0.00291	1389.63929	0.00937	1389.63929	0.00217
1388.67494	0.00301	1388.67494	0.00894	1388.67494	0.00219
1387.71058	0.00308	1387.71058	0.00852	1387.71058	0.00219
1386.74622	0.0031	1386.74622	0.00813	1386.74622	0.00218
1385.78186	0.0031	1385.78186	0.00776	1385.78186	0.00215
1384.8175	0.00309	1384.8175	0.00743	1384.8175	0.0021
1383.85315	0.00307	1383.85315	0.00717	1383.85315	0.00204
1382.88879	0.00302	1382.88879	0.00696	1382.88879	0.002
1381.92443	0.00296	1381.92443	0.00677	1381.92443	0.00196
1380.96007	0.00292	1380.96007	0.00661	1380.96007	0.00192
1379.99572	0.00295	1379.99572	0.00646	1379.99572	0.00188
1379.03136	0.00299	1379.03136	0.00634	1379.03136	0.00185
1378.067	0.00295	1378.067	0.00625	1378.067	0.00182
1377.10264	0.00287	1377.10264	0.00619	1377.10264	0.00178
1376.13829	0.00281	1376.13829	0.00617	1376.13829	0.00174
1375.17393	0.00277	1375.17393	0.00616	1375.17393	0.00169
1374.20957	0.0027	1374.20957	0.00616	1374.20957	0.00164
1373.24521	0.00262	1373.24521	0.00615	1373.24521	0.0016
1372.28086	0.00258	1372.28086	0.00615	1372.28086	0.00158
1371.3165	0.00261	1371.3165	0.00615	1371.3165	0.00157
1370.35214	0.00266	1370.35214	0.00616	1370.35214	0.00157
1369.38778	0.00267	1369.38778	0.00618	1369.38778	0.00158
1368.42343	0.00271	1368.42343	0.0062	1368.42343	0.0016
1367.45907	0.00283	1367.45907	0.00622	1367.45907	0.00162
1366.49471	0.00296	1366.49471	0.00625	1366.49471	0.00165
1365.53035	0.00306	1365.53035	0.00627	1365.53035	0.00168
1364.566	0.00315	1364.566	0.00629	1364.566	0.0017
1363.60164	0.00321	1363.60164	0.0063	1363.60164	0.0017
1362.63728	0.0032	1362.63728	0.00629	1362.63728	0.00166
1361.67292	0.0031	1361.67292	0.00627	1361.67292	0.0016

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1360.70856	0.00293	1360.70856	0.00626	1360.70856	0.00153
1359.74421	0.00275	1359.74421	0.00624	1359.74421	0.00146
1358.77985	0.00263	1358.77985	0.00623	1358.77985	0.00142
1357.81549	0.0026	1357.81549	0.00621	1357.81549	0.0014
1356.85113	0.00265	1356.85113	0.00619	1356.85113	0.0014
1355.88678	0.00271	1355.88678	0.00617	1355.88678	0.00141
1354.92242	0.00277	1354.92242	0.00616	1354.92242	0.00142
1353.95806	0.00286	1353.95806	0.00615	1353.95806	0.00145
1352.9937	0.00297	1352.9937	0.00612	1352.9937	0.00148
1352.02935	0.00311	1352.02935	0.00607	1352.02935	0.00152
1351.06499	0.00324	1351.06499	0.00601	1351.06499	0.00157
1350.10063	0.00334	1350.10063	0.00595	1350.10063	0.00163
1349.13627	0.00345	1349.13627	0.0059	1349.13627	0.0017
1348.17192	0.00358	1348.17192	0.00587	1348.17192	0.00178
1347.20756	0.0037	1347.20756	0.00587	1347.20756	0.00185
1346.2432	0.00383	1346.2432	0.00589	1346.2432	0.00191
1345.27884	0.00399	1345.27884	0.00593	1345.27884	0.00197
1344.31449	0.00421	1344.31449	0.00599	1344.31449	0.00206
1343.35013	0.00443	1343.35013	0.00606	1343.35013	0.00215
1342.38577	0.0046	1342.38577	0.00612	1342.38577	0.00226
1341.42141	0.00477	1341.42141	0.00617	1341.42141	0.00237
1340.45706	0.00497	1340.45706	0.0062	1340.45706	0.00247
1339.4927	0.00522	1339.4927	0.00623	1339.4927	0.00256
1338.52834	0.0055	1338.52834	0.00625	1338.52834	0.00265
1337.56398	0.00579	1337.56398	0.00627	1337.56398	0.00274
1336.59963	0.00609	1336.59963	0.00629	1336.59963	0.00286
1335.63527	0.00644	1335.63527	0.0063	1335.63527	0.00301
1334.67091	0.00684	1334.67091	0.00631	1334.67091	0.00317
1333.70655	0.00726	1333.70655	0.00631	1333.70655	0.00335
1332.74219	0.0077	1332.74219	0.00633	1332.74219	0.00355
1331.77784	0.00816	1331.77784	0.00635	1331.77784	0.00378
1330.81348	0.00866	1330.81348	0.00639	1330.81348	0.00403
1329.84912	0.00916	1329.84912	0.00644	1329.84912	0.00426
1328.88476	0.0096	1328.88476	0.00647	1328.88476	0.00447
1327.92041	0.0099	1327.92041	0.00651	1327.92041	0.00465
1326.95605	0.01009	1326.95605	0.00655	1326.95605	0.00479
1325.99169	0.01025	1325.99169	0.0066	1325.99169	0.00487
1325.02733	0.01036	1325.02733	0.00664	1325.02733	0.00491
1324.06298	0.01037	1324.06298	0.00669	1324.06298	0.00491
1323.09862	0.01027	1323.09862	0.00674	1323.09862	0.00487
1322.13426	0.01008	1322.13426	0.00678	1322.13426	0.00479

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1321.1699	0.00983	1321.1699	0.00682	1321.1699	0.00469
1320.20555	0.0096	1320.20555	0.00685	1320.20555	0.00458
1319.24119	0.00938	1319.24119	0.00688	1319.24119	0.00448
1318.27683	0.00915	1318.27683	0.0069	1318.27683	0.00439
1317.31247	0.00889	1317.31247	0.0069	1317.31247	0.00432
1316.34812	0.00864	1316.34812	0.0069	1316.34812	0.00427
1315.38376	0.00849	1315.38376	0.00688	1315.38376	0.00425
1314.4194	0.00847	1314.4194	0.00687	1314.4194	0.00425
1313.45504	0.00852	1313.45504	0.00684	1313.45504	0.00429
1312.49069	0.00862	1312.49069	0.00681	1312.49069	0.00434
1311.52633	0.00876	1311.52633	0.0068	1311.52633	0.00441
1310.56197	0.00893	1310.56197	0.00679	1310.56197	0.0045
1309.59761	0.0091	1309.59761	0.0068	1309.59761	0.00458
1308.63325	0.00921	1308.63325	0.0068	1308.63325	0.00464
1307.6689	0.0092	1307.6689	0.00681	1307.6689	0.00467
1306.70454	0.00912	1306.70454	0.00684	1306.70454	0.00467
1305.74018	0.00906	1305.74018	0.00686	1305.74018	0.00464
1304.77582	0.00905	1304.77582	0.00689	1304.77582	0.00457
1303.81147	0.00907	1303.81147	0.00693	1303.81147	0.00451
1302.84711	0.00912	1302.84711	0.00696	1302.84711	0.00449
1301.88275	0.0092	1301.88275	0.00698	1301.88275	0.00451
1300.91839	0.0093	1300.91839	0.007	1300.91839	0.00458
1299.95404	0.00945	1299.95404	0.00702	1299.95404	0.00471
1298.98968	0.0097	1298.98968	0.00704	1298.98968	0.00487
1298.02532	0.01004	1298.02532	0.00706	1298.02532	0.00503
1297.06096	0.01033	1297.06096	0.00709	1297.06096	0.00517
1296.09661	0.01049	1296.09661	0.00711	1296.09661	0.00526
1295.13225	0.01054	1295.13225	0.00712	1295.13225	0.00531
1294.16789	0.01049	1294.16789	0.00712	1294.16789	0.00531
1293.20353	0.01028	1293.20353	0.00712	1293.20353	0.00524
1292.23918	0.00991	1292.23918	0.0071	1292.23918	0.00511
1291.27482	0.00947	1291.27482	0.00707	1291.27482	0.00493
1290.31046	0.00905	1290.31046	0.007	1290.31046	0.00472
1289.3461	0.00871	1289.3461	0.00691	1289.3461	0.00452
1288.38175	0.00844	1288.38175	0.0068	1288.38175	0.00435
1287.41739	0.00824	1287.41739	0.00669	1287.41739	0.00423
1286.45303	0.00804	1286.45303	0.00658	1286.45303	0.00416
1285.48867	0.00778	1285.48867	0.00647	1285.48867	0.0041
1284.52431	0.00754	1284.52431	0.00635	1284.52431	0.00405
1283.55996	0.00736	1283.55996	0.00621	1283.55996	0.004
1282.5956	0.00717	1282.5956	0.00604	1282.5956	0.00394

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1281.63124	0.00699	1281.63124	0.00585	1281.63124	0.00388
1280.66688	0.00685	1280.66688	0.00566	1280.66688	0.00382
1279.70253	0.00671	1279.70253	0.00549	1279.70253	0.00377
1278.73817	0.00661	1278.73817	0.00533	1278.73817	0.00371
1277.77381	0.00656	1277.77381	0.00519	1277.77381	0.00366
1276.80945	0.00654	1276.80945	0.00507	1276.80945	0.0036
1275.8451	0.00652	1275.8451	0.00495	1275.8451	0.00356
1274.88074	0.00652	1274.88074	0.00483	1274.88074	0.00353
1273.91638	0.00658	1273.91638	0.00471	1273.91638	0.00352
1272.95202	0.00665	1272.95202	0.00458	1272.95202	0.00354
1271.98767	0.00673	1271.98767	0.00447	1271.98767	0.00358
1271.02331	0.00685	1271.02331	0.00436	1271.02331	0.00365
1270.05895	0.00706	1270.05895	0.00428	1270.05895	0.00373
1269.09459	0.0074	1269.09459	0.00421	1269.09459	0.00385
1268.13024	0.00779	1268.13024	0.00415	1268.13024	0.004
1267.16588	0.00819	1267.16588	0.0041	1267.16588	0.00417
1266.20152	0.00867	1266.20152	0.00405	1266.20152	0.00436
1265.23716	0.00922	1265.23716	0.004	1265.23716	0.00459
1264.27281	0.00983	1264.27281	0.00395	1264.27281	0.00486
1263.30845	0.01052	1263.30845	0.00391	1263.30845	0.00517
1262.34409	0.01131	1262.34409	0.00387	1262.34409	0.00554
1261.37973	0.01219	1261.37973	0.00385	1261.37973	0.00596
1260.41538	0.0132	1260.41538	0.00383	1260.41538	0.00644
1259.45102	0.01435	1259.45102	0.00381	1259.45102	0.00696
1258.48666	0.01556	1258.48666	0.0038	1258.48666	0.00752
1257.5223	0.0168	1257.5223	0.00379	1257.5223	0.0081
1256.55794	0.0181	1256.55794	0.00376	1256.55794	0.00871
1255.59359	0.01942	1255.59359	0.00373	1255.59359	0.00932
1254.62923	0.02072	1254.62923	0.00369	1254.62923	0.00992
1253.66487	0.022	1253.66487	0.00365	1253.66487	0.01051
1252.70051	0.02326	1252.70051	0.0036	1252.70051	0.01107
1251.73616	0.02442	1251.73616	0.00355	1251.73616	0.01161
1250.7718	0.02541	1250.7718	0.0035	1250.7718	0.01212
1249.80744	0.02627	1249.80744	0.00348	1249.80744	0.01258
1248.84308	0.02703	1248.84308	0.00345	1248.84308	0.01299
1247.87873	0.02762	1247.87873	0.00343	1247.87873	0.01332
1246.91437	0.02807	1246.91437	0.00341	1246.91437	0.01358
1245.95001	0.0284	1245.95001	0.00338	1245.95001	0.01374
1244.98565	0.02858	1244.98565	0.00335	1244.98565	0.01383
1244.0213	0.02857	1244.0213	0.00331	1244.0213	0.01382
1243.05694	0.02831	1243.05694	0.00326	1243.05694	0.01374

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1242.09258	0.02779	1242.09258	0.00321	1242.09258	0.01357
1241.12822	0.02712	1241.12822	0.00315	1241.12822	0.01332
1240.16387	0.02635	1240.16387	0.00309	1240.16387	0.01299
1239.19951	0.02541	1239.19951	0.00301	1239.19951	0.01259
1238.23515	0.02427	1238.23515	0.00292	1238.23515	0.01213
1237.27079	0.02302	1237.27079	0.00282	1237.27079	0.01162
1236.30644	0.02175	1236.30644	0.00271	1236.30644	0.01107
1235.34208	0.02049	1235.34208	0.00259	1235.34208	0.01051
1234.37772	0.01924	1234.37772	0.00246	1234.37772	0.00993
1233.41336	0.01799	1233.41336	0.00234	1233.41336	0.00936
1232.449	0.01671	1232.449	0.00221	1232.449	0.00879
1231.48465	0.01546	1231.48465	0.0021	1231.48465	0.00825
1230.52029	0.0143	1230.52029	0.00199	1230.52029	0.00773
1229.55593	0.01322	1229.55593	0.0019	1229.55593	0.00723
1228.59157	0.01218	1228.59157	0.0018	1228.59157	0.00677
1227.62722	0.01122	1227.62722	0.0017	1227.62722	0.00633
1226.66286	0.01035	1226.66286	0.00159	1226.66286	0.00591
1225.6985	0.00955	1225.6985	0.00148	1225.6985	0.0055
1224.73414	0.00881	1224.73414	0.00138	1224.73414	0.00512
1223.76979	0.00812	1223.76979	0.0013	1223.76979	0.00477
1222.80543	0.00753	1222.80543	0.00123	1222.80543	0.00447
1221.84107	0.00703	1221.84107	0.00119	1221.84107	0.00419
1220.87671	0.00658	1220.87671	0.00114	1220.87671	0.00395
1219.91236	0.00615	1219.91236	0.00108	1219.91236	0.00372
1218.948	0.00576	1218.948	0.00102	1218.948	0.0035
1217.98364	0.00542	1217.98364	9.70E-04	1217.98364	0.00328
1217.01928	0.0051	1217.01928	9.50E-04	1217.01928	0.00308
1216.05493	0.00481	1216.05493	9.30E-04	1216.05493	0.0029
1215.09057	0.00458	1215.09057	9.30E-04	1215.09057	0.00276
1214.12621	0.00443	1214.12621	9.40E-04	1214.12621	0.00264
1213.16185	0.00434	1213.16185	9.40E-04	1213.16185	0.00255
1212.1975	0.00426	1212.1975	9.40E-04	1212.1975	0.0025
1211.23314	0.0042	1211.23314	9.30E-04	1211.23314	0.00249
1210.26878	0.00421	1210.26878	9.30E-04	1210.26878	0.00248
1209.30442	0.00427	1209.30442	9.40E-04	1209.30442	0.00249
1208.34007	0.00433	1208.34007	9.30E-04	1208.34007	0.00251
1207.37571	0.00436	1207.37571	9.00E-04	1207.37571	0.00255
1206.41135	0.00435	1206.41135	8.50E-04	1206.41135	0.00256
1205.44699	0.0043	1205.44699	7.90E-04	1205.44699	0.00254
1204.48263	0.00422	1204.48263	7.20E-04	1204.48263	0.00251
1203.51828	0.00411	1203.51828	6.50E-04	1203.51828	0.00245

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1202.55392	0.00396	1202.55392	6.00E-04	1202.55392	0.00238
1201.58956	0.00377	1201.58956	5.70E-04	1201.58956	0.00229
1200.6252	0.0036	1200.6252	5.60E-04	1200.6252	0.0022
1199.66085	0.00341	1199.66085	5.60E-04	1199.66085	0.00211
1198.69649	0.0032	1198.69649	5.70E-04	1198.69649	0.00202
1197.73213	0.00303	1197.73213	5.80E-04	1197.73213	0.00194
1196.76777	0.00292	1196.76777	6.10E-04	1196.76777	0.00187
1195.80342	0.00282	1195.80342	6.50E-04	1195.80342	0.00181
1194.83906	0.00274	1194.83906	7.00E-04	1194.83906	0.00177
1193.8747	0.00267	1193.8747	8.00E-04	1193.8747	0.00177
1192.91034	0.00258	1192.91034	9.20E-04	1192.91034	0.00179
1191.94599	0.00252	1191.94599	0.00107	1191.94599	0.00182
1190.98163	0.00255	1190.98163	0.00124	1190.98163	0.00186
1190.01727	0.00259	1190.01727	0.00142	1190.01727	0.00191
1189.05291	0.00259	1189.05291	0.00163	1189.05291	0.00197
1188.08856	0.00257	1188.08856	0.00186	1188.08856	0.00199
1187.1242	0.00259	1187.1242	0.00212	1187.1242	0.00201
1186.15984	0.00265	1186.15984	0.00241	1186.15984	0.00201
1185.19548	0.00275	1185.19548	0.00271	1185.19548	0.00201
1184.23113	0.00288	1184.23113	0.00299	1184.23113	0.002
1183.26677	0.00306	1183.26677	0.00326	1183.26677	0.00201
1182.30241	0.00329	1182.30241	0.00351	1182.30241	0.00208
1181.33805	0.00358	1181.33805	0.00377	1181.33805	0.0022
1180.37369	0.00392	1180.37369	0.00404	1180.37369	0.00238
1179.40934	0.00438	1179.40934	0.00433	1179.40934	0.00263
1178.44498	0.00497	1178.44498	0.00461	1178.44498	0.00295
1177.48062	0.00566	1177.48062	0.00487	1177.48062	0.00333
1176.51626	0.00642	1176.51626	0.0051	1176.51626	0.00376
1175.55191	0.00726	1175.55191	0.00531	1175.55191	0.00425
1174.58755	0.00816	1174.58755	0.00551	1174.58755	0.00475
1173.62319	0.00908	1173.62319	0.0057	1173.62319	0.00524
1172.65883	0.00991	1172.65883	0.00587	1172.65883	0.0057
1171.69448	0.01056	1171.69448	0.00601	1171.69448	0.00609
1170.73012	0.01103	1170.73012	0.00612	1170.73012	0.00635
1169.76576	0.01128	1169.76576	0.00621	1169.76576	0.00645
1168.8014	0.01117	1168.8014	0.0063	1168.8014	0.00638
1167.83705	0.01068	1167.83705	0.00638	1167.83705	0.00617
1166.87269	0.00993	1166.87269	0.00644	1166.87269	0.00582
1165.90833	0.00908	1165.90833	0.00648	1165.90833	0.00541
1164.94397	0.00827	1164.94397	0.00649	1164.94397	0.005
1163.97962	0.00759	1163.97962	0.00647	1163.97962	0.00464

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1163.01526	0.00705	1163.01526	0.00646	1163.01526	0.00435
1162.0509	0.00657	1162.0509	0.0065	1162.0509	0.00413
1161.08654	0.00625	1161.08654	0.00655	1161.08654	0.00406
1160.12219	0.00636	1160.12219	0.0066	1160.12219	0.00418
1159.15783	0.00707	1159.15783	0.00668	1159.15783	0.00454
1158.19347	0.00836	1158.19347	0.00677	1158.19347	0.00518
1157.22911	0.01018	1157.22911	0.00687	1157.22911	0.00608
1156.26475	0.01234	1156.26475	0.00699	1156.26475	0.00715
1155.3004	0.01451	1155.3004	0.00714	1155.3004	0.00827
1154.33604	0.01629	1154.33604	0.00735	1154.33604	0.00928
1153.37168	0.01745	1153.37168	0.00758	1153.37168	0.01003
1152.40732	0.01799	1152.40732	0.00781	1152.40732	0.01044
1151.44297	0.01793	1151.44297	0.00801	1151.44297	0.01047
1150.47861	0.01733	1150.47861	0.00815	1150.47861	0.01019
1149.51425	0.01636	1149.51425	0.00825	1149.51425	0.00968
1148.54989	0.01509	1148.54989	0.00832	1148.54989	0.00905
1147.58554	0.01354	1147.58554	0.00839	1147.58554	0.00836
1146.62118	0.01188	1146.62118	0.00851	1146.62118	0.00769
1145.65682	0.01034	1145.65682	0.00867	1145.65682	0.00704
1144.69246	0.00898	1144.69246	0.00884	1144.69246	0.00639
1143.72811	0.00785	1143.72811	0.00901	1143.72811	0.00578
1142.76375	0.00699	1142.76375	0.0092	1142.76375	0.00523
1141.79939	0.00623	1141.79939	0.00942	1141.79939	0.00478
1140.83503	0.0055	1140.83503	0.00966	1140.83503	0.00442
1139.87068	0.00501	1139.87068	0.00993	1139.87068	0.0041
1138.90632	0.00477	1138.90632	0.01026	1138.90632	0.00385
1137.94196	0.00453	1137.94196	0.0106	1137.94196	0.00364
1136.9776	0.00425	1136.9776	0.01097	1136.9776	0.00347
1136.01325	0.00404	1136.01325	0.01139	1136.01325	0.00332
1135.04889	0.00394	1135.04889	0.01185	1135.04889	0.00322
1134.08453	0.00389	1134.08453	0.0123	1134.08453	0.0032
1133.12017	0.00381	1133.12017	0.01278	1133.12017	0.00324
1132.15582	0.00368	1132.15582	0.01332	1132.15582	0.00331
1131.19146	0.00365	1131.19146	0.0139	1131.19146	0.00339
1130.2271	0.00379	1130.2271	0.01449	1130.2271	0.00346
1129.26274	0.00389	1129.26274	0.01504	1129.26274	0.00348
1128.29838	0.00386	1128.29838	0.01553	1128.29838	0.00345
1127.33403	0.00393	1127.33403	0.01591	1127.33403	0.00343
1126.36967	0.00418	1126.36967	0.01618	1126.36967	0.00345
1125.40531	0.00435	1125.40531	0.01637	1125.40531	0.00353
1124.44095	0.00426	1124.44095	0.0165	1124.44095	0.00364

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1123.4766	0.00405	1123.4766	0.01661	1123.4766	0.00377
1122.51224	0.004	1122.51224	0.01667	1122.51224	0.00388
1121.54788	0.00419	1121.54788	0.01667	1121.54788	0.00392
1120.58352	0.00442	1120.58352	0.01657	1120.58352	0.0039
1119.61917	0.00461	1119.61917	0.01638	1119.61917	0.00387
1118.65481	0.00494	1118.65481	0.01612	1118.65481	0.00388
1117.69045	0.00541	1117.69045	0.01582	1117.69045	0.00398
1116.72609	0.00587	1116.72609	0.01556	1116.72609	0.00419
1115.76174	0.0063	1115.76174	0.0154	1115.76174	0.00452
1114.79738	0.00687	1114.79738	0.01536	1114.79738	0.00496
1113.83302	0.00768	1113.83302	0.01544	1113.83302	0.00549
1112.86866	0.00868	1112.86866	0.01565	1112.86866	0.00609
1111.90431	0.00975	1111.90431	0.01596	1111.90431	0.0067
1110.93995	0.01093	1110.93995	0.01634	1110.93995	0.00731
1109.97559	0.01217	1109.97559	0.01678	1109.97559	0.00792
1109.01123	0.01325	1109.01123	0.01727	1109.01123	0.00848
1108.04688	0.01398	1108.04688	0.01782	1108.04688	0.00892
1107.08252	0.01436	1107.08252	0.01842	1107.08252	0.00919
1106.11816	0.01439	1106.11816	0.01906	1106.11816	0.00927
1105.1538	0.01392	1105.1538	0.01974	1105.1538	0.00912
1104.18944	0.01302	1104.18944	0.02047	1104.18944	0.00876
1103.22509	0.01204	1103.22509	0.02122	1103.22509	0.00822
1102.26073	0.01107	1102.26073	0.02194	1102.26073	0.00761
1101.29637	0.01	1101.29637	0.0226	1101.29637	0.00698
1100.33201	0.00897	1100.33201	0.02323	1100.33201	0.00638
1099.36766	0.00817	1099.36766	0.02384	1099.36766	0.00584
1098.4033	0.00751	1098.4033	0.02441	1098.4033	0.00538
1097.43894	0.00691	1097.43894	0.02494	1097.43894	0.00502
1096.47458	0.00633	1096.47458	0.02549	1096.47458	0.00474
1095.51023	0.00574	1095.51023	0.02609	1095.51023	0.00452
1094.54587	0.00522	1094.54587	0.02666	1094.54587	0.00433
1093.58151	0.00477	1093.58151	0.02714	1093.58151	0.00413
1092.61715	0.00439	1092.61715	0.02757	1092.61715	0.00393
1091.6528	0.00417	1091.6528	0.02797	1091.6528	0.00372
1090.68844	0.00409	1090.68844	0.02836	1090.68844	0.00355
1089.72408	0.00409	1089.72408	0.02871	1089.72408	0.00343
1088.75972	0.00408	1088.75972	0.02905	1088.75972	0.00334
1087.79537	0.00399	1087.79537	0.02936	1087.79537	0.00329
1086.83101	0.00397	1086.83101	0.02962	1086.83101	0.00327
1085.86665	0.00409	1085.86665	0.02979	1085.86665	0.00328
1084.90229	0.0042	1084.90229	0.02989	1084.90229	0.00331



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1083.93794	0.00437	1083.93794	0.02995	1083.93794	0.00335
1082.97358	0.00471	1082.97358	0.02994	1082.97358	0.0034
1082.00922	0.00499	1082.00922	0.02984	1082.00922	0.00343
1081.04486	0.00493	1081.04486	0.02962	1081.04486	0.00342
1080.08051	0.00464	1080.08051	0.02929	1080.08051	0.00337
1079.11615	0.00436	1079.11615	0.02892	1079.11615	0.00329
1078.15179	0.00416	1078.15179	0.02854	1078.15179	0.00319
1077.18743	0.00407	1077.18743	0.02817	1077.18743	0.00307
1076.22307	0.00402	1076.22307	0.0278	1076.22307	0.00293
1075.25872	0.00391	1075.25872	0.02744	1075.25872	0.00279
1074.29436	0.00375	1074.29436	0.0271	1074.29436	0.00267
1073.33	0.0035	1073.33	0.02679	1073.33	0.00257
1072.36564	0.00315	1072.36564	0.0265	1072.36564	0.00248
1071.40129	0.00279	1071.40129	0.02625	1071.40129	0.00237
1070.43693	0.0025	1070.43693	0.02608	1070.43693	0.00222
1069.47257	0.00222	1069.47257	0.02599	1069.47257	0.00202
1068.50821	0.00198	1068.50821	0.02599	1068.50821	0.00178
1067.54386	0.00182	1067.54386	0.0261	1067.54386	0.00155
1066.5795	0.0017	1066.5795	0.02631	1066.5795	0.00136
1065.61514	0.00158	1065.61514	0.02658	1065.61514	0.00122
1064.65078	0.00148	1064.65078	0.02686	1064.65078	0.00113
1063.68643	0.00141	1063.68643	0.02715	1063.68643	0.00109
1062.72207	0.00131	1062.72207	0.02745	1062.72207	0.00105
1061.75771	0.00124	1061.75771	0.02776	1061.75771	9.80E-04
1060.79335	0.00118	1060.79335	0.02804	1060.79335	9.00E-04
1059.829	0.00114	1059.829	0.02828	1059.829	8.20E-04
1058.86464	0.00111	1058.86464	0.02848	1058.86464	7.50E-04
1057.90028	0.00105	1057.90028	0.02864	1057.90028	7.00E-04
1056.93592	9.40E-04	1056.93592	0.02879	1056.93592	6.80E-04
1055.97157	8.40E-04	1055.97157	0.02894	1055.97157	6.60E-04
1055.00721	7.40E-04	1055.00721	0.02909	1055.00721	6.30E-04
1054.04285	6.30E-04	1054.04285	0.02922	1054.04285	5.80E-04
1053.07849	6.30E-04	1053.07849	0.02933	1053.07849	4.90E-04
1052.11413	7.40E-04	1052.11413	0.0294	1052.11413	3.90E-04
1051.14978	7.90E-04	1051.14978	0.0295	1051.14978	3.20E-04
1050.18542	7.20E-04	1050.18542	0.02966	1050.18542	2.90E-04
1049.22106	6.80E-04	1049.22106	0.02991	1049.22106	3.00E-04
1048.2567	6.80E-04	1048.2567	0.03026	1048.2567	3.40E-04
1047.29235	5.80E-04	1047.29235	0.03073	1047.29235	3.90E-04
1046.32799	4.30E-04	1046.32799	0.03133	1046.32799	4.30E-04
1045.36363	3.60E-04	1045.36363	0.03207	1045.36363	4.30E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1044.39927	3.80E-04	1044.39927	0.03294	1044.39927	4.00E-04
1043.43492	4.70E-04	1043.43492	0.03391	1043.43492	3.60E-04
1042.47056	5.30E-04	1042.47056	0.03497	1042.47056	3.30E-04
1041.5062	4.60E-04	1041.5062	0.03607	1041.5062	3.10E-04
1040.54184	3.50E-04	1040.54184	0.03718	1040.54184	3.30E-04
1039.57749	3.40E-04	1039.57749	0.03831	1039.57749	3.80E-04
1038.61313	3.70E-04	1038.61313	0.03944	1038.61313	4.30E-04
1037.64877	3.90E-04	1037.64877	0.04054	1037.64877	4.40E-04
1036.68441	4.40E-04	1036.68441	0.04156	1036.68441	4.00E-04
1035.72006	4.50E-04	1035.72006	0.04244	1035.72006	3.20E-04
1034.7557	4.00E-04	1034.7557	0.04318	1034.7557	2.10E-04
1033.79134	4.10E-04	1033.79134	0.04379	1033.79134	9.00E-05
1032.82698	4.30E-04	1032.82698	0.04429	1032.82698	3.00E-05
1031.86263	3.70E-04	1031.86263	0.04467	1031.86263	3.00E-05
1030.89827	2.90E-04	1030.89827	0.04489	1030.89827	6.00E-05
1029.93391	2.80E-04	1029.93391	0.04492	1029.93391	8.00E-05
1028.96955	3.10E-04	1028.96955	0.04478	1028.96955	8.00E-05
1028.0052	3.00E-04	1028.0052	0.04446	1028.0052	8.00E-05
1027.04084	2.00E-04	1027.04084	0.04397	1027.04084	6.00E-05
1026.07648	1.20E-04	1026.07648	0.04333	1026.07648	3.00E-05
1025.11212	1.60E-04	1025.11212	0.04259	1025.11212	2.00E-05
1024.14776	2.60E-04	1024.14776	0.04174	1024.14776	1.00E-05
1023.18341	3.50E-04	1023.18341	0.04078	1023.18341	1.00E-05
1022.21905	4.80E-04	1022.21905	0.03975	1022.21905	5.00E-05
1021.25469	7.50E-04	1021.25469	0.03874	1021.25469	1.60E-04
1020.29033	0.00107	1020.29033	0.03778	1020.29033	3.70E-04
1019.32598	0.00139	1019.32598	0.03688	1019.32598	6.80E-04
1018.36162	0.00189	1018.36162	0.03602	1018.36162	0.00104
1017.39726	0.00256	1017.39726	0.03524	1017.39726	0.0014
1016.4329	0.00325	1016.4329	0.03453	1016.4329	0.00172
1015.46855	0.00374	1015.46855	0.03386	1015.46855	0.00196
1014.50419	0.0039	1014.50419	0.03322	1014.50419	0.00208
1013.53983	0.00371	1013.53983	0.03256	1013.53983	0.00205
1012.57547	0.00331	1012.57547	0.03183	1012.57547	0.00189
1011.61112	0.00293	1011.61112	0.03098	1011.61112	0.00166
1010.64676	0.00256	1010.64676	0.03	1010.64676	0.00142
1009.6824	0.00214	1009.6824	0.02892	1009.6824	0.00121
1008.71804	0.00182	1008.71804	0.02776	1008.71804	0.00102
1007.75369	0.00155	1007.75369	0.0266	1007.75369	8.10E-04
1006.78933	0.00125	1006.78933	0.02543	1006.78933	5.60E-04
1005.82497	0.00102	1005.82497	0.02421	1005.82497	2.90E-04

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1004.86061	9.10E-04	1004.86061	0.02297	1004.86061	6.00E-05
1003.89626	8.10E-04	1003.89626	0.02178	1003.89626	-5.00E-05
1002.9319	7.80E-04	1002.9319	0.02067	1002.9319	2.00E-05
1001.96754	9.20E-04	1001.96754	0.01966	1001.96754	2.00E-04
1001.00318	0.00104	1001.00318	0.01881	1001.00318	3.70E-04
1000.03882	0.00101	1000.03882	0.01812	1000.03882	4.80E-04
999.07447	9.80E-04	999.07447	0.01755	999.07447	5.00E-04
998.11011	0.00101	998.11011	0.01708	998.11011	4.50E-04
997.14575	0.00102	997.14575	0.01671	997.14575	3.80E-04
996.18139	0.00103	996.18139	0.01643	996.18139	3.60E-04
995.21704	0.00101	995.21704	0.01616	995.21704	4.20E-04
994.25268	9.20E-04	994.25268	0.01587	994.25268	5.30E-04
993.28832	9.30E-04	993.28832	0.01553	993.28832	6.10E-04
992.32396	0.00114	992.32396	0.01508	992.32396	6.60E-04
991.35961	0.00134	991.35961	0.01451	991.35961	7.00E-04
990.39525	0.00146	990.39525	0.01387	990.39525	7.30E-04
989.43089	0.00152	989.43089	0.01317	989.43089	8.00E-04
988.46653	0.00154	988.46653	0.01242	988.46653	9.30E-04
987.50218	0.00163	987.50218	0.01167	987.50218	0.00116
986.53782	0.00178	986.53782	0.01097	986.53782	0.00141
985.57346	0.00195	985.57346	0.01035	985.57346	0.00161
984.6091	0.00211	984.6091	0.00979	984.6091	0.00171
983.64475	0.00211	983.64475	0.00926	983.64475	0.00169
982.68039	0.00186	982.68039	0.00872	982.68039	0.00159
981.71603	0.00162	981.71603	0.00816	981.71603	0.00149
980.75167	0.0017	980.75167	0.00759	980.75167	0.00146
979.78732	0.00208	979.78732	0.00702	979.78732	0.00152
978.82296	0.0025	978.82296	0.00648	978.82296	0.0017
977.8586	0.00273	977.8586	0.00601	977.8586	0.00197
976.89424	0.00281	976.89424	0.00568	976.89424	0.00218
975.92988	0.00289	975.92988	0.00551	975.92988	0.00229
974.96553	0.00301	974.96553	0.00544	974.96553	0.00239
974.00117	0.00311	974.00117	0.00546	974.00117	0.00255
973.03681	0.00314	973.03681	0.00556	973.03681	0.00272
972.07245	0.00307	972.07245	0.00568	972.07245	0.00285
971.1081	0.00298	971.1081	0.00573	971.1081	0.00292
970.14374	0.0031	970.14374	0.00567	970.14374	0.0029
969.17938	0.00339	969.17938	0.00556	969.17938	0.00282
968.21502	0.00347	968.21502	0.00543	968.21502	0.00275
967.25067	0.00332	967.25067	0.00531	967.25067	0.00277
966.28631	0.00322	966.28631	0.00524	966.28631	0.00287

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
965.32195	0.00328	965.32195	0.00524	965.32195	0.00302
964.35759	0.00346	964.35759	0.00528	964.35759	0.00316
963.39324	0.0036	963.39324	0.00532	963.39324	0.00322
962.42888	0.00358	962.42888	0.00534	962.42888	0.00318
961.46452	0.00345	961.46452	0.00529	961.46452	0.00309
960.50016	0.0033	960.50016	0.0052	960.50016	0.00304
959.53581	0.00316	959.53581	0.00511	959.53581	0.00302
958.57145	0.00314	958.57145	0.00507	958.57145	0.00302
957.60709	0.00339	957.60709	0.00504	957.60709	0.00311
956.64273	0.00363	956.64273	0.00508	956.64273	0.00329
955.67838	0.00357	955.67838	0.00526	955.67838	0.00347
954.71402	0.00346	954.71402	0.00553	954.71402	0.0036
953.74966	0.00355	953.74966	0.00573	953.74966	0.00367
952.7853	0.00364	952.7853	0.00583	952.7853	0.00362
951.82095	0.00363	951.82095	0.00588	951.82095	0.00343
950.85659	0.0036	950.85659	0.00592	950.85659	0.00319
949.89223	0.0035	949.89223	0.0059	949.89223	0.00301
948.92787	0.00342	948.92787	0.00581	948.92787	0.00294
947.96351	0.00339	947.96351	0.00578	947.96351	0.00299
946.99916	0.0034	946.99916	0.00583	946.99916	0.00311
946.0348	0.00351	946.0348	0.00592	946.0348	0.00318
945.07044	0.00349	945.07044	0.00607	945.07044	0.00312
944.10608	0.00315	944.10608	0.00628	944.10608	0.00296
943.14173	0.00282	943.14173	0.00644	943.14173	0.00283
942.17737	0.0029	942.17737	0.00645	942.17737	0.00281
941.21301	0.00324	941.21301	0.00634	941.21301	0.00283
940.24865	0.00338	940.24865	0.00622	940.24865	0.0028
939.2843	0.00337	939.2843	0.00609	939.2843	0.00271
938.31994	0.00348	938.31994	0.00601	938.31994	0.00263
937.35558	0.00368	937.35558	0.00606	937.35558	0.00259
936.39122	0.00378	936.39122	0.00614	936.39122	0.00262
935.42687	0.0036	935.42687	0.00622	935.42687	0.00276
934.46251	0.00327	934.46251	0.00634	934.46251	0.00301
933.49815	0.00323	933.49815	0.00639	933.49815	0.00325
932.53379	0.0035	932.53379	0.0062	932.53379	0.00337
931.56944	0.00388	931.56944	0.00581	931.56944	0.00336
930.60508	0.00427	930.60508	0.00541	930.60508	0.00334
929.64072	0.00451	929.64072	0.00503	929.64072	0.0034
928.67636	0.00462	928.67636	0.00469	928.67636	0.00349
927.71201	0.00476	927.71201	0.00448	927.71201	0.00358
926.74765	0.00482	926.74765	0.00445	926.74765	0.00377

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
925.78329	0.00482	925.78329	0.00444	925.78329	0.00406
924.81893	0.00483	924.81893	0.00441	924.81893	0.00436
923.85457	0.00483	923.85457	0.00441	923.85457	0.00465
922.89022	0.00492	922.89022	0.00443	922.89022	0.00494
921.92586	0.00523	921.92586	0.00444	921.92586	0.00521
920.9615	0.00539	920.9615	0.00446	920.9615	0.00536
919.99714	0.0051	919.99714	0.00449	919.99714	0.00547
919.03279	0.00487	919.03279	0.00454	919.03279	0.00574
918.06843	0.00508	918.06843	0.00463	918.06843	0.00611
917.10407	0.00556	917.10407	0.00477	917.10407	0.0065
916.13971	0.00639	916.13971	0.00496	916.13971	0.00684
915.17536	0.00727	915.17536	0.0051	915.17536	0.007
914.211	0.00761	914.211	0.00513	914.211	0.00694
913.24664	0.00771	913.24664	0.00513	913.24664	0.00677
912.28228	0.00806	912.28228	0.00513	912.28228	0.0066
911.31793	0.00828	911.31793	0.00509	911.31793	0.00666
910.35357	0.00819	910.35357	0.00502	910.35357	0.00708
909.38921	0.00839	909.38921	0.00503	909.38921	0.00771
908.42485	0.00883	908.42485	0.00509	908.42485	0.00823
907.4605	0.00888	907.4605	0.0051	907.4605	0.00858
906.49614	0.00865	906.49614	0.00509	906.49614	0.00891
905.53178	0.00872	905.53178	0.00518	905.53178	0.00916
904.56742	0.00887	904.56742	0.00539	904.56742	0.00917
903.60307	0.00863	903.60307	0.00569	903.60307	0.00906
902.63871	0.00834	902.63871	0.00602	902.63871	0.00915
901.67435	0.00825	901.67435	0.00628	901.67435	0.00948
900.70999	0.00827	900.70999	0.00632	900.70999	0.00988
899.74564	0.00838	899.74564	0.00617	899.74564	0.01025
898.78128	0.00825	898.78128	0.00598	898.78128	0.01061
897.81692	0.00783	897.81692	0.00564	897.81692	0.01098
896.85256	0.00773	896.85256	0.00503	896.85256	0.01126
895.8882	0.00799	895.8882	0.00441	895.8882	0.01142
894.92385	0.00801	894.92385	0.00412	894.92385	0.01153
893.95949	0.00793	893.95949	0.00425	893.95949	0.01164
892.99513	0.00817	892.99513	0.0048	892.99513	0.01167
892.03077	0.00857	892.03077	0.00557	892.03077	0.0115
891.06642	0.0087	891.06642	0.00615	891.06642	0.01115
890.10206	0.00862	890.10206	0.00627	890.10206	0.01078
889.1377	0.00876	889.1377	0.00594	889.1377	0.01054
888.17334	0.00902	888.17334	0.00555	888.17334	0.01049
887.20899	0.00924	887.20899	0.00541	887.20899	0.01047

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
886.24463	0.00949	886.24463	0.00555	886.24463	0.01034
885.28027	0.00963	885.28027	0.00593	885.28027	0.01011
884.31591	0.00978	884.31591	0.00633	884.31591	0.00983
883.35156	0.00979	883.35156	0.00649	883.35156	0.00951
882.3872	0.00946	882.3872	0.00648	882.3872	0.00929
881.42284	0.00949	881.42284	0.00638	881.42284	0.00951
880.45848	0.01033	880.45848	0.00613	880.45848	0.0102
879.49413	0.01114	879.49413	0.00579	879.49413	0.01099
878.52977	0.01113	878.52977	0.00554	878.52977	0.01163
877.56541	0.01073	877.56541	0.00554	877.56541	0.01214
876.60105	0.01074	876.60105	0.00566	876.60105	0.01245
875.6367	0.0112	875.6367	0.00562	875.6367	0.0125
874.67234	0.0115	874.67234	0.00522	874.67234	0.01234
873.70798	0.01159	873.70798	0.00446	873.70798	0.01207
872.74362	0.01158	872.74362	0.00352	872.74362	0.01161
871.77926	0.01124	871.77926	0.00273	871.77926	0.01091
870.81491	0.01084	870.81491	0.00237	870.81491	0.01013
869.85055	0.01039	869.85055	0.00245	869.85055	0.00958
868.88619	0.00935	868.88619	0.00281	868.88619	0.00936
867.92183	0.0082	867.92183	0.00331	867.92183	0.00924
866.95748	0.00789	866.95748	0.00384	866.95748	0.00898
865.99312	0.00844	865.99312	0.00437	865.99312	0.00858
865.02876	0.00903	865.02876	0.00473	865.02876	0.00813
864.0644	0.00913	864.0644	0.00474	864.0644	0.00769
863.10005	0.00888	863.10005	0.00431	863.10005	0.00733
862.13569	0.00856	862.13569	0.0035	862.13569	0.00724
861.17133	0.00832	861.17133	0.00262	861.17133	0.00753
860.20697	0.00818	860.20697	0.00201	860.20697	0.00801
859.24262	0.00809	859.24262	0.00187	859.24262	0.00843
858.27826	0.00819	858.27826	0.00218	858.27826	0.00876
857.3139	0.00831	857.3139	0.00271	857.3139	0.00888
856.34954	0.00812	856.34954	0.00302	856.34954	0.00875
855.38519	0.00783	855.38519	0.00296	855.38519	0.00844
854.42083	0.00789	854.42083	0.00277	854.42083	0.00801
853.45647	0.00827	853.45647	0.00271	853.45647	0.00755
852.49211	0.00839	852.49211	0.00275	852.49211	0.00711
851.52776	0.00793	851.52776	0.00294	851.52776	0.00667
850.5634	0.00743	850.5634	0.00334	850.5634	0.00628
849.59904	0.00739	849.59904	0.00373	849.59904	0.00597
848.63468	0.00739	848.63468	0.00379	848.63468	0.00581
847.67032	0.00664	847.67032	0.00356	847.67032	0.00582

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
846.70597	0.00555	846.70597	0.00332	846.70597	0.00583
845.74161	0.00536	845.74161	0.00319	845.74161	0.0057
844.77725	0.00596	844.77725	0.00318	844.77725	0.00548
843.81289	0.00649	843.81289	0.00327	843.81289	0.00537
842.84854	0.00674	842.84854	0.00339	842.84854	0.00551
841.88418	0.00688	841.88418	0.00343	841.88418	0.00584
840.91982	0.00715	840.91982	0.00342	840.91982	0.00624
839.95546	0.00747	839.95546	0.00346	839.95546	0.00671
838.99111	0.00763	838.99111	0.00362	838.99111	0.00714
838.02675	0.00779	838.02675	0.00395	838.02675	0.00739
837.06239	0.00812	837.06239	0.00448	837.06239	0.00753
836.09803	0.00855	836.09803	0.00511	836.09803	0.00763
835.13368	0.0088	835.13368	0.00572	835.13368	0.00768
834.16932	0.00883	834.16932	0.0062	834.16932	0.0076
833.20496	0.00902	833.20496	0.0066	833.20496	0.0075
832.2406	0.00919	832.2406	0.00701	832.2406	0.00756
831.27625	0.00906	831.27625	0.00742	831.27625	0.00776
830.31189	0.00906	830.31189	0.00776	830.31189	0.00802
829.34753	0.00907	829.34753	0.00799	829.34753	0.00835
828.38317	0.00868	828.38317	0.0081	828.38317	0.00855
827.41882	0.00839	827.41882	0.00814	827.41882	0.00842
826.45446	0.0086	826.45446	0.00822	826.45446	0.00816
825.4901	0.00865	825.4901	0.00841	825.4901	0.00796
824.52574	0.00805	824.52574	0.00867	824.52574	0.00773
823.56139	0.0074	823.56139	0.00893	823.56139	0.00747
822.59703	0.0074	822.59703	0.00919	822.59703	0.00736
821.63267	0.00789	821.63267	0.00945	821.63267	0.00748
820.66831	0.00812	820.66831	0.0096	820.66831	0.00767
819.70395	0.00789	819.70395	0.00961	819.70395	0.00777
818.7396	0.0077	818.7396	0.00952	818.7396	0.00786
817.77524	0.00767	817.77524	0.00942	817.77524	0.00804
816.81088	0.00779	816.81088	0.0093	816.81088	0.00819
815.84652	0.00806	815.84652	0.00917	815.84652	0.00829
814.88217	0.00789	814.88217	0.00912	814.88217	0.0084
813.91781	0.00722	813.91781	0.00921	813.91781	0.00849
812.95345	0.00664	812.95345	0.00931	812.95345	0.00849
811.98909	0.00626	811.98909	0.00942	811.98909	0.00829
811.02474	0.00615	811.02474	0.00953	811.02474	0.0078
810.06038	0.00645	810.06038	0.00956	810.06038	0.00703
809.09602	0.00682	809.09602	0.00948	809.09602	0.0062
808.13166	0.00688	808.13166	0.00928	808.13166	0.00549

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
807.16731	0.00659	807.16731	0.00904	807.16731	0.00491
806.20295	0.0062	806.20295	0.00886	806.20295	0.00446
805.23859	0.00603	805.23859	0.00874	805.23859	0.00431
804.27423	0.00579	804.27423	0.0087	804.27423	0.00445
803.30988	0.00515	803.30988	0.00869	803.30988	0.00456
802.34552	0.00457	802.34552	0.00865	802.34552	0.00448
801.38116	0.0045	801.38116	0.00864	801.38116	0.00444
800.4168	0.00469	800.4168	0.00871	800.4168	0.00457
799.45245	0.00489	799.45245	0.00881	799.45245	0.0048
798.48809	0.00511	798.48809	0.00885	798.48809	0.00503
797.52373	0.0055	797.52373	0.00875	797.52373	0.00529
796.55937	0.00597	796.55937	0.00856	796.55937	0.00555
795.59501	0.00641	795.59501	0.00842	795.59501	0.00575
794.63066	0.00685	794.63066	0.00845	794.63066	0.00591
793.6663	0.00713	793.6663	0.00864	793.6663	0.00608
792.70194	0.00718	792.70194	0.00883	792.70194	0.00625
791.73758	0.00703	791.73758	0.00879	791.73758	0.00641
790.77323	0.00657	790.77323	0.00853	790.77323	0.00653
789.80887	0.0061	789.80887	0.0083	789.80887	0.00658
788.84451	0.00629	788.84451	0.00826	788.84451	0.00673
787.88015	0.00688	787.88015	0.00831	787.88015	0.00719
786.9158	0.00683	786.9158	0.00839	786.9158	0.00791
785.95144	0.00639	785.95144	0.00857	785.95144	0.00857
784.98708	0.00661	784.98708	0.00869	784.98708	0.00897
784.02272	0.00692	784.02272	0.00862	784.02272	0.00911
783.05837	0.00676	783.05837	0.00863	783.05837	0.00899
782.09401	0.0067	782.09401	0.00887	782.09401	0.00869
781.12965	0.00681	781.12965	0.00905	781.12965	0.00842
780.16529	0.00679	780.16529	0.00893	780.16529	0.00831
779.20094	0.00692	779.20094	0.00862	779.20094	0.00819
778.23658	0.00728	778.23658	0.00829	778.23658	0.00798
777.27222	0.0072	777.27222	0.00791	777.27222	0.00789
776.30786	0.0065	776.30786	0.00755	776.30786	0.00803
775.34351	0.00597	775.34351	0.00751	775.34351	0.00825
774.37915	0.00611	774.37915	0.00776	774.37915	0.00843
773.41479	0.00638	773.41479	0.00817	773.41479	0.00851
772.45043	0.00639	772.45043	0.00867	772.45043	0.0084
771.48608	0.00656	771.48608	0.00912	771.48608	0.0081
770.52172	0.00698	770.52172	0.00923	770.52172	0.00785
769.55736	0.00723	769.55736	0.00887	769.55736	0.00792
768.593	0.00713	768.593	0.00833	768.593	0.00825



Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
767.62864	0.00696	767.62864	0.00808	767.62864	0.00861
766.66429	0.00724	766.66429	0.00819	766.66429	0.00889
765.69993	0.00766	765.69993	0.00843	765.69993	0.00902
764.73557	0.00753	764.73557	0.00851	764.73557	0.00898
763.77121	0.00714	763.77121	0.00821	763.77121	0.00889
762.80686	0.00737	762.80686	0.00741	762.80686	0.00897
761.8425	0.00826	761.8425	0.00634	761.8425	0.00924
760.87814	0.00839	760.87814	0.00562	760.87814	0.00968
759.91378	0.00734	759.91378	0.00566	759.91378	0.01023
758.94943	0.00675	758.94943	0.00629	758.94943	0.0108
757.98507	0.00725	757.98507	0.00708	757.98507	0.01129
757.02071	0.00782	757.02071	0.00779	757.02071	0.01164
756.05635	0.00825	756.05635	0.0082	756.05635	0.01172
755.092	0.00859	755.092	0.00823	755.092	0.01148
754.12764	0.00843	754.12764	0.00819	754.12764	0.01103
753.16328	0.0082	753.16328	0.00833	753.16328	0.01066
752.19892	0.00847	752.19892	0.00862	752.19892	0.01054
751.23457	0.00852	751.23457	0.00892	751.23457	0.01056
750.27021	0.00809	750.27021	0.00911	750.27021	0.01069
749.30585	0.00799	749.30585	0.00898	749.30585	0.01098
748.34149	0.00811	748.34149	0.00842	748.34149	0.01125
747.37714	0.00792	747.37714	0.00753	747.37714	0.0112
746.41278	0.00818	746.41278	0.00668	746.41278	0.01083
745.44842	0.00924	745.44842	0.00624	745.44842	0.0105
744.48406	0.00981	744.48406	0.00644	744.48406	0.01059
743.5197	0.00913	743.5197	0.00729	743.5197	0.011
742.55535	0.00802	742.55535	0.00825	742.55535	0.01155
741.59099	0.00744	741.59099	0.00871	741.59099	0.01226
740.62663	0.00783	740.62663	0.00843	740.62663	0.01297
739.66227	0.00918	739.66227	0.00756	739.66227	0.01341
738.69792	0.01056	738.69792	0.00652	738.69792	0.01347
737.73356	0.01075	737.73356	0.00576	737.73356	0.01328
736.7692	0.00978	736.7692	0.00549	736.7692	0.01318
735.80484	0.00882	735.80484	0.00569	735.80484	0.01327
734.84049	0.00854	734.84049	0.00609	734.84049	0.01338
733.87613	0.00872	733.87613	0.00641	733.87613	0.01329
732.91177	0.00897	732.91177	0.00661	732.91177	0.0128
731.94741	0.00891	731.94741	0.00683	731.94741	0.01193
730.98306	0.00853	730.98306	0.00727	730.98306	0.01099
730.0187	0.00845	730.0187	0.00791	730.0187	0.0103
729.05434	0.00892	729.05434	0.00847	729.05434	0.01015

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
728.08998	0.0093	728.08998	0.00876	728.08998	0.01059
727.12563	0.00921	727.12563	0.00878	727.12563	0.01123
726.16127	0.00867	726.16127	0.00858	726.16127	0.01149
725.19691	0.0081	725.19691	0.00837	725.19691	0.01117
724.23255	0.00808	724.23255	0.00847	724.23255	0.01044
723.2682	0.00831	723.2682	0.00917	723.2682	0.00962
722.30384	0.00809	722.30384	0.0103	722.30384	0.00892
721.33948	0.00759	721.33948	0.01136	721.33948	0.00843
720.37512	0.00715	720.37512	0.01204	720.37512	0.00825
719.41076	0.00675	719.41076	0.01234	719.41076	0.00827
718.44641	0.00661	718.44641	0.01226	718.44641	0.00816
717.48205	0.00669	717.48205	0.01203	717.48205	0.00779
716.51769	0.00659	716.51769	0.01211	716.51769	0.00727
715.55333	0.00632	715.55333	0.01277	715.55333	0.00664
714.58898	0.00604	714.58898	0.01389	714.58898	0.00582
713.62462	0.00565	713.62462	0.01519	713.62462	0.00484
712.66026	0.00507	712.66026	0.0165	712.66026	0.00392
711.6959	0.00446	711.6959	0.01766	711.6959	0.00315
710.73155	0.00404	710.73155	0.01844	710.73155	0.00244
709.76719	0.00374	709.76719	0.01887	709.76719	0.00172
708.80283	0.00334	708.80283	0.0192	708.80283	0.00117
707.83847	0.00291	707.83847	0.01959	707.83847	9.60E-04
706.87412	0.00272	706.87412	0.02006	706.87412	0.00101
705.90976	0.00285	705.90976	0.02056	705.90976	0.0012
704.9454	0.00315	704.9454	0.02106	704.9454	0.0014
703.98104	0.00344	703.98104	0.0215	703.98104	0.00161
703.01669	0.00373	703.01669	0.02187	703.01669	0.00182
702.05233	0.00409	702.05233	0.02222	702.05233	0.00203
701.08797	0.00445	701.08797	0.02256	701.08797	0.0023
700.12361	0.0048	700.12361	0.02276	700.12361	0.00269
699.15926	0.00517	699.15926	0.02278	699.15926	0.00319
698.1949	0.00551	698.1949	0.02267	698.1949	0.00367
697.23054	0.00586	697.23054	0.02255	697.23054	0.00405
696.26618	0.00626	696.26618	0.02247	696.26618	0.0043
695.30183	0.00646	695.30183	0.02246	695.30183	0.00447
694.33747	0.0063	694.33747	0.02257	694.33747	0.00464
693.37311	0.00606	693.37311	0.02271	693.37311	0.00482
692.40875	0.00598	692.40875	0.02279	692.40875	0.00503
691.44439	0.00599	691.44439	0.02282	691.44439	0.00526
690.48004	0.00597	690.48004	0.02286	690.48004	0.00545
689.51568	0.00588	689.51568	0.0229	689.51568	0.00549

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
688.55132	0.00583	688.55132	0.02288	688.55132	0.00531
687.58696	0.00596	687.58696	0.02283	687.58696	0.00499
686.62261	0.00608	686.62261	0.02285	686.62261	0.0046
685.65825	0.00588	685.65825	0.02295	685.65825	0.00422
684.69389	0.00542	684.69389	0.02311	684.69389	0.00388
683.72953	0.00493	683.72953	0.02334	683.72953	0.00352
682.76518	0.00452	682.76518	0.0236	682.76518	0.00309
681.80082	0.00422	681.80082	0.02378	681.80082	0.0026
680.83646	0.004	680.83646	0.02379	680.83646	0.00209
679.8721	0.00376	679.8721	0.02371	679.8721	0.00161
678.90775	0.00328	678.90775	0.02358	678.90775	0.0012
677.94339	0.00279	677.94339	0.02336	677.94339	9.00E-04
676.97903	0.00256	676.97903	0.02309	676.97903	7.60E-04
676.01467	0.00248	676.01467	0.02285	676.01467	8.00E-04
675.05032	0.00239	675.05032	0.0227	675.05032	9.90E-04
674.08596	0.00227	674.08596	0.02266	674.08596	0.0013
673.1216	0.00227	673.1216	0.02286	673.1216	0.00169
672.15724	0.00241	672.15724	0.0233	672.15724	0.00203
671.19289	0.00245	671.19289	0.02355	671.19289	0.0019
670.22853	0.00242	670.22853	0.02357	670.22853	0.00147
669.26417	0.0025	669.26417	0.02356	669.26417	0.00112
668.29981	0.00239	668.29981	0.02358	668.29981	9.90E-04
667.33545	0.00224	667.33545	0.02359	667.33545	0.00106
666.3711	0.00266	666.3711	0.02362	666.3711	0.00136
665.40674	0.00299	665.40674	0.02369	665.40674	0.00184
664.44238	0.0029	664.44238	0.02369	664.44238	0.00225
663.47802	0.00252	663.47802	0.02339	663.47802	0.00216
662.51367	0.0021	662.51367	0.02311	662.51367	0.0019
661.54931	0.00194	661.54931	0.02301	661.54931	0.00175
660.58495	0.00218	660.58495	0.02307	660.58495	0.00168
659.62059	0.00258	659.62059	0.02326	659.62059	0.00171
658.65624	0.00265	658.65624	0.0236	658.65624	0.0019
657.69188	0.00234	657.69188	0.02401	657.69188	0.00209
656.72752	0.00207	656.72752	0.02437	656.72752	0.00209
655.76316	0.00189	655.76316	0.0245	655.76316	0.0019
654.79881	0.00153	654.79881	0.02439	654.79881	0.00167
653.83445	0.00115	653.83445	0.02411	653.83445	0.00144
652.87009	0.0012	652.87009	0.02369	652.87009	0.00121
651.90573	0.00157	651.90573	0.0232	651.90573	0.00113
650.94138	0.00195	650.94138	0.02279	650.94138	0.00122
649.97702	0.00225	649.97702	0.02257	649.97702	0.00135

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
649.01266	0.00243	649.01266	0.02253	649.01266	0.00147
648.0483	0.00237	648.0483	0.02257	648.0483	0.00162
647.08395	0.00213	647.08395	0.0227	647.08395	0.0017
646.11959	0.00187	646.11959	0.0229	646.11959	0.0016
645.15523	0.00165	645.15523	0.02309	645.15523	0.0015
644.19087	0.00166	644.19087	0.02313	644.19087	0.00165
643.22652	0.00211	643.22652	0.023	643.22652	0.00206
642.26216	0.00281	642.26216	0.02283	642.26216	0.00257
641.2978	0.00341	641.2978	0.02271	641.2978	0.00306
640.33344	0.00383	640.33344	0.02258	640.33344	0.00333
639.36908	0.00385	639.36908	0.02239	639.36908	0.00318
638.40473	0.00354	638.40473	0.02224	638.40473	0.00274
637.44037	0.00359	637.44037	0.02219	637.44037	0.00234
636.47601	0.00398	636.47601	0.02212	636.47601	0.00221
635.51165	0.00416	635.51165	0.02198	635.51165	0.00238
634.5473	0.00422	634.5473	0.02194	634.5473	0.00279
633.58294	0.00429	633.58294	0.02199	633.58294	0.00352
632.61858	0.00411	632.61858	0.02167	632.61858	0.00482
631.65422	0.00402	631.65422	0.02044	631.65422	0.00688
630.68987	0.00461	630.68987	0.018	630.68987	0.00965
629.72551	0.00562	629.72551	0.01417	629.72551	0.01282
628.76115	0.00653	628.76115	0.0095	628.76115	0.01584
627.79679	0.00741	627.79679	0.00532	627.79679	0.01784
626.83244	0.00785	626.83244	0.00285	626.83244	0.01812
625.86808	0.00759	625.86808	0.0024	625.86808	0.01712
624.90372	0.00691	624.90372	0.00321	624.90372	0.01617
623.93936	0.00588	623.93936	0.00428	623.93936	0.01591
622.97501	0.00473	622.97501	0.0051	622.97501	0.01614
622.01065	0.00399	622.01065	0.00532	622.01065	0.01674
621.04629	0.00452	621.04629	0.00497	621.04629	0.0174
620.08193	0.00606	620.08193	0.00472	620.08193	0.01713
619.11758	0.00683	619.11758	0.00486	619.11758	0.01537
618.15322	0.00641	618.15322	0.00492	618.15322	0.01318
617.18886	0.00619	617.18886	0.00431	617.18886	0.01199
616.2245	0.0067	616.2245	0.00295	616.2245	0.01208
615.26014	0.00729	615.26014	0.00159	615.26014	0.01299
614.29579	0.00729	614.29579	9.60E-04	614.29579	0.01441
613.33143	0.00679	613.33143	0.00117	613.33143	0.01594
612.36707	0.00688	612.36707	0.00199	612.36707	0.01686
611.40271	0.00757	611.40271	0.003	611.40271	0.01651
610.43836	0.00808	610.43836	0.00388	610.43836	0.01511

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
609.474	0.00833	609.474	0.00428	609.474	0.01374
608.50964	0.00734	608.50964	0.00394	608.50964	0.01323
607.54528	0.00528	607.54528	0.00324	607.54528	0.01343
606.58093	0.00446	606.58093	0.00285	606.58093	0.01414
605.61657	0.00512	605.61657	0.00279	605.61657	0.01545
604.65221	0.00576	604.65221	0.00268	604.65221	0.01699
603.68785	0.00627	603.68785	0.00273	603.68785	0.01771
602.7235	0.00776	602.7235	0.00345	602.7235	0.01729
601.75914	0.00991	601.75914	0.00448	601.75914	0.01674
600.79478	0.01046	600.79478	0.00508	600.79478	0.01666
599.83042	0.00939	599.83042	0.00519	599.83042	0.01671
598.86607	0.00869	598.86607	0.00527	598.86607	0.0168
597.90171	0.00851	597.90171	0.00539	597.90171	0.01705
596.93735	0.00855	596.93735	0.00533	596.93735	0.01718
595.97299	0.00876	595.97299	0.00532	595.97299	0.01685
595.00864	0.00844	595.00864	0.00575	595.00864	0.016
594.04428	0.00812	594.04428	0.00642	594.04428	0.01503
593.07992	0.00865	593.07992	0.00659	593.07992	0.01429
592.11556	0.00932	592.11556	0.00603	592.11556	0.01365
591.15121	0.00952	591.15121	0.00532	591.15121	0.01309
590.18685	0.00919	590.18685	0.00469	590.18685	0.01277
589.22249	0.0078	589.22249	0.00404	589.22249	0.01282
588.25813	0.00595	588.25813	0.00375	588.25813	0.01333
587.29377	0.00551	587.29377	0.00427	587.29377	0.01402
586.32942	0.00653	586.32942	0.00539	586.32942	0.01447
585.36506	0.00763	585.36506	0.00679	585.36506	0.01451
584.4007	0.00804	584.4007	0.00822	584.4007	0.01406
583.43634	0.00734	583.43634	0.0092	583.43634	0.01325
582.47199	0.00579	582.47199	0.00911	582.47199	0.01242
581.50763	0.00508	581.50763	0.00803	581.50763	0.01179
580.54327	0.00628	580.54327	0.0067	580.54327	0.01148
579.57891	0.00795	579.57891	0.00557	579.57891	0.01176
578.61456	0.00849	578.61456	0.00485	578.61456	0.01232
577.6502	0.00818	577.6502	0.00507	577.6502	0.0126
576.68584	0.00773	576.68584	0.00635	576.68584	0.01264
575.72148	0.00721	575.72148	0.00767	575.72148	0.0126
574.75713	0.00643	574.75713	0.00799	574.75713	0.01259
573.79277	0.0058	573.79277	0.00744	573.79277	0.01295
572.82841	0.00619	572.82841	0.0066	572.82841	0.01387
571.86405	0.0072	571.86405	0.00567	571.86405	0.01498
570.8997	0.00816	570.8997	0.0046	570.8997	0.01558

Vigin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
569.93534	0.00952	569.93534	0.00354	569.93534	0.01534
568.97098	0.01036	568.97098	0.00309	568.97098	0.01425
568.00662	0.00937	568.00662	0.0035	568.00662	0.0123
567.04227	0.00749	567.04227	0.00418	567.04227	0.01028
566.07791	0.00632	566.07791	0.00463	566.07791	0.00975
565.11355	0.00645	565.11355	0.00484	565.11355	0.01131
564.14919	0.00711	564.14919	0.0048	564.14919	0.01387
563.18483	0.00764	563.18483	0.00466	563.18483	0.016
562.22048	0.00867	562.22048	0.00492	562.22048	0.01678
561.25612	0.00995	561.25612	0.00585	561.25612	0.01617
560.29176	0.01019	560.29176	0.00694	560.29176	0.01474
559.3274	0.00955	559.3274	0.00742	559.3274	0.01343
558.36305	0.009	558.36305	0.00671	558.36305	0.01322
557.39869	0.0081	557.39869	0.00476	557.39869	0.01433
556.43433	0.00681	556.43433	0.00251	556.43433	0.01563
555.46997	0.00665	555.46997	1.00E-03	555.46997	0.01567
554.50562	0.00718	554.50562	6.00E-04	554.50562	0.0143
553.54126	0.00717	553.54126	0.00115	553.54126	0.01244
552.5769	0.00676	552.5769	0.00246	552.5769	0.01056
551.61254	0.006	551.61254	0.00408	551.61254	0.0086
550.64819	0.00559	550.64819	0.00543	550.64819	0.00704
549.68383	0.0062	549.68383	0.00663	549.68383	0.00625
548.71947	0.00746	548.71947	0.00797	548.71947	0.0058
547.75511	0.00864	547.75511	0.0089	547.75511	0.00589
546.79076	0.00846	546.79076	0.009	546.79076	0.00727
545.8264	0.00722	545.8264	0.00868	545.8264	0.00932
544.86204	0.0071	544.86204	0.00807	544.86204	0.01049
543.89768	0.00833	543.89768	0.00672	543.89768	0.01067
542.93333	0.00804	542.93333	0.00509	542.93333	0.01084
541.96897	0.00537	541.96897	0.00386	541.96897	0.01096
541.00461	0.00385	541.00461	0.00255	541.00461	0.01052
540.04025	0.00408	540.04025	0.00124	540.04025	0.01012
539.07589	0.0036	539.07589	0.00126	539.07589	0.01029
538.11154	0.00339	538.11154	0.00277	538.11154	0.01025
537.14718	0.00487	537.14718	0.00481	537.14718	0.00956
536.18282	0.00644	536.18282	0.00678	536.18282	0.00907
535.21846	0.00607	535.21846	0.00888	535.21846	0.00923
534.25411	0.00397	534.25411	0.01076	534.25411	0.00926
533.28975	0.00269	533.28975	0.01122	533.28975	0.0087
532.32539	0.00353	532.32539	0.0101	532.32539	0.00807
531.36103	0.0049	531.36103	0.00848	531.36103	0.00769

Virgin Membrane		Fouled by alginate in absence of Ca <sup>2+</sup>		Fouled by BSA in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
530.39668	0.00524	530.39668	0.00724	530.39668	0.00742
529.43232	0.00466	529.43232	0.00641	529.43232	0.00732
528.46796	0.0033	528.46796	0.00541	528.46796	0.00763
527.5036	0.0019	527.5036	0.00437	527.5036	0.00825
526.53925	0.00219	526.53925	0.00407	526.53925	0.00853
525.57489	0.00376	525.57489	0.00434	525.57489	0.00794
524.61053	0.00497	524.61053	0.00422	524.61053	0.0069
523.64617	0.00518	523.64617	0.00339	523.64617	0.00621
522.68182	0.00464	522.68182	0.00231	522.68182	0.00592
521.71746	0.00441	521.71746	0.00137	521.71746	0.00568
520.7531	0.004	520.7531	3.70E-04	520.7531	0.00572
519.78874	0.0027	519.78874	-5.10E-04	519.78874	0.00631
518.82439	0.00235	518.82439	-4.90E-04	518.82439	0.00696
517.86003	0.00349	517.86003	0.00111	517.86003	0.00725
516.89567	0.00423	516.89567	0.00387	516.89567	0.0076
515.93131	0.00422	515.93131	0.0063	515.93131	0.00832
514.96696	0.00436	514.96696	0.0075	514.96696	0.00858
514.0026	0.0042	514.0026	0.0078	514.0026	0.0075
513.03824	0.00416	513.03824	0.00702	513.03824	0.00553
512.07388	0.00503	512.07388	0.00473	512.07388	0.00351
511.10952	0.00572	511.10952	0.00216	511.10952	0.0018
510.14517	0.00579	510.14517	9.10E-04	510.14517	9.80E-04
509.18081	0.00605	509.18081	5.10E-04	509.18081	0.0015
508.21645	0.00637	508.21645	-3.00E-04	508.21645	0.00271
507.25209	0.00604	507.25209	-0.00134	507.25209	0.00354
506.28774	0.00484	506.28774	-0.00168	506.28774	0.00376
505.32338	0.00325	505.32338	-0.00166	505.32338	0.00373
504.35902	0.00143	504.35902	-0.00179	504.35902	0.00369
503.39466	0	503.39466	-0.00103	503.39466	0.0037
502.43031	-5.30E-04	502.43031	-0.00103	502.43031	0.0037
501.46595	7.60E-04	501.46595	-0.00103	501.46595	0.0037
500.50159	0.00119	500.50159	-0.00103	500.50159	0.0037
499.53723	0	499.53723	-0.00103	499.53723	0.0037

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3998.22658	6.00E-05	3998.22658	-8.00E-05	3998.22658	0
3997.26223	6.00E-05	3997.26223	-8.00E-05	3997.26223	0
3996.29787	6.00E-05	3996.29787	-8.00E-05	3996.29787	0
3995.33351	6.00E-05	3995.33351	-8.00E-05	3995.33351	0

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3994.36915	6.00E-05	3994.36915	-8.00E-05	3994.36915	0
3993.4048	8.00E-05	3993.4048	-7.00E-05	3993.4048	1.00E-05
3992.44044	9.00E-05	3992.44044	-6.00E-05	3992.44044	2.00E-05
3991.47608	1.00E-04	3991.47608	-6.00E-05	3991.47608	3.00E-05
3990.51172	1.00E-04	3990.51172	-6.00E-05	3990.51172	4.00E-05
3989.54737	1.00E-04	3989.54737	-6.00E-05	3989.54737	5.00E-05
3988.58301	9.00E-05	3988.58301	-6.00E-05	3988.58301	5.00E-05
3987.61865	8.00E-05	3987.61865	-5.00E-05	3987.61865	4.00E-05
3986.65429	6.00E-05	3986.65429	-5.00E-05	3986.65429	3.00E-05
3985.68994	4.00E-05	3985.68994	-4.00E-05	3985.68994	2.00E-05
3984.72558	3.00E-05	3984.72558	-4.00E-05	3984.72558	1.00E-05
3983.76122	2.00E-05	3983.76122	-4.00E-05	3983.76122	1.00E-05
3982.79686	2.00E-05	3982.79686	-4.00E-05	3982.79686	3.00E-05
3981.8325	3.00E-05	3981.8325	-3.00E-05	3981.8325	4.00E-05
3980.86815	4.00E-05	3980.86815	-2.00E-05	3980.86815	5.00E-05
3979.90379	5.00E-05	3979.90379	0	3979.90379	5.00E-05
3978.93943	6.00E-05	3978.93943	2.00E-05	3978.93943	5.00E-05
3977.97507	7.00E-05	3977.97507	4.00E-05	3977.97507	4.00E-05
3977.01072	8.00E-05	3977.01072	5.00E-05	3977.01072	4.00E-05
3976.04636	8.00E-05	3976.04636	5.00E-05	3976.04636	4.00E-05
3975.082	7.00E-05	3975.082	5.00E-05	3975.082	5.00E-05
3974.11764	7.00E-05	3974.11764	5.00E-05	3974.11764	6.00E-05
3973.15329	6.00E-05	3973.15329	5.00E-05	3973.15329	7.00E-05
3972.18893	5.00E-05	3972.18893	5.00E-05	3972.18893	7.00E-05
3971.22457	4.00E-05	3971.22457	3.00E-05	3971.22457	8.00E-05
3970.26021	4.00E-05	3970.26021	2.00E-05	3970.26021	9.00E-05
3969.29586	4.00E-05	3969.29586	1.00E-05	3969.29586	9.00E-05
3968.3315	6.00E-05	3968.3315	2.00E-05	3968.3315	9.00E-05
3967.36714	8.00E-05	3967.36714	4.00E-05	3967.36714	8.00E-05
3966.40278	9.00E-05	3966.40278	5.00E-05	3966.40278	8.00E-05
3965.43843	1.00E-04	3965.43843	5.00E-05	3965.43843	9.00E-05
3964.47407	9.00E-05	3964.47407	4.00E-05	3964.47407	1.00E-04
3963.50971	6.00E-05	3963.50971	3.00E-05	3963.50971	1.10E-04
3962.54535	3.00E-05	3962.54535	2.00E-05	3962.54535	1.20E-04
3961.581	2.00E-05	3961.581	3.00E-05	3961.581	1.10E-04
3960.61664	2.00E-05	3960.61664	5.00E-05	3960.61664	9.00E-05
3959.65228	4.00E-05	3959.65228	7.00E-05	3959.65228	7.00E-05
3958.68792	7.00E-05	3958.68792	7.00E-05	3958.68792	7.00E-05
3957.72357	1.00E-04	3957.72357	7.00E-05	3957.72357	8.00E-05



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3956.75921	1.10E-04	3956.75921	6.00E-05	3956.75921	9.00E-05
3955.79485	1.10E-04	3955.79485	6.00E-05	3955.79485	1.10E-04
3954.83049	1.00E-04	3954.83049	7.00E-05	3954.83049	1.30E-04
3953.86613	9.00E-05	3953.86613	1.00E-04	3953.86613	1.30E-04
3952.90178	9.00E-05	3952.90178	1.10E-04	3952.90178	1.40E-04
3951.93742	1.00E-04	3951.93742	1.20E-04	3951.93742	1.40E-04
3950.97306	1.00E-04	3950.97306	1.20E-04	3950.97306	1.40E-04
3950.0087	1.00E-04	3950.0087	1.20E-04	3950.0087	1.40E-04
3949.04435	1.00E-04	3949.04435	1.20E-04	3949.04435	1.30E-04
3948.07999	1.00E-04	3948.07999	1.30E-04	3948.07999	1.40E-04
3947.11563	1.00E-04	3947.11563	1.50E-04	3947.11563	1.40E-04
3946.15127	1.20E-04	3946.15127	1.60E-04	3946.15127	1.50E-04
3945.18692	1.20E-04	3945.18692	1.60E-04	3945.18692	1.50E-04
3944.22256	1.10E-04	3944.22256	1.50E-04	3944.22256	1.50E-04
3943.2582	1.00E-04	3943.2582	1.50E-04	3943.2582	1.40E-04
3942.29384	9.00E-05	3942.29384	1.50E-04	3942.29384	1.30E-04
3941.32949	9.00E-05	3941.32949	1.50E-04	3941.32949	1.20E-04
3940.36513	9.00E-05	3940.36513	1.60E-04	3940.36513	1.30E-04
3939.40077	1.00E-04	3939.40077	1.60E-04	3939.40077	1.30E-04
3938.43641	1.10E-04	3938.43641	1.60E-04	3938.43641	1.30E-04
3937.47206	1.20E-04	3937.47206	1.50E-04	3937.47206	1.30E-04
3936.5077	1.30E-04	3936.5077	1.60E-04	3936.5077	1.40E-04
3935.54334	1.50E-04	3935.54334	1.60E-04	3935.54334	1.50E-04
3934.57898	1.50E-04	3934.57898	1.70E-04	3934.57898	1.50E-04
3933.61463	1.60E-04	3933.61463	1.80E-04	3933.61463	1.60E-04
3932.65027	1.60E-04	3932.65027	1.90E-04	3932.65027	1.50E-04
3931.68591	1.70E-04	3931.68591	1.90E-04	3931.68591	1.60E-04
3930.72155	1.70E-04	3930.72155	1.80E-04	3930.72155	1.70E-04
3929.75719	1.80E-04	3929.75719	1.80E-04	3929.75719	1.90E-04
3928.79284	2.00E-04	3928.79284	1.70E-04	3928.79284	2.00E-04
3927.82848	1.90E-04	3927.82848	1.50E-04	3927.82848	2.00E-04
3926.86412	1.70E-04	3926.86412	1.40E-04	3926.86412	1.80E-04
3925.89976	1.30E-04	3925.89976	1.40E-04	3925.89976	1.70E-04
3924.93541	1.10E-04	3924.93541	1.60E-04	3924.93541	1.60E-04
3923.97105	1.10E-04	3923.97105	1.80E-04	3923.97105	1.60E-04
3923.00669	1.10E-04	3923.00669	1.80E-04	3923.00669	1.60E-04
3922.04233	1.20E-04	3922.04233	1.90E-04	3922.04233	1.60E-04
3921.07798	1.50E-04	3921.07798	1.90E-04	3921.07798	1.60E-04
3920.11362	1.70E-04	3920.11362	1.80E-04	3920.11362	1.40E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3919.14926	1.60E-04	3919.14926	1.60E-04	3919.14926	1.30E-04
3918.1849	1.40E-04	3918.1849	1.70E-04	3918.1849	1.30E-04
3917.22055	1.30E-04	3917.22055	1.90E-04	3917.22055	1.40E-04
3916.25619	1.30E-04	3916.25619	2.10E-04	3916.25619	1.50E-04
3915.29183	1.30E-04	3915.29183	2.20E-04	3915.29183	1.60E-04
3914.32747	1.30E-04	3914.32747	2.40E-04	3914.32747	1.80E-04
3913.36312	1.50E-04	3913.36312	2.60E-04	3913.36312	2.10E-04
3912.39876	1.70E-04	3912.39876	2.60E-04	3912.39876	2.20E-04
3911.4344	1.70E-04	3911.4344	2.60E-04	3911.4344	2.30E-04
3910.47004	1.70E-04	3910.47004	2.80E-04	3910.47004	2.40E-04
3909.50569	1.80E-04	3909.50569	3.00E-04	3909.50569	2.40E-04
3908.54133	1.90E-04	3908.54133	2.90E-04	3908.54133	2.20E-04
3907.57697	2.00E-04	3907.57697	2.50E-04	3907.57697	1.90E-04
3906.61261	1.80E-04	3906.61261	2.00E-04	3906.61261	1.80E-04
3905.64825	1.70E-04	3905.64825	1.70E-04	3905.64825	1.70E-04
3904.6839	1.60E-04	3904.6839	1.60E-04	3904.6839	1.80E-04
3903.71954	1.40E-04	3903.71954	1.70E-04	3903.71954	2.00E-04
3902.75518	1.30E-04	3902.75518	2.10E-04	3902.75518	2.10E-04
3901.79082	1.30E-04	3901.79082	2.30E-04	3901.79082	2.20E-04
3900.82647	1.30E-04	3900.82647	2.50E-04	3900.82647	2.10E-04
3899.86211	1.30E-04	3899.86211	2.70E-04	3899.86211	2.10E-04
3898.89775	1.40E-04	3898.89775	2.90E-04	3898.89775	2.00E-04
3897.93339	1.50E-04	3897.93339	3.10E-04	3897.93339	2.00E-04
3896.96904	1.60E-04	3896.96904	3.40E-04	3896.96904	1.90E-04
3896.00468	1.80E-04	3896.00468	3.60E-04	3896.00468	1.90E-04
3895.04032	2.10E-04	3895.04032	3.60E-04	3895.04032	1.90E-04
3894.07596	2.00E-04	3894.07596	3.10E-04	3894.07596	1.70E-04
3893.11161	1.80E-04	3893.11161	2.80E-04	3893.11161	1.60E-04
3892.14725	1.60E-04	3892.14725	2.90E-04	3892.14725	1.70E-04
3891.18289	1.70E-04	3891.18289	3.20E-04	3891.18289	2.10E-04
3890.21853	2.00E-04	3890.21853	3.50E-04	3890.21853	2.40E-04
3889.25418	2.40E-04	3889.25418	3.50E-04	3889.25418	2.60E-04
3888.28982	2.60E-04	3888.28982	3.10E-04	3888.28982	2.60E-04
3887.32546	2.60E-04	3887.32546	2.80E-04	3887.32546	2.50E-04
3886.3611	2.50E-04	3886.3611	2.60E-04	3886.3611	2.40E-04
3885.39675	2.30E-04	3885.39675	2.80E-04	3885.39675	2.40E-04
3884.43239	2.40E-04	3884.43239	3.20E-04	3884.43239	2.50E-04
3883.46803	2.50E-04	3883.46803	3.40E-04	3883.46803	2.60E-04
3882.50367	2.60E-04	3882.50367	3.50E-04	3882.50367	2.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3881.53932	2.50E-04	3881.53932	3.30E-04	3881.53932	2.20E-04
3880.57496	2.10E-04	3880.57496	3.20E-04	3880.57496	1.90E-04
3879.6106	1.90E-04	3879.6106	3.50E-04	3879.6106	1.80E-04
3878.64624	1.90E-04	3878.64624	4.00E-04	3878.64624	2.10E-04
3877.68188	2.20E-04	3877.68188	4.20E-04	3877.68188	2.40E-04
3876.71753	2.40E-04	3876.71753	4.00E-04	3876.71753	2.50E-04
3875.75317	2.30E-04	3875.75317	3.60E-04	3875.75317	2.50E-04
3874.78881	2.10E-04	3874.78881	3.40E-04	3874.78881	2.60E-04
3873.82445	2.30E-04	3873.82445	3.30E-04	3873.82445	2.70E-04
3872.8601	2.30E-04	3872.8601	3.00E-04	3872.8601	2.70E-04
3871.89574	2.10E-04	3871.89574	2.80E-04	3871.89574	2.50E-04
3870.93138	2.00E-04	3870.93138	3.10E-04	3870.93138	2.60E-04
3869.96702	2.00E-04	3869.96702	3.50E-04	3869.96702	2.80E-04
3869.00267	2.10E-04	3869.00267	3.90E-04	3869.00267	3.00E-04
3868.03831	2.10E-04	3868.03831	4.20E-04	3868.03831	3.00E-04
3867.07395	2.20E-04	3867.07395	4.50E-04	3867.07395	3.00E-04
3866.10959	2.50E-04	3866.10959	4.50E-04	3866.10959	3.10E-04
3865.14524	2.50E-04	3865.14524	4.10E-04	3865.14524	2.80E-04
3864.18088	2.10E-04	3864.18088	3.70E-04	3864.18088	2.50E-04
3863.21652	1.70E-04	3863.21652	3.80E-04	3863.21652	2.50E-04
3862.25216	1.70E-04	3862.25216	4.40E-04	3862.25216	2.90E-04
3861.28781	2.00E-04	3861.28781	4.80E-04	3861.28781	3.20E-04
3860.32345	2.00E-04	3860.32345	4.80E-04	3860.32345	3.10E-04
3859.35909	2.00E-04	3859.35909	4.80E-04	3859.35909	3.10E-04
3858.39473	2.70E-04	3858.39473	4.90E-04	3858.39473	3.40E-04
3857.43038	3.40E-04	3857.43038	4.30E-04	3857.43038	3.20E-04
3856.46602	3.30E-04	3856.46602	3.00E-04	3856.46602	2.50E-04
3855.50166	2.80E-04	3855.50166	2.00E-04	3855.50166	2.00E-04
3854.5373	2.20E-04	3854.5373	1.60E-04	3854.5373	1.80E-04
3853.57294	1.60E-04	3853.57294	1.90E-04	3853.57294	2.00E-04
3852.60859	1.00E-04	3852.60859	2.70E-04	3852.60859	2.40E-04
3851.64423	9.00E-05	3851.64423	4.00E-04	3851.64423	2.90E-04
3850.67987	1.40E-04	3850.67987	5.20E-04	3850.67987	3.60E-04
3849.71551	2.00E-04	3849.71551	5.80E-04	3849.71551	3.70E-04
3848.75116	2.20E-04	3848.75116	5.60E-04	3848.75116	3.30E-04
3847.7868	2.50E-04	3847.7868	5.40E-04	3847.7868	3.00E-04
3846.82244	2.60E-04	3846.82244	4.90E-04	3846.82244	2.80E-04
3845.85808	2.50E-04	3845.85808	4.60E-04	3845.85808	2.60E-04
3844.89373	2.50E-04	3844.89373	4.40E-04	3844.89373	2.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3843.92937	2.60E-04	3843.92937	4.10E-04	3843.92937	2.40E-04
3842.96501	2.50E-04	3842.96501	4.00E-04	3842.96501	2.40E-04
3842.00065	2.70E-04	3842.00065	3.90E-04	3842.00065	2.60E-04
3841.0363	2.70E-04	3841.0363	3.70E-04	3841.0363	2.70E-04
3840.07194	2.50E-04	3840.07194	3.40E-04	3840.07194	2.60E-04
3839.10758	2.10E-04	3839.10758	3.30E-04	3839.10758	2.60E-04
3838.14322	1.80E-04	3838.14322	3.50E-04	3838.14322	2.60E-04
3837.17887	1.50E-04	3837.17887	3.80E-04	3837.17887	2.70E-04
3836.21451	1.50E-04	3836.21451	4.30E-04	3836.21451	2.80E-04
3835.25015	1.90E-04	3835.25015	4.60E-04	3835.25015	3.00E-04
3834.28579	2.40E-04	3834.28579	4.60E-04	3834.28579	3.10E-04
3833.32144	2.60E-04	3833.32144	4.30E-04	3833.32144	2.90E-04
3832.35708	2.50E-04	3832.35708	4.20E-04	3832.35708	2.70E-04
3831.39272	2.70E-04	3831.39272	4.40E-04	3831.39272	2.80E-04
3830.42836	2.80E-04	3830.42836	4.40E-04	3830.42836	2.80E-04
3829.46401	2.70E-04	3829.46401	4.30E-04	3829.46401	2.90E-04
3828.49965	2.60E-04	3828.49965	4.30E-04	3828.49965	3.10E-04
3827.53529	2.60E-04	3827.53529	4.20E-04	3827.53529	3.30E-04
3826.57093	2.40E-04	3826.57093	4.20E-04	3826.57093	3.40E-04
3825.60657	2.50E-04	3825.60657	4.40E-04	3825.60657	3.50E-04
3824.64222	2.70E-04	3824.64222	4.30E-04	3824.64222	3.40E-04
3823.67786	2.60E-04	3823.67786	3.80E-04	3823.67786	3.00E-04
3822.7135	2.20E-04	3822.7135	3.40E-04	3822.7135	2.50E-04
3821.74914	1.90E-04	3821.74914	3.20E-04	3821.74914	2.30E-04
3820.78479	1.80E-04	3820.78479	3.30E-04	3820.78479	2.50E-04
3819.82043	2.20E-04	3819.82043	3.60E-04	3819.82043	2.90E-04
3818.85607	2.50E-04	3818.85607	3.60E-04	3818.85607	3.10E-04
3817.89171	2.70E-04	3817.89171	3.60E-04	3817.89171	3.20E-04
3816.92736	2.80E-04	3816.92736	3.70E-04	3816.92736	3.10E-04
3815.963	2.50E-04	3815.963	3.70E-04	3815.963	3.00E-04
3814.99864	2.10E-04	3814.99864	4.00E-04	3814.99864	2.90E-04
3814.03428	2.00E-04	3814.03428	4.50E-04	3814.03428	3.10E-04
3813.06993	2.20E-04	3813.06993	5.00E-04	3813.06993	3.50E-04
3812.10557	2.70E-04	3812.10557	5.10E-04	3812.10557	3.80E-04
3811.14121	3.10E-04	3811.14121	4.60E-04	3811.14121	3.60E-04
3810.17685	3.10E-04	3810.17685	4.00E-04	3810.17685	3.10E-04
3809.2125	2.90E-04	3809.2125	3.50E-04	3809.2125	2.70E-04
3808.24814	2.60E-04	3808.24814	3.40E-04	3808.24814	2.50E-04
3807.28378	2.50E-04	3807.28378	3.60E-04	3807.28378	2.60E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3806.31942	2.50E-04	3806.31942	4.00E-04	3806.31942	2.90E-04
3805.35507	2.80E-04	3805.35507	4.30E-04	3805.35507	3.20E-04
3804.39071	2.90E-04	3804.39071	4.20E-04	3804.39071	3.20E-04
3803.42635	2.80E-04	3803.42635	3.90E-04	3803.42635	3.00E-04
3802.46199	2.40E-04	3802.46199	3.50E-04	3802.46199	2.70E-04
3801.49763	2.00E-04	3801.49763	3.50E-04	3801.49763	2.50E-04
3800.53328	2.00E-04	3800.53328	3.80E-04	3800.53328	2.60E-04
3799.56892	2.30E-04	3799.56892	4.20E-04	3799.56892	2.90E-04
3798.60456	2.60E-04	3798.60456	4.40E-04	3798.60456	3.20E-04
3797.6402	3.10E-04	3797.6402	4.50E-04	3797.6402	3.40E-04
3796.67585	3.20E-04	3796.67585	4.30E-04	3796.67585	3.10E-04
3795.71149	2.90E-04	3795.71149	4.10E-04	3795.71149	2.80E-04
3794.74713	2.60E-04	3794.74713	4.30E-04	3794.74713	2.70E-04
3793.78277	2.50E-04	3793.78277	4.70E-04	3793.78277	2.70E-04
3792.81842	2.70E-04	3792.81842	4.90E-04	3792.81842	2.80E-04
3791.85406	2.80E-04	3791.85406	4.80E-04	3791.85406	3.00E-04
3790.8897	2.80E-04	3790.8897	4.70E-04	3790.8897	3.10E-04
3789.92534	2.80E-04	3789.92534	4.80E-04	3789.92534	3.40E-04
3788.96099	2.90E-04	3788.96099	5.00E-04	3788.96099	3.50E-04
3787.99663	2.80E-04	3787.99663	4.90E-04	3787.99663	3.50E-04
3787.03227	2.80E-04	3787.03227	4.70E-04	3787.03227	3.40E-04
3786.06791	2.70E-04	3786.06791	4.50E-04	3786.06791	3.30E-04
3785.10356	2.70E-04	3785.10356	4.30E-04	3785.10356	3.10E-04
3784.1392	2.80E-04	3784.1392	4.30E-04	3784.1392	3.10E-04
3783.17484	3.00E-04	3783.17484	4.20E-04	3783.17484	3.00E-04
3782.21048	3.00E-04	3782.21048	4.00E-04	3782.21048	2.90E-04
3781.24613	2.80E-04	3781.24613	3.90E-04	3781.24613	2.70E-04
3780.28177	2.70E-04	3780.28177	3.90E-04	3780.28177	2.70E-04
3779.31741	2.60E-04	3779.31741	4.00E-04	3779.31741	2.80E-04
3778.35305	2.50E-04	3778.35305	4.10E-04	3778.35305	2.90E-04
3777.38869	2.50E-04	3777.38869	4.40E-04	3777.38869	3.10E-04
3776.42434	2.60E-04	3776.42434	4.60E-04	3776.42434	3.30E-04
3775.45998	2.70E-04	3775.45998	4.80E-04	3775.45998	3.40E-04
3774.49562	2.70E-04	3774.49562	4.80E-04	3774.49562	3.40E-04
3773.53126	2.60E-04	3773.53126	4.50E-04	3773.53126	3.30E-04
3772.56691	2.50E-04	3772.56691	4.10E-04	3772.56691	3.20E-04
3771.60255	2.30E-04	3771.60255	3.80E-04	3771.60255	3.20E-04
3770.63819	2.30E-04	3770.63819	3.80E-04	3770.63819	3.30E-04
3769.67383	2.60E-04	3769.67383	3.90E-04	3769.67383	3.50E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3768.70948	2.70E-04	3768.70948	4.00E-04	3768.70948	3.60E-04
3767.74512	2.70E-04	3767.74512	4.00E-04	3767.74512	3.70E-04
3766.78076	2.80E-04	3766.78076	4.20E-04	3766.78076	3.80E-04
3765.8164	3.00E-04	3765.8164	4.20E-04	3765.8164	3.80E-04
3764.85205	2.90E-04	3764.85205	4.20E-04	3764.85205	3.70E-04
3763.88769	3.00E-04	3763.88769	4.30E-04	3763.88769	3.70E-04
3762.92333	3.20E-04	3762.92333	4.40E-04	3762.92333	3.70E-04
3761.95897	3.40E-04	3761.95897	4.30E-04	3761.95897	3.60E-04
3760.99462	3.40E-04	3760.99462	4.10E-04	3760.99462	3.40E-04
3760.03026	3.30E-04	3760.03026	3.80E-04	3760.03026	3.20E-04
3759.0659	3.10E-04	3759.0659	3.50E-04	3759.0659	3.00E-04
3758.10154	2.80E-04	3758.10154	3.60E-04	3758.10154	2.90E-04
3757.13719	2.90E-04	3757.13719	4.00E-04	3757.13719	3.00E-04
3756.17283	3.30E-04	3756.17283	4.20E-04	3756.17283	3.30E-04
3755.20847	3.40E-04	3755.20847	3.80E-04	3755.20847	3.20E-04
3754.24411	3.00E-04	3754.24411	3.40E-04	3754.24411	3.00E-04
3753.27976	3.00E-04	3753.27976	3.10E-04	3753.27976	3.00E-04
3752.3154	2.80E-04	3752.3154	2.60E-04	3752.3154	2.80E-04
3751.35104	2.20E-04	3751.35104	2.30E-04	3751.35104	2.50E-04
3750.38668	1.60E-04	3750.38668	2.70E-04	3750.38668	2.50E-04
3749.42232	2.00E-04	3749.42232	3.80E-04	3749.42232	3.00E-04
3748.45797	3.10E-04	3748.45797	4.50E-04	3748.45797	3.60E-04
3747.49361	3.60E-04	3747.49361	3.90E-04	3747.49361	3.30E-04
3746.52925	3.20E-04	3746.52925	3.20E-04	3746.52925	2.80E-04
3745.56489	3.10E-04	3745.56489	3.10E-04	3745.56489	2.80E-04
3744.60054	2.70E-04	3744.60054	3.10E-04	3744.60054	2.80E-04
3743.63618	2.20E-04	3743.63618	3.30E-04	3743.63618	2.90E-04
3742.67182	1.90E-04	3742.67182	4.00E-04	3742.67182	3.20E-04
3741.70746	2.30E-04	3741.70746	5.00E-04	3741.70746	3.80E-04
3740.74311	3.20E-04	3740.74311	5.20E-04	3740.74311	4.10E-04
3739.77875	3.50E-04	3739.77875	4.30E-04	3739.77875	3.70E-04
3738.81439	3.10E-04	3738.81439	3.30E-04	3738.81439	3.10E-04
3737.85003	2.60E-04	3737.85003	2.70E-04	3737.85003	2.80E-04
3736.88568	2.40E-04	3736.88568	2.50E-04	3736.88568	2.70E-04
3735.92132	2.40E-04	3735.92132	2.50E-04	3735.92132	2.90E-04
3734.95696	2.50E-04	3734.95696	2.60E-04	3734.95696	3.10E-04
3733.9926	2.40E-04	3733.9926	3.00E-04	3733.9926	3.30E-04
3733.02825	2.40E-04	3733.02825	3.50E-04	3733.02825	3.60E-04
3732.06389	2.60E-04	3732.06389	4.10E-04	3732.06389	3.80E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3731.09953	2.80E-04	3731.09953	4.60E-04	3731.09953	3.90E-04
3730.13517	2.90E-04	3730.13517	4.90E-04	3730.13517	3.70E-04
3729.17082	3.00E-04	3729.17082	4.90E-04	3729.17082	3.50E-04
3728.20646	3.20E-04	3728.20646	4.80E-04	3728.20646	3.40E-04
3727.2421	3.20E-04	3727.2421	4.60E-04	3727.2421	3.30E-04
3726.27774	3.10E-04	3726.27774	4.30E-04	3726.27774	3.30E-04
3725.31338	3.00E-04	3725.31338	4.00E-04	3725.31338	3.30E-04
3724.34903	3.00E-04	3724.34903	3.90E-04	3724.34903	3.20E-04
3723.38467	3.10E-04	3723.38467	3.90E-04	3723.38467	3.20E-04
3722.42031	3.40E-04	3722.42031	4.00E-04	3722.42031	3.20E-04
3721.45595	3.50E-04	3721.45595	3.90E-04	3721.45595	3.10E-04
3720.4916	3.40E-04	3720.4916	3.90E-04	3720.4916	3.10E-04
3719.52724	3.40E-04	3719.52724	4.10E-04	3719.52724	3.20E-04
3718.56288	3.40E-04	3718.56288	4.40E-04	3718.56288	3.40E-04
3717.59852	3.30E-04	3717.59852	4.50E-04	3717.59852	3.50E-04
3716.63417	3.20E-04	3716.63417	4.50E-04	3716.63417	3.60E-04
3715.66981	3.40E-04	3715.66981	4.30E-04	3715.66981	3.60E-04
3714.70545	3.40E-04	3714.70545	3.70E-04	3714.70545	3.20E-04
3713.74109	3.20E-04	3713.74109	3.20E-04	3713.74109	2.90E-04
3712.77674	3.10E-04	3712.77674	2.90E-04	3712.77674	2.80E-04
3711.81238	2.90E-04	3711.81238	2.80E-04	3711.81238	2.80E-04
3710.84802	2.70E-04	3710.84802	3.20E-04	3710.84802	2.90E-04
3709.88366	2.60E-04	3709.88366	3.90E-04	3709.88366	3.20E-04
3708.91931	2.90E-04	3708.91931	4.70E-04	3708.91931	3.60E-04
3707.95495	3.00E-04	3707.95495	5.00E-04	3707.95495	3.70E-04
3706.99059	3.00E-04	3706.99059	5.00E-04	3706.99059	3.60E-04
3706.02623	3.10E-04	3706.02623	5.00E-04	3706.02623	3.60E-04
3705.06188	3.20E-04	3705.06188	4.70E-04	3705.06188	3.50E-04
3704.09752	3.10E-04	3704.09752	4.20E-04	3704.09752	3.20E-04
3703.13316	2.90E-04	3703.13316	4.00E-04	3703.13316	3.10E-04
3702.1688	2.90E-04	3702.1688	4.20E-04	3702.1688	3.20E-04
3701.20445	2.90E-04	3701.20445	4.50E-04	3701.20445	3.30E-04
3700.24009	2.80E-04	3700.24009	4.80E-04	3700.24009	3.40E-04
3699.27573	2.80E-04	3699.27573	5.10E-04	3699.27573	3.40E-04
3698.31137	3.00E-04	3698.31137	5.10E-04	3698.31137	3.50E-04
3697.34701	3.20E-04	3697.34701	4.90E-04	3697.34701	3.50E-04
3696.38266	3.30E-04	3696.38266	4.70E-04	3696.38266	3.50E-04
3695.4183	3.50E-04	3695.4183	4.60E-04	3695.4183	3.50E-04
3694.45394	3.60E-04	3694.45394	4.40E-04	3694.45394	3.50E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3693.48958	3.50E-04	3693.48958	4.00E-04	3693.48958	3.50E-04
3692.52523	3.50E-04	3692.52523	3.80E-04	3692.52523	3.50E-04
3691.56087	3.50E-04	3691.56087	3.40E-04	3691.56087	3.50E-04
3690.59651	3.10E-04	3690.59651	3.00E-04	3690.59651	3.30E-04
3689.63215	2.70E-04	3689.63215	3.10E-04	3689.63215	3.40E-04
3688.6678	2.50E-04	3688.6678	3.50E-04	3688.6678	3.70E-04
3687.70344	2.60E-04	3687.70344	4.10E-04	3687.70344	4.00E-04
3686.73908	2.70E-04	3686.73908	4.40E-04	3686.73908	4.10E-04
3685.77472	2.90E-04	3685.77472	4.60E-04	3685.77472	4.20E-04
3684.81037	3.20E-04	3684.81037	4.90E-04	3684.81037	4.40E-04
3683.84601	3.50E-04	3683.84601	4.70E-04	3683.84601	4.30E-04
3682.88165	3.20E-04	3682.88165	4.40E-04	3682.88165	4.10E-04
3681.91729	2.80E-04	3681.91729	4.30E-04	3681.91729	4.10E-04
3680.95294	2.70E-04	3680.95294	4.40E-04	3680.95294	4.40E-04
3679.98858	3.00E-04	3679.98858	4.40E-04	3679.98858	4.60E-04
3679.02422	3.50E-04	3679.02422	3.80E-04	3679.02422	4.60E-04
3678.05986	3.60E-04	3678.05986	2.80E-04	3678.05986	4.30E-04
3677.09551	3.30E-04	3677.09551	2.10E-04	3677.09551	4.00E-04
3676.13115	2.90E-04	3676.13115	2.10E-04	3676.13115	3.90E-04
3675.16679	2.80E-04	3675.16679	2.60E-04	3675.16679	4.20E-04
3674.20243	2.80E-04	3674.20243	3.20E-04	3674.20243	4.40E-04
3673.23807	2.80E-04	3673.23807	3.80E-04	3673.23807	4.50E-04
3672.27372	3.00E-04	3672.27372	4.30E-04	3672.27372	4.60E-04
3671.30936	3.10E-04	3671.30936	4.20E-04	3671.30936	4.50E-04
3670.345	2.80E-04	3670.345	3.90E-04	3670.345	4.40E-04
3669.38064	2.40E-04	3669.38064	4.00E-04	3669.38064	4.50E-04
3668.41629	2.30E-04	3668.41629	4.60E-04	3668.41629	5.00E-04
3667.45193	2.70E-04	3667.45193	5.20E-04	3667.45193	5.60E-04
3666.48757	3.10E-04	3666.48757	5.30E-04	3666.48757	6.00E-04
3665.52321	3.30E-04	3665.52321	5.00E-04	3665.52321	6.10E-04
3664.55886	3.40E-04	3664.55886	4.70E-04	3664.55886	6.10E-04
3663.5945	3.40E-04	3663.5945	4.50E-04	3663.5945	6.00E-04
3662.63014	3.30E-04	3662.63014	4.30E-04	3662.63014	6.00E-04
3661.66578	3.20E-04	3661.66578	4.30E-04	3661.66578	6.00E-04
3660.70143	3.40E-04	3660.70143	4.40E-04	3660.70143	6.10E-04
3659.73707	3.50E-04	3659.73707	4.30E-04	3659.73707	6.20E-04
3658.77271	3.50E-04	3658.77271	3.80E-04	3658.77271	6.10E-04
3657.80835	3.30E-04	3657.80835	3.50E-04	3657.80835	6.00E-04
3656.844	3.20E-04	3656.844	3.60E-04	3656.844	6.00E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3655.87964	3.10E-04	3655.87964	4.00E-04	3655.87964	6.10E-04
3654.91528	3.20E-04	3654.91528	4.30E-04	3654.91528	6.20E-04
3653.95092	3.40E-04	3653.95092	4.40E-04	3653.95092	6.40E-04
3652.98657	3.70E-04	3652.98657	4.10E-04	3652.98657	6.40E-04
3652.02221	3.80E-04	3652.02221	3.40E-04	3652.02221	6.20E-04
3651.05785	3.70E-04	3651.05785	2.80E-04	3651.05785	5.90E-04
3650.09349	3.40E-04	3650.09349	2.60E-04	3650.09349	5.80E-04
3649.12913	3.20E-04	3649.12913	3.10E-04	3649.12913	6.10E-04
3648.16478	3.00E-04	3648.16478	4.00E-04	3648.16478	6.50E-04
3647.20042	3.10E-04	3647.20042	4.80E-04	3647.20042	7.10E-04
3646.23606	3.30E-04	3646.23606	5.30E-04	3646.23606	7.60E-04
3645.2717	3.50E-04	3645.2717	5.40E-04	3645.2717	7.80E-04
3644.30735	3.60E-04	3644.30735	5.30E-04	3644.30735	7.90E-04
3643.34299	3.70E-04	3643.34299	5.20E-04	3643.34299	8.00E-04
3642.37863	3.80E-04	3642.37863	5.00E-04	3642.37863	8.00E-04
3641.41427	3.70E-04	3641.41427	4.90E-04	3641.41427	7.90E-04
3640.44992	3.60E-04	3640.44992	4.90E-04	3640.44992	8.00E-04
3639.48556	3.70E-04	3639.48556	5.00E-04	3639.48556	8.10E-04
3638.5212	3.80E-04	3638.5212	5.00E-04	3638.5212	8.30E-04
3637.55684	4.10E-04	3637.55684	4.90E-04	3637.55684	8.60E-04
3636.59249	4.10E-04	3636.59249	4.80E-04	3636.59249	8.70E-04
3635.62813	4.00E-04	3635.62813	4.70E-04	3635.62813	8.90E-04
3634.66377	3.90E-04	3634.66377	4.80E-04	3634.66377	9.10E-04
3633.69941	4.10E-04	3633.69941	5.00E-04	3633.69941	9.40E-04
3632.73506	4.30E-04	3632.73506	4.80E-04	3632.73506	9.60E-04
3631.7707	4.20E-04	3631.7707	4.10E-04	3631.7707	9.30E-04
3630.80634	3.80E-04	3630.80634	3.50E-04	3630.80634	9.00E-04
3629.84198	3.40E-04	3629.84198	3.30E-04	3629.84198	8.80E-04
3628.87763	3.20E-04	3628.87763	3.60E-04	3628.87763	8.90E-04
3627.91327	3.10E-04	3627.91327	4.20E-04	3627.91327	9.10E-04
3626.94891	3.30E-04	3626.94891	5.10E-04	3626.94891	9.50E-04
3625.98455	3.90E-04	3625.98455	6.00E-04	3625.98455	1.00E-03
3625.0202	4.60E-04	3625.0202	6.30E-04	3625.0202	0.00104
3624.05584	4.80E-04	3624.05584	6.00E-04	3624.05584	0.00103
3623.09148	4.70E-04	3623.09148	5.50E-04	3623.09148	0.00102
3622.12712	4.50E-04	3622.12712	5.10E-04	3622.12712	0.00102
3621.16276	4.30E-04	3621.16276	4.70E-04	3621.16276	0.00103
3620.19841	4.00E-04	3620.19841	4.40E-04	3620.19841	0.00105
3619.23405	3.80E-04	3619.23405	4.50E-04	3619.23405	0.00108

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3618.26969	3.70E-04	3618.26969	4.80E-04	3618.26969	0.00112
3617.30533	3.80E-04	3617.30533	5.20E-04	3617.30533	0.00116
3616.34098	4.20E-04	3616.34098	5.50E-04	3616.34098	0.00119
3615.37662	4.40E-04	3615.37662	5.30E-04	3615.37662	0.00119
3614.41226	4.30E-04	3614.41226	4.90E-04	3614.41226	0.00119
3613.4479	4.20E-04	3613.4479	4.70E-04	3613.4479	0.00121
3612.48355	4.10E-04	3612.48355	4.50E-04	3612.48355	0.00123
3611.51919	3.90E-04	3611.51919	4.30E-04	3611.51919	0.00124
3610.55483	3.70E-04	3610.55483	4.30E-04	3610.55483	0.00126
3609.59047	3.70E-04	3609.59047	4.40E-04	3609.59047	0.00127
3608.62612	3.80E-04	3608.62612	4.60E-04	3608.62612	0.00129
3607.66176	3.80E-04	3607.66176	5.00E-04	3607.66176	0.0013
3606.6974	3.80E-04	3606.6974	5.60E-04	3606.6974	0.00132
3605.73304	4.00E-04	3605.73304	6.10E-04	3605.73304	0.00136
3604.76869	4.30E-04	3604.76869	6.20E-04	3604.76869	0.00138
3603.80433	4.40E-04	3603.80433	5.90E-04	3603.80433	0.00138
3602.83997	4.40E-04	3602.83997	5.60E-04	3602.83997	0.0014
3601.87561	4.40E-04	3601.87561	5.40E-04	3601.87561	0.00141
3600.91126	4.50E-04	3600.91126	5.20E-04	3600.91126	0.00143
3599.9469	4.50E-04	3599.9469	5.30E-04	3599.9469	0.00145
3598.98254	4.60E-04	3598.98254	5.30E-04	3598.98254	0.00147
3598.01818	4.60E-04	3598.01818	5.30E-04	3598.01818	0.00149
3597.05382	4.50E-04	3597.05382	5.30E-04	3597.05382	0.0015
3596.08947	4.40E-04	3596.08947	5.20E-04	3596.08947	0.00151
3595.12511	4.30E-04	3595.12511	5.30E-04	3595.12511	0.00152
3594.16075	4.20E-04	3594.16075	5.50E-04	3594.16075	0.00154
3593.19639	4.30E-04	3593.19639	5.70E-04	3593.19639	0.00156
3592.23204	4.50E-04	3592.23204	5.90E-04	3592.23204	0.0016
3591.26768	4.70E-04	3591.26768	5.70E-04	3591.26768	0.00162
3590.30332	4.70E-04	3590.30332	5.50E-04	3590.30332	0.00164
3589.33896	4.50E-04	3589.33896	5.20E-04	3589.33896	0.00164
3588.37461	4.20E-04	3588.37461	5.20E-04	3588.37461	0.00165
3587.41025	3.90E-04	3587.41025	5.60E-04	3587.41025	0.00167
3586.44589	3.70E-04	3586.44589	6.00E-04	3586.44589	0.0017
3585.48153	3.70E-04	3585.48153	6.40E-04	3585.48153	0.00174
3584.51718	3.90E-04	3584.51718	6.60E-04	3584.51718	0.00178
3583.55282	4.00E-04	3583.55282	6.50E-04	3583.55282	0.00181
3582.58846	4.00E-04	3582.58846	6.30E-04	3582.58846	0.00183
3581.6241	3.90E-04	3581.6241	6.00E-04	3581.6241	0.00186

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3580.65975	3.80E-04	3580.65975	6.00E-04	3580.65975	0.00188
3579.69539	3.80E-04	3579.69539	6.00E-04	3579.69539	0.0019
3578.73103	3.90E-04	3578.73103	6.00E-04	3578.73103	0.00192
3577.76667	4.00E-04	3577.76667	6.00E-04	3577.76667	0.00193
3576.80232	4.10E-04	3576.80232	6.10E-04	3576.80232	0.00195
3575.83796	4.00E-04	3575.83796	6.10E-04	3575.83796	0.00196
3574.8736	4.00E-04	3574.8736	6.00E-04	3574.8736	0.00198
3573.90924	3.90E-04	3573.90924	6.10E-04	3573.90924	0.002
3572.94489	3.90E-04	3572.94489	6.30E-04	3572.94489	0.00202
3571.98053	4.00E-04	3571.98053	6.50E-04	3571.98053	0.00204
3571.01617	4.30E-04	3571.01617	6.30E-04	3571.01617	0.00204
3570.05181	4.50E-04	3570.05181	5.90E-04	3570.05181	0.00204
3569.08745	4.60E-04	3569.08745	5.30E-04	3569.08745	0.00205
3568.1231	4.50E-04	3568.1231	5.00E-04	3568.1231	0.00207
3567.15874	4.50E-04	3567.15874	5.00E-04	3567.15874	0.0021
3566.19438	4.50E-04	3566.19438	5.40E-04	3566.19438	0.00213
3565.23002	4.50E-04	3565.23002	6.10E-04	3565.23002	0.00217
3564.26567	4.80E-04	3564.26567	6.60E-04	3564.26567	0.00221
3563.30131	4.90E-04	3563.30131	6.80E-04	3563.30131	0.00225
3562.33695	4.90E-04	3562.33695	6.70E-04	3562.33695	0.00229
3561.37259	4.70E-04	3561.37259	6.60E-04	3561.37259	0.00231
3560.40824	4.40E-04	3560.40824	6.50E-04	3560.40824	0.00232
3559.44388	4.30E-04	3559.44388	6.40E-04	3559.44388	0.00232
3558.47952	4.20E-04	3558.47952	6.40E-04	3558.47952	0.00232
3557.51516	4.30E-04	3557.51516	6.40E-04	3557.51516	0.00233
3556.55081	4.30E-04	3556.55081	6.40E-04	3556.55081	0.00236
3555.58645	4.40E-04	3555.58645	6.30E-04	3555.58645	0.0024
3554.62209	4.20E-04	3554.62209	6.20E-04	3554.62209	0.00243
3553.65773	4.10E-04	3553.65773	6.20E-04	3553.65773	0.00247
3552.69338	4.00E-04	3552.69338	6.40E-04	3552.69338	0.00251
3551.72902	4.00E-04	3551.72902	6.60E-04	3551.72902	0.00254
3550.76466	4.00E-04	3550.76466	6.80E-04	3550.76466	0.00256
3549.8003	4.00E-04	3549.8003	6.90E-04	3549.8003	0.00257
3548.83595	4.00E-04	3548.83595	6.90E-04	3548.83595	0.00257
3547.87159	4.00E-04	3547.87159	6.90E-04	3547.87159	0.00258
3546.90723	4.00E-04	3546.90723	6.70E-04	3546.90723	0.00258
3545.94287	3.90E-04	3545.94287	6.70E-04	3545.94287	0.0026
3544.97851	4.00E-04	3544.97851	6.90E-04	3544.97851	0.00263
3544.01416	4.20E-04	3544.01416	7.00E-04	3544.01416	0.00268

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3543.0498	4.50E-04	3543.0498	7.10E-04	3543.0498	0.00272
3542.08544	4.70E-04	3542.08544	7.20E-04	3542.08544	0.00276
3541.12108	4.80E-04	3541.12108	7.40E-04	3541.12108	0.00279
3540.15673	5.00E-04	3540.15673	7.50E-04	3540.15673	0.00281
3539.19237	5.10E-04	3539.19237	7.50E-04	3539.19237	0.00283
3538.22801	5.20E-04	3538.22801	7.40E-04	3538.22801	0.00283
3537.26365	5.20E-04	3537.26365	7.40E-04	3537.26365	0.00284
3536.2993	5.20E-04	3536.2993	7.40E-04	3536.2993	0.00285
3535.33494	5.10E-04	3535.33494	7.40E-04	3535.33494	0.00285
3534.37058	5.00E-04	3534.37058	7.40E-04	3534.37058	0.00286
3533.40622	4.90E-04	3533.40622	7.40E-04	3533.40622	0.00289
3532.44187	4.90E-04	3532.44187	7.50E-04	3532.44187	0.00293
3531.47751	5.00E-04	3531.47751	7.50E-04	3531.47751	0.00297
3530.51315	5.10E-04	3530.51315	7.50E-04	3530.51315	0.003
3529.54879	5.10E-04	3529.54879	7.50E-04	3529.54879	0.00303
3528.58444	5.10E-04	3528.58444	7.60E-04	3528.58444	0.00303
3527.62008	5.10E-04	3527.62008	7.70E-04	3527.62008	0.00304
3526.65572	5.00E-04	3526.65572	7.80E-04	3526.65572	0.00304
3525.69136	5.00E-04	3525.69136	7.80E-04	3525.69136	0.00304
3524.72701	5.00E-04	3524.72701	7.80E-04	3524.72701	0.00306
3523.76265	5.10E-04	3523.76265	7.80E-04	3523.76265	0.00309
3522.79829	5.30E-04	3522.79829	7.70E-04	3522.79829	0.00313
3521.83393	5.30E-04	3521.83393	7.70E-04	3521.83393	0.00317
3520.86958	5.20E-04	3520.86958	7.80E-04	3520.86958	0.0032
3519.90522	5.20E-04	3519.90522	8.00E-04	3519.90522	0.00322
3518.94086	5.20E-04	3518.94086	8.20E-04	3518.94086	0.00325
3517.9765	5.10E-04	3517.9765	8.30E-04	3517.9765	0.00327
3517.01214	5.10E-04	3517.01214	8.40E-04	3517.01214	0.00329
3516.04779	5.10E-04	3516.04779	8.40E-04	3516.04779	0.00332
3515.08343	5.20E-04	3515.08343	8.30E-04	3515.08343	0.00334
3514.11907	5.30E-04	3514.11907	8.20E-04	3514.11907	0.00336
3513.15471	5.40E-04	3513.15471	8.20E-04	3513.15471	0.00338
3512.19036	5.50E-04	3512.19036	8.20E-04	3512.19036	0.00339
3511.226	5.60E-04	3511.226	8.30E-04	3511.226	0.00343
3510.26164	5.50E-04	3510.26164	8.40E-04	3510.26164	0.00347
3509.29728	5.30E-04	3509.29728	8.50E-04	3509.29728	0.0035
3508.33293	5.00E-04	3508.33293	8.50E-04	3508.33293	0.00352
3507.36857	4.80E-04	3507.36857	8.40E-04	3507.36857	0.00352
3506.40421	4.70E-04	3506.40421	8.20E-04	3506.40421	0.00352

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3505.43985	4.80E-04	3505.43985	8.10E-04	3505.43985	0.00352
3504.4755	4.90E-04	3504.4755	8.20E-04	3504.4755	0.00352
3503.51114	4.90E-04	3503.51114	8.30E-04	3503.51114	0.00353
3502.54678	4.90E-04	3502.54678	8.40E-04	3502.54678	0.00355
3501.58242	4.90E-04	3501.58242	8.50E-04	3501.58242	0.00358
3500.61807	4.90E-04	3500.61807	8.60E-04	3500.61807	0.0036
3499.65371	5.10E-04	3499.65371	8.60E-04	3499.65371	0.00362
3498.68935	5.30E-04	3498.68935	8.50E-04	3498.68935	0.00364
3497.72499	5.50E-04	3497.72499	8.40E-04	3497.72499	0.00366
3496.76064	5.50E-04	3496.76064	8.30E-04	3496.76064	0.00368
3495.79628	5.40E-04	3495.79628	8.30E-04	3495.79628	0.0037
3494.83192	5.30E-04	3494.83192	8.40E-04	3494.83192	0.00372
3493.86756	5.30E-04	3493.86756	8.50E-04	3493.86756	0.00374
3492.9032	5.40E-04	3492.9032	8.70E-04	3492.9032	0.00376
3491.93885	5.60E-04	3491.93885	8.80E-04	3491.93885	0.00378
3490.97449	5.80E-04	3490.97449	8.80E-04	3490.97449	0.00379
3490.01013	5.90E-04	3490.01013	8.90E-04	3490.01013	0.00381
3489.04577	6.00E-04	3489.04577	8.90E-04	3489.04577	0.00382
3488.08142	6.00E-04	3488.08142	9.00E-04	3488.08142	0.00383
3487.11706	6.10E-04	3487.11706	8.90E-04	3487.11706	0.00385
3486.1527	6.00E-04	3486.1527	8.80E-04	3486.1527	0.00386
3485.18834	5.90E-04	3485.18834	8.70E-04	3485.18834	0.00387
3484.22399	5.70E-04	3484.22399	8.70E-04	3484.22399	0.00389
3483.25963	5.60E-04	3483.25963	8.70E-04	3483.25963	0.00392
3482.29527	5.60E-04	3482.29527	8.80E-04	3482.29527	0.00395
3481.33091	5.70E-04	3481.33091	9.00E-04	3481.33091	0.00398
3480.36656	5.90E-04	3480.36656	9.20E-04	3480.36656	0.004
3479.4022	6.00E-04	3479.4022	9.40E-04	3479.4022	0.00401
3478.43784	6.10E-04	3478.43784	9.60E-04	3478.43784	0.00402
3477.47348	6.10E-04	3477.47348	9.80E-04	3477.47348	0.00403
3476.50913	6.00E-04	3476.50913	1.00E-03	3476.50913	0.00405
3475.54477	6.00E-04	3475.54477	0.00101	3475.54477	0.00408
3474.58041	6.00E-04	3474.58041	0.00102	3474.58041	0.0041
3473.61605	6.10E-04	3473.61605	0.00102	3473.61605	0.00412
3472.6517	6.30E-04	3472.6517	0.00101	3472.6517	0.00413
3471.68734	6.40E-04	3471.68734	9.90E-04	3471.68734	0.00414
3470.72298	6.50E-04	3470.72298	9.80E-04	3470.72298	0.00415
3469.75862	6.40E-04	3469.75862	9.70E-04	3469.75862	0.00416
3468.79426	6.30E-04	3468.79426	9.70E-04	3468.79426	0.00417

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
3467.82991	6.20E-04	3467.82991	9.80E-04	3467.82991	0.00419
3466.86555	6.20E-04	3466.86555	1.00E-03	3466.86555	0.0042
3465.90119	6.30E-04	3465.90119	0.00101	3465.90119	0.00422
3464.93683	6.50E-04	3464.93683	0.00101	3464.93683	0.00423
3463.97248	6.50E-04	3463.97248	1.00E-03	3463.97248	0.00425
3463.00812	6.50E-04	3463.00812	9.70E-04	3463.00812	0.00427
3462.04376	6.30E-04	3462.04376	9.40E-04	3462.04376	0.00429
3461.0794	6.10E-04	3461.0794	9.30E-04	3461.0794	0.00431
3460.11505	6.00E-04	3460.11505	9.30E-04	3460.11505	0.00432
3459.15069	6.00E-04	3459.15069	9.40E-04	3459.15069	0.00433
3458.18633	6.10E-04	3458.18633	9.60E-04	3458.18633	0.00435
3457.22197	6.20E-04	3457.22197	9.90E-04	3457.22197	0.00437
3456.25762	6.30E-04	3456.25762	0.00101	3456.25762	0.0044
3455.29326	6.30E-04	3455.29326	0.00103	3455.29326	0.00442
3454.3289	6.30E-04	3454.3289	0.00103	3454.3289	0.00445
3453.36454	6.40E-04	3453.36454	0.00103	3453.36454	0.00447
3452.40019	6.50E-04	3452.40019	0.00103	3452.40019	0.00448
3451.43583	6.60E-04	3451.43583	0.00102	3451.43583	0.00448
3450.47147	6.70E-04	3450.47147	0.00101	3450.47147	0.00448
3449.50711	6.60E-04	3449.50711	1.00E-03	3449.50711	0.00449
3448.54276	6.50E-04	3448.54276	0.00101	3448.54276	0.0045
3447.5784	6.50E-04	3447.5784	0.00102	3447.5784	0.00453
3446.61404	6.50E-04	3446.61404	0.00104	3446.61404	0.00456
3445.64968	6.70E-04	3445.64968	0.00106	3445.64968	0.00459
3444.68533	6.80E-04	3444.68533	0.00106	3444.68533	0.0046
3443.72097	7.00E-04	3443.72097	0.00106	3443.72097	0.00462
3442.75661	7.10E-04	3442.75661	0.00104	3442.75661	0.00462
3441.79225	7.10E-04	3441.79225	0.00103	3441.79225	0.00463
3440.82789	6.90E-04	3440.82789	0.00104	3440.82789	0.00464
3439.86354	6.80E-04	3439.86354	0.00105	3439.86354	0.00466
3438.89918	6.70E-04	3438.89918	0.00107	3438.89918	0.00468
3437.93482	6.70E-04	3437.93482	0.00108	3437.93482	0.0047
3436.97046	6.60E-04	3436.97046	0.00109	3436.97046	0.00471
3436.00611	6.60E-04	3436.00611	0.00109	3436.00611	0.00472
3435.04175	6.60E-04	3435.04175	0.00108	3435.04175	0.00473
3434.07739	6.60E-04	3434.07739	0.00107	3434.07739	0.00474
3433.11303	6.70E-04	3433.11303	0.00106	3433.11303	0.00477
3432.14868	6.70E-04	3432.14868	0.00106	3432.14868	0.0048
3431.18432	6.80E-04	3431.18432	0.00107	3431.18432	0.00483

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3430.21996	6.90E-04	3430.21996	0.00108	3430.21996	0.00486
3429.2556	6.90E-04	3429.2556	0.00109	3429.2556	0.00487
3428.29125	6.90E-04	3428.29125	0.00109	3428.29125	0.00488
3427.32689	6.90E-04	3427.32689	0.00108	3427.32689	0.00489
3426.36253	7.10E-04	3426.36253	0.00108	3426.36253	0.00489
3425.39817	7.30E-04	3425.39817	0.00109	3425.39817	0.00489
3424.43382	7.40E-04	3424.43382	0.00111	3424.43382	0.0049
3423.46946	7.50E-04	3423.46946	0.00112	3423.46946	0.00492
3422.5051	7.60E-04	3422.5051	0.00113	3422.5051	0.00494
3421.54074	7.60E-04	3421.54074	0.00113	3421.54074	0.00495
3420.57639	7.60E-04	3420.57639	0.00112	3420.57639	0.00497
3419.61203	7.60E-04	3419.61203	0.00112	3419.61203	0.00498
3418.64767	7.60E-04	3418.64767	0.00114	3418.64767	0.005
3417.68331	7.60E-04	3417.68331	0.00115	3417.68331	0.005
3416.71895	7.70E-04	3416.71895	0.00116	3416.71895	0.00502
3415.7546	7.70E-04	3415.7546	0.00117	3415.7546	0.00503
3414.79024	7.70E-04	3414.79024	0.00117	3414.79024	0.00505
3413.82588	7.80E-04	3413.82588	0.00117	3413.82588	0.00506
3412.86152	7.90E-04	3412.86152	0.00117	3412.86152	0.00509
3411.89717	7.80E-04	3411.89717	0.00117	3411.89717	0.00511
3410.93281	7.80E-04	3410.93281	0.00118	3410.93281	0.00513
3409.96845	7.70E-04	3409.96845	0.00119	3409.96845	0.00515
3409.00409	7.60E-04	3409.00409	0.00119	3409.00409	0.00516
3408.03974	7.60E-04	3408.03974	0.0012	3408.03974	0.00518
3407.07538	7.70E-04	3407.07538	0.0012	3407.07538	0.00518
3406.11102	7.90E-04	3406.11102	0.0012	3406.11102	0.00519
3405.14666	8.00E-04	3405.14666	0.00119	3405.14666	0.0052
3404.18231	8.00E-04	3404.18231	0.00119	3404.18231	0.00522
3403.21795	8.00E-04	3403.21795	0.00118	3403.21795	0.00524
3402.25359	7.90E-04	3402.25359	0.00118	3402.25359	0.00527
3401.28923	7.80E-04	3401.28923	0.00117	3401.28923	0.00529
3400.32488	7.80E-04	3400.32488	0.00118	3400.32488	0.00531
3399.36052	7.80E-04	3399.36052	0.00119	3399.36052	0.00531
3398.39616	7.90E-04	3398.39616	0.00119	3398.39616	0.0053
3397.4318	8.10E-04	3397.4318	0.0012	3397.4318	0.0053
3396.46745	8.20E-04	3396.46745	0.00122	3396.46745	0.0053
3395.50309	8.40E-04	3395.50309	0.00123	3395.50309	0.00532
3394.53873	8.60E-04	3394.53873	0.00124	3394.53873	0.00534
3393.57437	8.70E-04	3393.57437	0.00124	3393.57437	0.00537

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3392.61002	8.80E-04	3392.61002	0.00123	3392.61002	0.00541
3391.64566	8.70E-04	3391.64566	0.00122	3391.64566	0.00543
3390.6813	8.60E-04	3390.6813	0.00121	3390.6813	0.00545
3389.71694	8.30E-04	3389.71694	0.00121	3389.71694	0.00545
3388.75258	8.10E-04	3388.75258	0.00122	3388.75258	0.00545
3387.78823	8.00E-04	3387.78823	0.00121	3387.78823	0.00546
3386.82387	8.00E-04	3386.82387	0.0012	3386.82387	0.00546
3385.85951	8.00E-04	3385.85951	0.00118	3385.85951	0.00547
3384.89515	8.10E-04	3384.89515	0.00117	3384.89515	0.00547
3383.9308	8.20E-04	3383.9308	0.00117	3383.9308	0.00549
3382.96644	8.40E-04	3382.96644	0.00118	3382.96644	0.00551
3382.00208	8.60E-04	3382.00208	0.00121	3382.00208	0.00553
3381.03772	8.80E-04	3381.03772	0.00124	3381.03772	0.00556
3380.07337	8.90E-04	3380.07337	0.00125	3380.07337	0.00558
3379.10901	8.90E-04	3379.10901	0.00125	3379.10901	0.0056
3378.14465	8.80E-04	3378.14465	0.00124	3378.14465	0.00561
3377.18029	8.70E-04	3377.18029	0.00123	3377.18029	0.00563
3376.21594	8.70E-04	3376.21594	0.00122	3376.21594	0.00564
3375.25158	8.70E-04	3375.25158	0.00121	3375.25158	0.00566
3374.28722	8.80E-04	3374.28722	0.00122	3374.28722	0.00569
3373.32286	9.00E-04	3373.32286	0.00122	3373.32286	0.00572
3372.35851	9.00E-04	3372.35851	0.00124	3372.35851	0.00574
3371.39415	9.00E-04	3371.39415	0.00124	3371.39415	0.00576
3370.42979	8.90E-04	3370.42979	0.00126	3370.42979	0.00578
3369.46543	8.80E-04	3369.46543	0.00127	3369.46543	0.0058
3368.50108	8.70E-04	3368.50108	0.00127	3368.50108	0.00581
3367.53672	8.60E-04	3367.53672	0.00127	3367.53672	0.0058
3366.57236	8.60E-04	3366.57236	0.00128	3366.57236	0.0058
3365.608	8.70E-04	3365.608	0.00129	3365.608	0.0058
3364.64364	8.70E-04	3364.64364	0.00129	3364.64364	0.00581
3363.67929	8.80E-04	3363.67929	0.00129	3363.67929	0.00582
3362.71493	8.80E-04	3362.71493	0.0013	3362.71493	0.00585
3361.75057	8.90E-04	3361.75057	0.0013	3361.75057	0.00588
3360.78621	8.90E-04	3360.78621	0.0013	3360.78621	0.00591
3359.82186	9.00E-04	3359.82186	0.0013	3359.82186	0.00593
3358.8575	9.00E-04	3358.8575	0.0013	3358.8575	0.00594
3357.89314	9.00E-04	3357.89314	0.0013	3357.89314	0.00595
3356.92878	9.00E-04	3356.92878	0.0013	3356.92878	0.00596
3355.96443	9.10E-04	3355.96443	0.0013	3355.96443	0.00597



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3355.00007	9.10E-04	3355.00007	0.00132	3355.00007	0.00598
3354.03571	9.20E-04	3354.03571	0.00134	3354.03571	0.00599
3353.07135	9.20E-04	3353.07135	0.00135	3353.07135	0.006
3352.107	9.30E-04	3352.107	0.00136	3352.107	0.00601
3351.14264	9.20E-04	3351.14264	0.00136	3351.14264	0.00602
3350.17828	9.10E-04	3350.17828	0.00135	3350.17828	0.00603
3349.21392	9.10E-04	3349.21392	0.00134	3349.21392	0.00603
3348.24957	9.30E-04	3348.24957	0.00133	3348.24957	0.00603
3347.28521	9.50E-04	3347.28521	0.00133	3347.28521	0.00604
3346.32085	9.70E-04	3346.32085	0.00133	3346.32085	0.00605
3345.35649	9.80E-04	3345.35649	0.00134	3345.35649	0.00607
3344.39214	9.80E-04	3344.39214	0.00135	3344.39214	0.00608
3343.42778	9.50E-04	3343.42778	0.00136	3343.42778	0.00609
3342.46342	9.20E-04	3342.46342	0.00136	3342.46342	0.00609
3341.49906	9.00E-04	3341.49906	0.00136	3341.49906	0.0061
3340.5347	9.00E-04	3340.5347	0.00135	3340.5347	0.00611
3339.57035	9.10E-04	3339.57035	0.00135	3339.57035	0.00613
3338.60599	9.30E-04	3338.60599	0.00135	3338.60599	0.00615
3337.64163	9.40E-04	3337.64163	0.00135	3337.64163	0.00617
3336.67727	9.50E-04	3336.67727	0.00134	3336.67727	0.00618
3335.71292	9.50E-04	3335.71292	0.00134	3335.71292	0.00619
3334.74856	9.50E-04	3334.74856	0.00133	3334.74856	0.00619
3333.7842	9.60E-04	3333.7842	0.00132	3333.7842	0.0062
3332.81984	9.60E-04	3332.81984	0.00131	3332.81984	0.0062
3331.85549	9.60E-04	3331.85549	0.00131	3331.85549	0.00621
3330.89113	9.60E-04	3330.89113	0.00132	3330.89113	0.00621
3329.92677	9.50E-04	3329.92677	0.00133	3329.92677	0.00623
3328.96241	9.40E-04	3328.96241	0.00135	3328.96241	0.00626
3327.99806	9.30E-04	3327.99806	0.00137	3327.99806	0.00629
3327.0337	9.30E-04	3327.0337	0.00138	3327.0337	0.00631
3326.06934	9.40E-04	3326.06934	0.00138	3326.06934	0.00632
3325.10498	9.50E-04	3325.10498	0.00137	3325.10498	0.00632
3324.14063	9.50E-04	3324.14063	0.00137	3324.14063	0.00632
3323.17627	9.50E-04	3323.17627	0.00136	3323.17627	0.00631
3322.21191	9.40E-04	3322.21191	0.00136	3322.21191	0.00631
3321.24755	9.40E-04	3321.24755	0.00137	3321.24755	0.00632
3320.2832	9.40E-04	3320.2832	0.00137	3320.2832	0.00634
3319.31884	9.50E-04	3319.31884	0.00136	3319.31884	0.00634
3318.35448	9.60E-04	3318.35448	0.00137	3318.35448	0.00635

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3317.39012	9.70E-04	3317.39012	0.00137	3317.39012	0.00636
3316.42577	9.70E-04	3316.42577	0.00136	3316.42577	0.00639
3315.46141	9.70E-04	3315.46141	0.00136	3315.46141	0.0064
3314.49705	9.60E-04	3314.49705	0.00135	3314.49705	0.00642
3313.53269	9.70E-04	3313.53269	0.00135	3313.53269	0.00643
3312.56833	9.80E-04	3312.56833	0.00135	3312.56833	0.00643
3311.60398	9.80E-04	3311.60398	0.00136	3311.60398	0.00643
3310.63962	9.90E-04	3310.63962	0.00139	3310.63962	0.00642
3309.67526	9.90E-04	3309.67526	0.00142	3309.67526	0.00643
3308.7109	9.90E-04	3308.7109	0.00143	3308.7109	0.00646
3307.74655	9.80E-04	3307.74655	0.00143	3307.74655	0.00649
3306.78219	9.70E-04	3306.78219	0.00143	3306.78219	0.00652
3305.81783	9.50E-04	3305.81783	0.00142	3305.81783	0.00654
3304.85347	9.50E-04	3304.85347	0.0014	3304.85347	0.00654
3303.88912	9.60E-04	3303.88912	0.00139	3303.88912	0.00653
3302.92476	9.80E-04	3302.92476	0.00137	3302.92476	0.00651
3301.9604	0.00101	3301.9604	0.00136	3301.9604	0.00649
3300.99604	0.00103	3300.99604	0.00135	3300.99604	0.00648
3300.03169	0.00104	3300.03169	0.00134	3300.03169	0.00647
3299.06733	0.00103	3299.06733	0.00134	3299.06733	0.00647
3298.10297	0.00101	3298.10297	0.00134	3298.10297	0.00647
3297.13861	9.90E-04	3297.13861	0.00134	3297.13861	0.00648
3296.17426	9.80E-04	3296.17426	0.00135	3296.17426	0.0065
3295.2099	9.90E-04	3295.2099	0.00136	3295.2099	0.00651
3294.24554	9.90E-04	3294.24554	0.00136	3294.24554	0.00653
3293.28118	9.90E-04	3293.28118	0.00136	3293.28118	0.00653
3292.31683	9.90E-04	3292.31683	0.00137	3292.31683	0.00653
3291.35247	9.80E-04	3291.35247	0.00137	3291.35247	0.00653
3290.38811	9.70E-04	3290.38811	0.00136	3290.38811	0.00652
3289.42375	9.70E-04	3289.42375	0.00136	3289.42375	0.00651
3288.45939	9.60E-04	3288.45939	0.00137	3288.45939	0.0065
3287.49504	9.60E-04	3287.49504	0.00137	3287.49504	0.00649
3286.53068	9.60E-04	3286.53068	0.00136	3286.53068	0.00648
3285.56632	9.50E-04	3285.56632	0.00136	3285.56632	0.00646
3284.60196	9.60E-04	3284.60196	0.00137	3284.60196	0.00645
3283.63761	9.70E-04	3283.63761	0.00138	3283.63761	0.00643
3282.67325	9.80E-04	3282.67325	0.00138	3282.67325	0.00643
3281.70889	9.90E-04	3281.70889	0.00137	3281.70889	0.00643
3280.74453	1.00E-03	3280.74453	0.00136	3280.74453	0.00643

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3279.78018	9.90E-04	3279.78018	0.00134	3279.78018	0.00643
3278.81582	9.70E-04	3278.81582	0.00132	3278.81582	0.00642
3277.85146	9.50E-04	3277.85146	0.00131	3277.85146	0.0064
3276.8871	9.40E-04	3276.8871	0.00131	3276.8871	0.00638
3275.92275	9.50E-04	3275.92275	0.00131	3275.92275	0.00637
3274.95839	9.60E-04	3274.95839	0.00131	3274.95839	0.00635
3273.99403	9.90E-04	3273.99403	0.00131	3273.99403	0.00635
3273.02967	1.00E-03	3273.02967	0.00131	3273.02967	0.00635
3272.06532	0.00101	3272.06532	0.00132	3272.06532	0.00634
3271.10096	1.00E-03	3271.10096	0.00133	3271.10096	0.00632
3270.1366	9.90E-04	3270.1366	0.00134	3270.1366	0.0063
3269.17224	9.70E-04	3269.17224	0.00133	3269.17224	0.00626
3268.20789	9.60E-04	3268.20789	0.00131	3268.20789	0.00622
3267.24353	9.50E-04	3267.24353	0.00129	3267.24353	0.00619
3266.27917	9.50E-04	3266.27917	0.00126	3266.27917	0.00618
3265.31481	9.50E-04	3265.31481	0.00125	3265.31481	0.00617
3264.35046	9.50E-04	3264.35046	0.00124	3264.35046	0.00616
3263.3861	9.50E-04	3263.3861	0.00124	3263.3861	0.00615
3262.42174	9.50E-04	3262.42174	0.00125	3262.42174	0.00613
3261.45738	9.50E-04	3261.45738	0.00127	3261.45738	0.00611
3260.49302	9.50E-04	3260.49302	0.00128	3260.49302	0.00607
3259.52867	9.40E-04	3259.52867	0.00129	3259.52867	0.00604
3258.56431	9.30E-04	3258.56431	0.00128	3258.56431	0.00602
3257.59995	9.20E-04	3257.59995	0.00128	3257.59995	0.006
3256.63559	9.10E-04	3256.63559	0.00127	3256.63559	0.00599
3255.67124	9.00E-04	3255.67124	0.00126	3255.67124	0.00599
3254.70688	8.80E-04	3254.70688	0.00126	3254.70688	0.00599
3253.74252	8.80E-04	3253.74252	0.00125	3253.74252	0.00598
3252.77816	8.80E-04	3252.77816	0.00125	3252.77816	0.00596
3251.81381	8.90E-04	3251.81381	0.00125	3251.81381	0.00594
3250.84945	9.00E-04	3250.84945	0.00124	3250.84945	0.00591
3249.88509	9.00E-04	3249.88509	0.00124	3249.88509	0.00589
3248.92073	9.00E-04	3248.92073	0.00124	3248.92073	0.00587
3247.95638	8.90E-04	3247.95638	0.00124	3247.95638	0.00585
3246.99202	8.90E-04	3246.99202	0.00124	3246.99202	0.00583
3246.02766	8.80E-04	3246.02766	0.00124	3246.02766	0.00581
3245.0633	8.90E-04	3245.0633	0.00124	3245.0633	0.00579
3244.09895	9.00E-04	3244.09895	0.00124	3244.09895	0.00577
3243.13459	9.10E-04	3243.13459	0.00123	3243.13459	0.00576

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3242.17023	9.00E-04	3242.17023	0.00123	3242.17023	0.00575
3241.20587	8.90E-04	3241.20587	0.00122	3241.20587	0.00574
3240.24152	8.80E-04	3240.24152	0.0012	3240.24152	0.00573
3239.27716	8.60E-04	3239.27716	0.00119	3239.27716	0.00572
3238.3128	8.50E-04	3238.3128	0.00119	3238.3128	0.00571
3237.34844	8.40E-04	3237.34844	0.00118	3237.34844	0.00569
3236.38408	8.40E-04	3236.38408	0.00119	3236.38408	0.00569
3235.41973	8.40E-04	3235.41973	0.00119	3235.41973	0.00568
3234.45537	8.50E-04	3234.45537	0.0012	3234.45537	0.00566
3233.49101	8.50E-04	3233.49101	0.00121	3233.49101	0.00564
3232.52665	8.50E-04	3232.52665	0.0012	3232.52665	0.00562
3231.5623	8.50E-04	3231.5623	0.00118	3231.5623	0.0056
3230.59794	8.60E-04	3230.59794	0.00116	3230.59794	0.00558
3229.63358	8.60E-04	3229.63358	0.00115	3229.63358	0.00556
3228.66922	8.70E-04	3228.66922	0.00114	3228.66922	0.00555
3227.70487	8.60E-04	3227.70487	0.00114	3227.70487	0.00554
3226.74051	8.50E-04	3226.74051	0.00114	3226.74051	0.00554
3225.77615	8.30E-04	3225.77615	0.00114	3225.77615	0.00553
3224.81179	8.20E-04	3224.81179	0.00113	3224.81179	0.00552
3223.84744	8.20E-04	3223.84744	0.00112	3223.84744	0.0055
3222.88308	8.20E-04	3222.88308	0.0011	3222.88308	0.0055
3221.91872	8.20E-04	3221.91872	0.0011	3221.91872	0.00549
3220.95436	8.20E-04	3220.95436	0.00111	3220.95436	0.00548
3219.99001	8.10E-04	3219.99001	0.00112	3219.99001	0.00546
3219.02565	8.00E-04	3219.02565	0.00113	3219.02565	0.00544
3218.06129	8.00E-04	3218.06129	0.00115	3218.06129	0.00542
3217.09693	7.90E-04	3217.09693	0.00115	3217.09693	0.00541
3216.13258	7.90E-04	3216.13258	0.00114	3216.13258	0.0054
3215.16822	7.80E-04	3215.16822	0.00113	3215.16822	0.00539
3214.20386	7.70E-04	3214.20386	0.00112	3214.20386	0.00538
3213.2395	7.80E-04	3213.2395	0.00111	3213.2395	0.00537
3212.27514	7.80E-04	3212.27514	0.00111	3212.27514	0.00534
3211.31079	7.90E-04	3211.31079	0.00112	3211.31079	0.00533
3210.34643	8.00E-04	3210.34643	0.00113	3210.34643	0.00532
3209.38207	8.10E-04	3209.38207	0.00113	3209.38207	0.00533
3208.41771	8.10E-04	3208.41771	0.00112	3208.41771	0.00532
3207.45336	8.00E-04	3207.45336	0.0011	3207.45336	0.00531
3206.489	8.00E-04	3206.489	0.00108	3206.489	0.0053
3205.52464	7.90E-04	3205.52464	0.00106	3205.52464	0.00528

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3204.56028	7.90E-04	3204.56028	0.00106	3204.56028	0.00527
3203.59593	7.90E-04	3203.59593	0.00106	3203.59593	0.00525
3202.63157	7.80E-04	3202.63157	0.00106	3202.63157	0.00524
3201.66721	7.80E-04	3201.66721	0.00106	3201.66721	0.00523
3200.70285	7.60E-04	3200.70285	0.00106	3200.70285	0.00522
3199.7385	7.50E-04	3199.7385	0.00105	3199.7385	0.0052
3198.77414	7.40E-04	3198.77414	0.00104	3198.77414	0.00517
3197.80978	7.40E-04	3197.80978	0.00103	3197.80978	0.00516
3196.84542	7.30E-04	3196.84542	0.00102	3196.84542	0.00514
3195.88107	7.30E-04	3195.88107	0.00103	3195.88107	0.00513
3194.91671	7.30E-04	3194.91671	0.00103	3194.91671	0.00512
3193.95235	7.30E-04	3193.95235	0.00102	3193.95235	0.00512
3192.98799	7.30E-04	3192.98799	0.00101	3192.98799	0.00512
3192.02364	7.30E-04	3192.02364	1.00E-03	3192.02364	0.00511
3191.05928	7.20E-04	3191.05928	9.90E-04	3191.05928	0.00511
3190.09492	7.20E-04	3190.09492	1.00E-03	3190.09492	0.0051
3189.13056	7.10E-04	3189.13056	0.00101	3189.13056	0.00508
3188.16621	7.00E-04	3188.16621	0.00102	3188.16621	0.00506
3187.20185	6.90E-04	3187.20185	0.00102	3187.20185	0.00504
3186.23749	6.80E-04	3186.23749	0.00102	3186.23749	0.00502
3185.27313	6.70E-04	3185.27313	0.00101	3185.27313	0.005
3184.30877	6.60E-04	3184.30877	9.90E-04	3184.30877	0.00498
3183.34442	6.60E-04	3183.34442	9.80E-04	3183.34442	0.00496
3182.38006	6.60E-04	3182.38006	9.80E-04	3182.38006	0.00493
3181.4157	6.60E-04	3181.4157	9.80E-04	3181.4157	0.00492
3180.45134	6.70E-04	3180.45134	9.70E-04	3180.45134	0.00491
3179.48699	6.70E-04	3179.48699	9.60E-04	3179.48699	0.0049
3178.52263	6.80E-04	3178.52263	9.50E-04	3178.52263	0.00489
3177.55827	6.80E-04	3177.55827	9.40E-04	3177.55827	0.00488
3176.59391	6.90E-04	3176.59391	9.30E-04	3176.59391	0.00487
3175.62956	6.80E-04	3175.62956	9.20E-04	3175.62956	0.00484
3174.6652	6.70E-04	3174.6652	9.20E-04	3174.6652	0.00482
3173.70084	6.70E-04	3173.70084	9.30E-04	3173.70084	0.0048
3172.73648	6.50E-04	3172.73648	9.50E-04	3172.73648	0.00478
3171.77213	6.40E-04	3171.77213	9.50E-04	3171.77213	0.00477
3170.80777	6.30E-04	3170.80777	9.60E-04	3170.80777	0.00475
3169.84341	6.30E-04	3169.84341	9.50E-04	3169.84341	0.00474
3168.87905	6.30E-04	3168.87905	9.30E-04	3168.87905	0.00472
3167.9147	6.30E-04	3167.9147	9.20E-04	3167.9147	0.00471

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3166.95034	6.30E-04	3166.95034	9.10E-04	3166.95034	0.0047
3165.98598	6.40E-04	3165.98598	9.00E-04	3165.98598	0.00468
3165.02162	6.40E-04	3165.02162	9.00E-04	3165.02162	0.00467
3164.05727	6.30E-04	3164.05727	9.10E-04	3164.05727	0.00466
3163.09291	6.30E-04	3163.09291	9.10E-04	3163.09291	0.00465
3162.12855	6.20E-04	3162.12855	9.10E-04	3162.12855	0.00465
3161.16419	6.20E-04	3161.16419	9.00E-04	3161.16419	0.00465
3160.19983	6.20E-04	3160.19983	8.90E-04	3160.19983	0.00465
3159.23548	6.20E-04	3159.23548	8.80E-04	3159.23548	0.00464
3158.27112	6.30E-04	3158.27112	8.70E-04	3158.27112	0.00462
3157.30676	6.30E-04	3157.30676	8.70E-04	3157.30676	0.00459
3156.3424	6.30E-04	3156.3424	8.80E-04	3156.3424	0.00456
3155.37805	6.10E-04	3155.37805	8.90E-04	3155.37805	0.00454
3154.41369	5.90E-04	3154.41369	9.10E-04	3154.41369	0.00451
3153.44933	5.80E-04	3153.44933	9.10E-04	3153.44933	0.0045
3152.48497	5.70E-04	3152.48497	9.10E-04	3152.48497	0.00449
3151.52062	5.70E-04	3151.52062	9.00E-04	3151.52062	0.00449
3150.55626	5.90E-04	3150.55626	8.80E-04	3150.55626	0.00448
3149.5919	6.00E-04	3149.5919	8.60E-04	3149.5919	0.00447
3148.62754	6.20E-04	3148.62754	8.50E-04	3148.62754	0.00445
3147.66319	6.20E-04	3147.66319	8.50E-04	3147.66319	0.00442
3146.69883	6.20E-04	3146.69883	8.60E-04	3146.69883	0.0044
3145.73447	6.10E-04	3145.73447	8.60E-04	3145.73447	0.00438
3144.77011	6.00E-04	3144.77011	8.60E-04	3144.77011	0.00436
3143.80576	5.90E-04	3143.80576	8.50E-04	3143.80576	0.00435
3142.8414	5.80E-04	3142.8414	8.60E-04	3142.8414	0.00433
3141.87704	5.80E-04	3141.87704	8.70E-04	3141.87704	0.00432
3140.91268	5.80E-04	3140.91268	8.90E-04	3140.91268	0.0043
3139.94833	5.80E-04	3139.94833	9.00E-04	3139.94833	0.00429
3138.98397	5.60E-04	3138.98397	9.10E-04	3138.98397	0.00428
3138.01961	5.50E-04	3138.01961	9.00E-04	3138.01961	0.00427
3137.05525	5.40E-04	3137.05525	8.70E-04	3137.05525	0.00425
3136.0909	5.20E-04	3136.0909	8.50E-04	3136.0909	0.00423
3135.12654	5.20E-04	3135.12654	8.30E-04	3135.12654	0.00421
3134.16218	5.20E-04	3134.16218	8.20E-04	3134.16218	0.00419
3133.19782	5.30E-04	3133.19782	8.20E-04	3133.19782	0.00419
3132.23346	5.40E-04	3132.23346	8.20E-04	3132.23346	0.00418
3131.26911	5.50E-04	3131.26911	8.20E-04	3131.26911	0.00418
3130.30475	5.50E-04	3130.30475	8.20E-04	3130.30475	0.00417

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3129.34039	5.50E-04	3129.34039	8.10E-04	3129.34039	0.00416
3128.37603	5.50E-04	3128.37603	8.10E-04	3128.37603	0.00415
3127.41168	5.50E-04	3127.41168	8.10E-04	3127.41168	0.00412
3126.44732	5.40E-04	3126.44732	8.10E-04	3126.44732	0.00409
3125.48296	5.30E-04	3125.48296	8.10E-04	3125.48296	0.00406
3124.5186	5.10E-04	3124.5186	8.10E-04	3124.5186	0.00403
3123.55425	5.00E-04	3123.55425	8.00E-04	3123.55425	0.00402
3122.58989	4.90E-04	3122.58989	8.00E-04	3122.58989	0.00402
3121.62553	4.90E-04	3121.62553	7.90E-04	3121.62553	0.00403
3120.66117	5.00E-04	3120.66117	7.80E-04	3120.66117	0.00404
3119.69682	5.10E-04	3119.69682	7.70E-04	3119.69682	0.00404
3118.73246	5.10E-04	3118.73246	7.70E-04	3118.73246	0.00403
3117.7681	5.00E-04	3117.7681	7.70E-04	3117.7681	0.004
3116.80374	5.00E-04	3116.80374	7.90E-04	3116.80374	0.00398
3115.83939	5.00E-04	3115.83939	8.00E-04	3115.83939	0.00396
3114.87503	5.00E-04	3114.87503	8.10E-04	3114.87503	0.00395
3113.91067	5.10E-04	3113.91067	8.00E-04	3113.91067	0.00394
3112.94631	5.10E-04	3112.94631	7.80E-04	3112.94631	0.00393
3111.98196	5.10E-04	3111.98196	7.60E-04	3111.98196	0.00392
3111.0176	5.10E-04	3111.0176	7.50E-04	3111.0176	0.00391
3110.05324	5.00E-04	3110.05324	7.50E-04	3110.05324	0.0039
3109.08888	5.00E-04	3109.08888	7.50E-04	3109.08888	0.0039
3108.12452	4.90E-04	3108.12452	7.70E-04	3108.12452	0.0039
3107.16017	4.90E-04	3107.16017	7.80E-04	3107.16017	0.00389
3106.19581	4.80E-04	3106.19581	7.80E-04	3106.19581	0.00387
3105.23145	4.80E-04	3105.23145	7.80E-04	3105.23145	0.00385
3104.26709	4.80E-04	3104.26709	7.80E-04	3104.26709	0.00383
3103.30274	4.90E-04	3103.30274	7.70E-04	3103.30274	0.00382
3102.33838	5.00E-04	3102.33838	7.70E-04	3102.33838	0.00382
3101.37402	5.10E-04	3101.37402	7.70E-04	3101.37402	0.00381
3100.40966	5.20E-04	3100.40966	7.70E-04	3100.40966	0.00381
3099.44531	5.10E-04	3099.44531	7.70E-04	3099.44531	0.0038
3098.48095	5.00E-04	3098.48095	7.70E-04	3098.48095	0.00379
3097.51659	4.90E-04	3097.51659	7.70E-04	3097.51659	0.00378
3096.55223	4.90E-04	3096.55223	7.70E-04	3096.55223	0.00377
3095.58788	4.90E-04	3095.58788	7.80E-04	3095.58788	0.00376
3094.62352	4.80E-04	3094.62352	7.80E-04	3094.62352	0.00375
3093.65916	4.80E-04	3093.65916	7.90E-04	3093.65916	0.00374
3092.6948	4.80E-04	3092.6948	7.80E-04	3092.6948	0.00372

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3091.73045	4.80E-04	3091.73045	7.70E-04	3091.73045	0.00371
3090.76609	4.80E-04	3090.76609	7.70E-04	3090.76609	0.0037
3089.80173	4.80E-04	3089.80173	7.70E-04	3089.80173	0.0037
3088.83737	4.90E-04	3088.83737	7.70E-04	3088.83737	0.00371
3087.87302	4.90E-04	3087.87302	7.80E-04	3087.87302	0.00371
3086.90866	4.90E-04	3086.90866	7.90E-04	3086.90866	0.00371
3085.9443	4.80E-04	3085.9443	8.00E-04	3085.9443	0.00371
3084.97994	4.70E-04	3084.97994	8.00E-04	3084.97994	0.00371
3084.01559	4.60E-04	3084.01559	8.00E-04	3084.01559	0.00371
3083.05123	4.60E-04	3083.05123	7.90E-04	3083.05123	0.0037
3082.08687	4.60E-04	3082.08687	7.80E-04	3082.08687	0.00369
3081.12251	4.60E-04	3081.12251	7.80E-04	3081.12251	0.00368
3080.15815	4.60E-04	3080.15815	7.70E-04	3080.15815	0.00367
3079.1938	4.50E-04	3079.1938	7.70E-04	3079.1938	0.00365
3078.22944	4.40E-04	3078.22944	7.80E-04	3078.22944	0.00363
3077.26508	4.30E-04	3077.26508	7.80E-04	3077.26508	0.00361
3076.30072	4.20E-04	3076.30072	7.80E-04	3076.30072	0.00359
3075.33637	4.30E-04	3075.33637	7.70E-04	3075.33637	0.00357
3074.37201	4.30E-04	3074.37201	7.70E-04	3074.37201	0.00356
3073.40765	4.30E-04	3073.40765	7.60E-04	3073.40765	0.00357
3072.44329	4.20E-04	3072.44329	7.60E-04	3072.44329	0.00357
3071.47894	4.10E-04	3071.47894	7.60E-04	3071.47894	0.00358
3070.51458	4.10E-04	3070.51458	7.70E-04	3070.51458	0.00358
3069.55022	4.10E-04	3069.55022	7.80E-04	3069.55022	0.00358
3068.58586	4.20E-04	3068.58586	7.90E-04	3068.58586	0.00358
3067.62151	4.30E-04	3067.62151	7.90E-04	3067.62151	0.00358
3066.65715	4.20E-04	3066.65715	7.90E-04	3066.65715	0.00358
3065.69279	4.10E-04	3065.69279	7.90E-04	3065.69279	0.00357
3064.72843	4.00E-04	3064.72843	7.80E-04	3064.72843	0.00354
3063.76408	3.80E-04	3063.76408	7.60E-04	3063.76408	0.00352
3062.79972	3.70E-04	3062.79972	7.50E-04	3062.79972	0.0035
3061.83536	3.60E-04	3061.83536	7.40E-04	3061.83536	0.00349
3060.871	3.70E-04	3060.871	7.40E-04	3060.871	0.00348
3059.90665	3.80E-04	3059.90665	7.50E-04	3059.90665	0.00348
3058.94229	3.80E-04	3058.94229	7.50E-04	3058.94229	0.00348
3057.97793	3.90E-04	3057.97793	7.60E-04	3057.97793	0.00347
3057.01357	3.80E-04	3057.01357	7.60E-04	3057.01357	0.00347
3056.04921	3.80E-04	3056.04921	7.50E-04	3056.04921	0.00346
3055.08486	3.70E-04	3055.08486	7.50E-04	3055.08486	0.00345



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3054.1205	3.70E-04	3054.1205	7.40E-04	3054.1205	0.00345
3053.15614	3.80E-04	3053.15614	7.30E-04	3053.15614	0.00345
3052.19178	3.90E-04	3052.19178	7.20E-04	3052.19178	0.00344
3051.22743	4.00E-04	3051.22743	7.20E-04	3051.22743	0.00342
3050.26307	4.00E-04	3050.26307	7.20E-04	3050.26307	0.0034
3049.29871	3.90E-04	3049.29871	7.20E-04	3049.29871	0.00338
3048.33435	3.70E-04	3048.33435	7.20E-04	3048.33435	0.00336
3047.37	3.60E-04	3047.37	7.20E-04	3047.37	0.00334
3046.40564	3.60E-04	3046.40564	7.20E-04	3046.40564	0.00333
3045.44128	3.60E-04	3045.44128	7.10E-04	3045.44128	0.00333
3044.47692	3.60E-04	3044.47692	7.10E-04	3044.47692	0.00332
3043.51257	3.60E-04	3043.51257	7.10E-04	3043.51257	0.0033
3042.54821	3.50E-04	3042.54821	7.20E-04	3042.54821	0.00329
3041.58385	3.30E-04	3041.58385	7.20E-04	3041.58385	0.00327
3040.61949	3.20E-04	3040.61949	7.20E-04	3040.61949	0.00326
3039.65514	3.10E-04	3039.65514	7.20E-04	3039.65514	0.00323
3038.69078	3.00E-04	3038.69078	7.20E-04	3038.69078	0.00321
3037.72642	3.00E-04	3037.72642	7.10E-04	3037.72642	0.00318
3036.76206	3.00E-04	3036.76206	7.10E-04	3036.76206	0.00316
3035.79771	3.00E-04	3035.79771	7.10E-04	3035.79771	0.00314
3034.83335	3.00E-04	3034.83335	7.10E-04	3034.83335	0.00312
3033.86899	3.00E-04	3033.86899	7.10E-04	3033.86899	0.00311
3032.90463	3.00E-04	3032.90463	7.00E-04	3032.90463	0.0031
3031.94027	3.00E-04	3031.94027	7.00E-04	3031.94027	0.0031
3030.97592	2.90E-04	3030.97592	6.90E-04	3030.97592	0.00309
3030.01156	2.90E-04	3030.01156	6.90E-04	3030.01156	0.00308
3029.0472	2.90E-04	3029.0472	6.80E-04	3029.0472	0.00307
3028.08284	3.00E-04	3028.08284	6.90E-04	3028.08284	0.00306
3027.11849	3.10E-04	3027.11849	6.90E-04	3027.11849	0.00304
3026.15413	3.20E-04	3026.15413	6.80E-04	3026.15413	0.00302
3025.18977	3.30E-04	3025.18977	6.70E-04	3025.18977	0.00301
3024.22541	3.30E-04	3024.22541	6.70E-04	3024.22541	0.003
3023.26106	3.40E-04	3023.26106	6.60E-04	3023.26106	0.003
3022.2967	3.40E-04	3022.2967	6.60E-04	3022.2967	0.003
3021.33234	3.40E-04	3021.33234	6.60E-04	3021.33234	0.00299
3020.36798	3.40E-04	3020.36798	6.60E-04	3020.36798	0.00299
3019.40363	3.40E-04	3019.40363	6.60E-04	3019.40363	0.00294
3018.43927	3.30E-04	3018.43927	6.50E-04	3018.43927	0.00286
3017.47491	3.30E-04	3017.47491	6.50E-04	3017.47491	0.00275

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3016.51055	3.30E-04	3016.51055	6.40E-04	3016.51055	0.00265
3015.5462	3.30E-04	3015.5462	6.30E-04	3015.5462	0.0026
3014.58184	3.30E-04	3014.58184	6.20E-04	3014.58184	0.00261
3013.61748	3.20E-04	3013.61748	6.20E-04	3013.61748	0.00268
3012.65312	3.10E-04	3012.65312	6.20E-04	3012.65312	0.00277
3011.68877	3.00E-04	3011.68877	6.30E-04	3011.68877	0.00284
3010.72441	2.90E-04	3010.72441	6.30E-04	3010.72441	0.00287
3009.76005	2.70E-04	3009.76005	6.40E-04	3009.76005	0.00285
3008.79569	2.60E-04	3008.79569	6.40E-04	3008.79569	0.00281
3007.83134	2.50E-04	3007.83134	6.40E-04	3007.83134	0.00279
3006.86698	2.50E-04	3006.86698	6.30E-04	3006.86698	0.00276
3005.90262	2.60E-04	3005.90262	6.20E-04	3005.90262	0.00275
3004.93826	2.60E-04	3004.93826	6.10E-04	3004.93826	0.00275
3003.9739	2.70E-04	3003.9739	6.00E-04	3003.9739	0.00274
3003.00955	2.70E-04	3003.00955	6.10E-04	3003.00955	0.00273
3002.04519	2.60E-04	3002.04519	6.10E-04	3002.04519	0.00271
3001.08083	2.60E-04	3001.08083	6.30E-04	3001.08083	0.00269
3000.11647	2.50E-04	3000.11647	6.40E-04	3000.11647	0.00268
2999.15212	2.60E-04	2999.15212	6.50E-04	2999.15212	0.00266
2998.18776	2.60E-04	2998.18776	6.50E-04	2998.18776	0.00265
2997.2234	2.60E-04	2997.2234	6.50E-04	2997.2234	0.00265
2996.25904	2.60E-04	2996.25904	6.50E-04	2996.25904	0.00265
2995.29469	2.70E-04	2995.29469	6.50E-04	2995.29469	0.00265
2994.33033	2.70E-04	2994.33033	6.50E-04	2994.33033	0.00266
2993.36597	2.60E-04	2993.36597	6.40E-04	2993.36597	0.00268
2992.40161	2.50E-04	2992.40161	6.40E-04	2992.40161	0.00269
2991.43726	2.40E-04	2991.43726	6.40E-04	2991.43726	0.00271
2990.4729	2.30E-04	2990.4729	6.40E-04	2990.4729	0.00272
2989.50854	2.30E-04	2989.50854	6.40E-04	2989.50854	0.00273
2988.54418	2.30E-04	2988.54418	6.50E-04	2988.54418	0.00273
2987.57983	2.30E-04	2987.57983	6.60E-04	2987.57983	0.00274
2986.61547	2.40E-04	2986.61547	6.60E-04	2986.61547	0.00275
2985.65111	2.30E-04	2985.65111	6.70E-04	2985.65111	0.00277
2984.68675	2.30E-04	2984.68675	6.70E-04	2984.68675	0.0028
2983.7224	2.30E-04	2983.7224	6.60E-04	2983.7224	0.00282
2982.75804	2.20E-04	2982.75804	6.50E-04	2982.75804	0.00284
2981.79368	2.20E-04	2981.79368	6.50E-04	2981.79368	0.00285
2980.82932	2.10E-04	2980.82932	6.50E-04	2980.82932	0.00285
2979.86496	2.00E-04	2979.86496	6.70E-04	2979.86496	0.00284

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2978.90061	1.90E-04	2978.90061	6.80E-04	2978.90061	0.0028
2977.93625	1.90E-04	2977.93625	6.90E-04	2977.93625	0.00271
2976.97189	1.90E-04	2976.97189	7.00E-04	2976.97189	0.0026
2976.00753	1.90E-04	2976.00753	7.00E-04	2976.00753	0.00253
2975.04318	1.90E-04	2975.04318	6.90E-04	2975.04318	0.00252
2974.07882	1.80E-04	2974.07882	6.90E-04	2974.07882	0.00258
2973.11446	1.80E-04	2973.11446	7.00E-04	2973.11446	0.0027
2972.1501	1.70E-04	2972.1501	7.10E-04	2972.1501	0.00284
2971.18575	1.70E-04	2971.18575	7.20E-04	2971.18575	0.00296
2970.22139	1.80E-04	2970.22139	7.20E-04	2970.22139	0.00303
2969.25703	1.80E-04	2969.25703	7.20E-04	2969.25703	0.00306
2968.29267	1.80E-04	2968.29267	7.20E-04	2968.29267	0.00307
2967.32832	1.70E-04	2967.32832	7.20E-04	2967.32832	0.00308
2966.36396	1.60E-04	2966.36396	7.30E-04	2966.36396	0.00308
2965.3996	1.50E-04	2965.3996	7.30E-04	2965.3996	0.00309
2964.43524	1.40E-04	2964.43524	7.40E-04	2964.43524	0.0031
2963.47089	1.30E-04	2963.47089	7.40E-04	2963.47089	0.00311
2962.50653	1.30E-04	2962.50653	7.40E-04	2962.50653	0.00312
2961.54217	1.40E-04	2961.54217	7.50E-04	2961.54217	0.00312
2960.57781	1.40E-04	2960.57781	7.60E-04	2960.57781	0.00313
2959.61346	1.50E-04	2959.61346	7.70E-04	2959.61346	0.00313
2958.6491	1.60E-04	2958.6491	7.80E-04	2958.6491	0.00315
2957.68474	1.80E-04	2957.68474	7.90E-04	2957.68474	0.00317
2956.72038	2.00E-04	2956.72038	7.90E-04	2956.72038	0.00318
2955.75603	2.20E-04	2955.75603	8.00E-04	2955.75603	0.00319
2954.79167	2.20E-04	2954.79167	8.20E-04	2954.79167	0.00318
2953.82731	2.30E-04	2953.82731	8.40E-04	2953.82731	0.00316
2952.86295	2.40E-04	2952.86295	8.60E-04	2952.86295	0.00314
2951.89859	2.40E-04	2951.89859	8.80E-04	2951.89859	0.00312
2950.93424	2.50E-04	2950.93424	8.80E-04	2950.93424	0.00312
2949.96988	2.60E-04	2949.96988	8.70E-04	2949.96988	0.00312
2949.00552	2.70E-04	2949.00552	8.70E-04	2949.00552	0.00313
2948.04116	2.80E-04	2948.04116	8.80E-04	2948.04116	0.00314
2947.07681	2.90E-04	2947.07681	8.90E-04	2947.07681	0.00315
2946.11245	2.90E-04	2946.11245	9.10E-04	2946.11245	0.00315
2945.14809	2.90E-04	2945.14809	9.20E-04	2945.14809	0.00315
2944.18373	2.70E-04	2944.18373	9.30E-04	2944.18373	0.00315
2943.21938	2.60E-04	2943.21938	9.30E-04	2943.21938	0.00315
2942.25502	2.60E-04	2942.25502	9.30E-04	2942.25502	0.00317

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2941.29066	2.60E-04	2941.29066	9.20E-04	2941.29066	0.00318
2940.3263	2.60E-04	2940.3263	9.10E-04	2940.3263	0.0032
2939.36195	2.60E-04	2939.36195	9.00E-04	2939.36195	0.00322
2938.39759	2.50E-04	2938.39759	8.90E-04	2938.39759	0.00323
2937.43323	2.30E-04	2937.43323	8.90E-04	2937.43323	0.00324
2936.46887	2.20E-04	2936.46887	9.00E-04	2936.46887	0.00325
2935.50452	2.20E-04	2935.50452	9.10E-04	2935.50452	0.00325
2934.54016	2.10E-04	2934.54016	9.20E-04	2934.54016	0.00325
2933.5758	2.20E-04	2933.5758	9.20E-04	2933.5758	0.00326
2932.61144	2.20E-04	2932.61144	9.20E-04	2932.61144	0.00327
2931.64709	2.20E-04	2931.64709	9.10E-04	2931.64709	0.00328
2930.68273	2.10E-04	2930.68273	9.00E-04	2930.68273	0.00328
2929.71837	2.10E-04	2929.71837	9.00E-04	2929.71837	0.00328
2928.75401	2.00E-04	2928.75401	9.00E-04	2928.75401	0.00327
2927.78965	2.00E-04	2927.78965	9.00E-04	2927.78965	0.00325
2926.8253	2.00E-04	2926.8253	9.00E-04	2926.8253	0.00322
2925.86094	2.00E-04	2925.86094	8.90E-04	2925.86094	0.0032
2924.89658	2.00E-04	2924.89658	8.80E-04	2924.89658	0.00319
2923.93222	2.00E-04	2923.93222	8.80E-04	2923.93222	0.00317
2922.96787	1.90E-04	2922.96787	8.80E-04	2922.96787	0.00315
2922.00351	1.80E-04	2922.00351	8.90E-04	2922.00351	0.00313
2921.03915	1.70E-04	2921.03915	8.90E-04	2921.03915	0.00311
2920.07479	1.60E-04	2920.07479	9.00E-04	2920.07479	0.00309
2919.11044	1.60E-04	2919.11044	9.00E-04	2919.11044	0.00307
2918.14608	1.70E-04	2918.14608	8.90E-04	2918.14608	0.00305
2917.18172	1.80E-04	2917.18172	8.80E-04	2917.18172	0.00303
2916.21736	1.80E-04	2916.21736	8.80E-04	2916.21736	0.00301
2915.25301	1.70E-04	2915.25301	8.80E-04	2915.25301	0.003
2914.28865	1.70E-04	2914.28865	8.80E-04	2914.28865	0.00298
2913.32429	1.70E-04	2913.32429	8.70E-04	2913.32429	0.00295
2912.35993	1.70E-04	2912.35993	8.60E-04	2912.35993	0.00294
2911.39558	1.80E-04	2911.39558	8.50E-04	2911.39558	0.00292
2910.43122	1.80E-04	2910.43122	8.40E-04	2910.43122	0.0029
2909.46686	1.80E-04	2909.46686	8.30E-04	2909.46686	0.00289
2908.5025	1.80E-04	2908.5025	8.40E-04	2908.5025	0.00288
2907.53815	1.90E-04	2907.53815	8.40E-04	2907.53815	0.00286
2906.57379	1.90E-04	2906.57379	8.40E-04	2906.57379	0.00284
2905.60943	2.00E-04	2905.60943	8.30E-04	2905.60943	0.00281
2904.64507	2.00E-04	2904.64507	8.20E-04	2904.64507	0.00278

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2903.68071	2.00E-04	2903.68071	8.00E-04	2903.68071	0.00275
2902.71636	1.90E-04	2902.71636	7.80E-04	2902.71636	0.00273
2901.752	1.80E-04	2901.752	7.60E-04	2901.752	0.00271
2900.78764	1.70E-04	2900.78764	7.50E-04	2900.78764	0.0027
2899.82328	1.70E-04	2899.82328	7.40E-04	2899.82328	0.00269
2898.85893	1.70E-04	2898.85893	7.40E-04	2898.85893	0.00268
2897.89457	1.70E-04	2897.89457	7.40E-04	2897.89457	0.00267
2896.93021	1.70E-04	2896.93021	7.50E-04	2896.93021	0.00266
2895.96585	1.70E-04	2895.96585	7.60E-04	2895.96585	0.00266
2895.0015	1.50E-04	2895.0015	7.60E-04	2895.0015	0.00265
2894.03714	1.40E-04	2894.03714	7.60E-04	2894.03714	0.00265
2893.07278	1.30E-04	2893.07278	7.40E-04	2893.07278	0.00264
2892.10842	1.20E-04	2892.10842	7.20E-04	2892.10842	0.00263
2891.14407	1.30E-04	2891.14407	7.00E-04	2891.14407	0.00262
2890.17971	1.40E-04	2890.17971	6.80E-04	2890.17971	0.00261
2889.21535	1.50E-04	2889.21535	6.70E-04	2889.21535	0.0026
2888.25099	1.60E-04	2888.25099	6.70E-04	2888.25099	0.00259
2887.28664	1.50E-04	2887.28664	6.70E-04	2887.28664	0.00259
2886.32228	1.40E-04	2886.32228	6.80E-04	2886.32228	0.00258
2885.35792	1.20E-04	2885.35792	6.80E-04	2885.35792	0.00257
2884.39356	1.00E-04	2884.39356	6.80E-04	2884.39356	0.00257
2883.42921	8.00E-05	2883.42921	6.80E-04	2883.42921	0.00257
2882.46485	7.00E-05	2882.46485	6.70E-04	2882.46485	0.00257
2881.50049	7.00E-05	2881.50049	6.70E-04	2881.50049	0.00258
2880.53613	7.00E-05	2880.53613	6.70E-04	2880.53613	0.00259
2879.57178	8.00E-05	2879.57178	6.60E-04	2879.57178	0.00259
2878.60742	8.00E-05	2878.60742	6.60E-04	2878.60742	0.0026
2877.64306	8.00E-05	2877.64306	6.60E-04	2877.64306	0.0026
2876.6787	7.00E-05	2876.6787	6.60E-04	2876.6787	0.00261
2875.71434	7.00E-05	2875.71434	6.60E-04	2875.71434	0.0026
2874.74999	7.00E-05	2874.74999	6.60E-04	2874.74999	0.0026
2873.78563	7.00E-05	2873.78563	6.70E-04	2873.78563	0.0026
2872.82127	6.00E-05	2872.82127	6.60E-04	2872.82127	0.00261
2871.85691	6.00E-05	2871.85691	6.60E-04	2871.85691	0.0026
2870.89256	4.00E-05	2870.89256	6.50E-04	2870.89256	0.00259
2869.9282	2.00E-05	2869.9282	6.50E-04	2869.9282	0.00258
2868.96384	1.00E-05	2868.96384	6.60E-04	2868.96384	0.00256
2867.99948	1.00E-05	2867.99948	6.60E-04	2867.99948	0.00253
2867.03513	1.00E-05	2867.03513	6.50E-04	2867.03513	0.00251

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2866.07077	1.00E-05	2866.07077	6.40E-04	2866.07077	0.00247
2865.10641	2.00E-05	2865.10641	6.30E-04	2865.10641	0.00244
2864.14205	1.00E-05	2864.14205	6.20E-04	2864.14205	0.0024
2863.1777	1.00E-05	2863.1777	6.20E-04	2863.1777	0.00238
2862.21334	1.00E-05	2862.21334	6.20E-04	2862.21334	0.00236
2861.24898	1.00E-05	2861.24898	6.30E-04	2861.24898	0.00235
2860.28462	2.00E-05	2860.28462	6.30E-04	2860.28462	0.00234
2859.32027	3.00E-05	2859.32027	6.40E-04	2859.32027	0.00234
2858.35591	4.00E-05	2858.35591	6.40E-04	2858.35591	0.00232
2857.39155	4.00E-05	2857.39155	6.50E-04	2857.39155	0.0023
2856.42719	4.00E-05	2856.42719	6.50E-04	2856.42719	0.00228
2855.46284	4.00E-05	2855.46284	6.60E-04	2855.46284	0.00226
2854.49848	5.00E-05	2854.49848	6.50E-04	2854.49848	0.00224
2853.53412	6.00E-05	2853.53412	6.50E-04	2853.53412	0.00223
2852.56976	6.00E-05	2852.56976	6.40E-04	2852.56976	0.00221
2851.6054	6.00E-05	2851.6054	6.30E-04	2851.6054	0.0022
2850.64105	6.00E-05	2850.64105	6.20E-04	2850.64105	0.00218
2849.67669	6.00E-05	2849.67669	6.10E-04	2849.67669	0.00217
2848.71233	6.00E-05	2848.71233	6.00E-04	2848.71233	0.00215
2847.74797	6.00E-05	2847.74797	5.90E-04	2847.74797	0.00213
2846.78362	6.00E-05	2846.78362	5.90E-04	2846.78362	0.00212
2845.81926	6.00E-05	2845.81926	5.80E-04	2845.81926	0.00211
2844.8549	6.00E-05	2844.8549	5.80E-04	2844.8549	0.00211
2843.89054	6.00E-05	2843.89054	5.80E-04	2843.89054	0.0021
2842.92619	6.00E-05	2842.92619	5.80E-04	2842.92619	0.00209
2841.96183	6.00E-05	2841.96183	5.80E-04	2841.96183	0.00208
2840.99747	5.00E-05	2840.99747	5.70E-04	2840.99747	0.00206
2840.03311	4.00E-05	2840.03311	5.70E-04	2840.03311	0.00203
2839.06876	3.00E-05	2839.06876	5.60E-04	2839.06876	0.00202
2838.1044	3.00E-05	2838.1044	5.50E-04	2838.1044	0.00201
2837.14004	3.00E-05	2837.14004	5.30E-04	2837.14004	0.002
2836.17568	3.00E-05	2836.17568	5.20E-04	2836.17568	0.002
2835.21133	4.00E-05	2835.21133	5.20E-04	2835.21133	0.00199
2834.24697	5.00E-05	2834.24697	5.20E-04	2834.24697	0.00199
2833.28261	5.00E-05	2833.28261	5.30E-04	2833.28261	0.00197
2832.31825	4.00E-05	2832.31825	5.40E-04	2832.31825	0.00196
2831.3539	3.00E-05	2831.3539	5.40E-04	2831.3539	0.00194
2830.38954	2.00E-05	2830.38954	5.40E-04	2830.38954	0.00192
2829.42518	2.00E-05	2829.42518	5.40E-04	2829.42518	0.00191

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2828.46082	2.00E-05	2828.46082	5.40E-04	2828.46082	0.00191
2827.49647	2.00E-05	2827.49647	5.30E-04	2827.49647	0.0019
2826.53211	3.00E-05	2826.53211	5.20E-04	2826.53211	0.00189
2825.56775	3.00E-05	2825.56775	5.10E-04	2825.56775	0.00188
2824.60339	3.00E-05	2824.60339	5.00E-04	2824.60339	0.00187
2823.63903	3.00E-05	2823.63903	5.00E-04	2823.63903	0.00187
2822.67468	3.00E-05	2822.67468	5.10E-04	2822.67468	0.00186
2821.71032	2.00E-05	2821.71032	5.10E-04	2821.71032	0.00186
2820.74596	2.00E-05	2820.74596	5.10E-04	2820.74596	0.00186
2819.7816	2.00E-05	2819.7816	5.10E-04	2819.7816	0.00186
2818.81725	2.00E-05	2818.81725	5.00E-04	2818.81725	0.00186
2817.85289	2.00E-05	2817.85289	4.90E-04	2817.85289	0.00185
2816.88853	2.00E-05	2816.88853	4.80E-04	2816.88853	0.00184
2815.92417	3.00E-05	2815.92417	4.90E-04	2815.92417	0.00182
2814.95982	5.00E-05	2814.95982	4.90E-04	2814.95982	0.00182
2813.99546	5.00E-05	2813.99546	4.90E-04	2813.99546	0.00181
2813.0311	6.00E-05	2813.0311	5.00E-04	2813.0311	0.00182
2812.06674	5.00E-05	2812.06674	5.00E-04	2812.06674	0.00182
2811.10239	5.00E-05	2811.10239	4.90E-04	2811.10239	0.00181
2810.13803	4.00E-05	2810.13803	4.80E-04	2810.13803	0.0018
2809.17367	3.00E-05	2809.17367	4.70E-04	2809.17367	0.00179
2808.20931	3.00E-05	2808.20931	4.70E-04	2808.20931	0.00177
2807.24496	3.00E-05	2807.24496	4.60E-04	2807.24496	0.00176
2806.2806	3.00E-05	2806.2806	4.60E-04	2806.2806	0.00176
2805.31624	4.00E-05	2805.31624	4.60E-04	2805.31624	0.00176
2804.35188	5.00E-05	2804.35188	4.50E-04	2804.35188	0.00176
2803.38753	6.00E-05	2803.38753	4.40E-04	2803.38753	0.00176
2802.42317	7.00E-05	2802.42317	4.40E-04	2802.42317	0.00177
2801.45881	8.00E-05	2801.45881	4.40E-04	2801.45881	0.00177
2800.49445	8.00E-05	2800.49445	4.50E-04	2800.49445	0.00176
2799.53009	7.00E-05	2799.53009	4.50E-04	2799.53009	0.00176
2798.56574	6.00E-05	2798.56574	4.50E-04	2798.56574	0.00175
2797.60138	5.00E-05	2797.60138	4.60E-04	2797.60138	0.00174
2796.63702	5.00E-05	2796.63702	4.60E-04	2796.63702	0.00173
2795.67266	5.00E-05	2795.67266	4.50E-04	2795.67266	0.00173
2794.70831	5.00E-05	2794.70831	4.50E-04	2794.70831	0.00173
2793.74395	5.00E-05	2793.74395	4.50E-04	2793.74395	0.00172
2792.77959	5.00E-05	2792.77959	4.40E-04	2792.77959	0.00173
2791.81523	5.00E-05	2791.81523	4.40E-04	2791.81523	0.00173

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2790.85088	5.00E-05	2790.85088	4.30E-04	2790.85088	0.00173
2789.88652	5.00E-05	2789.88652	4.30E-04	2789.88652	0.00172
2788.92216	6.00E-05	2788.92216	4.30E-04	2788.92216	0.00172
2787.9578	8.00E-05	2787.9578	4.30E-04	2787.9578	0.00171
2786.99345	8.00E-05	2786.99345	4.20E-04	2786.99345	0.00171
2786.02909	8.00E-05	2786.02909	4.20E-04	2786.02909	0.0017
2785.06473	9.00E-05	2785.06473	4.20E-04	2785.06473	0.0017
2784.10037	9.00E-05	2784.10037	4.20E-04	2784.10037	0.00169
2783.13602	1.00E-04	2783.13602	4.20E-04	2783.13602	0.00168
2782.17166	1.10E-04	2782.17166	4.10E-04	2782.17166	0.00167
2781.2073	1.10E-04	2781.2073	4.10E-04	2781.2073	0.00167
2780.24294	1.10E-04	2780.24294	4.10E-04	2780.24294	0.00166
2779.27859	1.10E-04	2779.27859	4.10E-04	2779.27859	0.00166
2778.31423	1.00E-04	2778.31423	4.20E-04	2778.31423	0.00167
2777.34987	1.00E-04	2777.34987	4.20E-04	2777.34987	0.00167
2776.38551	1.00E-04	2776.38551	4.20E-04	2776.38551	0.00167
2775.42115	1.00E-04	2775.42115	4.10E-04	2775.42115	0.00167
2774.4568	1.10E-04	2774.4568	4.00E-04	2774.4568	0.00167
2773.49244	1.00E-04	2773.49244	3.90E-04	2773.49244	0.00166
2772.52808	1.00E-04	2772.52808	3.90E-04	2772.52808	0.00165
2771.56372	1.00E-04	2771.56372	3.90E-04	2771.56372	0.00165
2770.59937	9.00E-05	2770.59937	3.90E-04	2770.59937	0.00164
2769.63501	9.00E-05	2769.63501	3.80E-04	2769.63501	0.00164
2768.67065	9.00E-05	2768.67065	3.80E-04	2768.67065	0.00163
2767.70629	9.00E-05	2767.70629	3.80E-04	2767.70629	0.00163
2766.74194	9.00E-05	2766.74194	3.80E-04	2766.74194	0.00163
2765.77758	9.00E-05	2765.77758	3.80E-04	2765.77758	0.00162
2764.81322	9.00E-05	2764.81322	3.80E-04	2764.81322	0.00162
2763.84886	9.00E-05	2763.84886	3.80E-04	2763.84886	0.00162
2762.88451	9.00E-05	2762.88451	3.80E-04	2762.88451	0.00162
2761.92015	8.00E-05	2761.92015	3.80E-04	2761.92015	0.00163
2760.95579	8.00E-05	2760.95579	3.70E-04	2760.95579	0.00163
2759.99143	6.00E-05	2759.99143	3.70E-04	2759.99143	0.00163
2759.02708	5.00E-05	2759.02708	3.70E-04	2759.02708	0.00162
2758.06272	5.00E-05	2758.06272	3.70E-04	2758.06272	0.00161
2757.09836	5.00E-05	2757.09836	3.70E-04	2757.09836	0.00161
2756.134	5.00E-05	2756.134	3.80E-04	2756.134	0.0016
2755.16965	7.00E-05	2755.16965	3.80E-04	2755.16965	0.0016
2754.20529	8.00E-05	2754.20529	3.80E-04	2754.20529	0.00159



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2753.24093	9.00E-05	2753.24093	3.80E-04	2753.24093	0.00159
2752.27657	9.00E-05	2752.27657	3.80E-04	2752.27657	0.00158
2751.31222	9.00E-05	2751.31222	3.80E-04	2751.31222	0.00158
2750.34786	9.00E-05	2750.34786	3.80E-04	2750.34786	0.00159
2749.3835	8.00E-05	2749.3835	3.80E-04	2749.3835	0.00159
2748.41914	8.00E-05	2748.41914	3.80E-04	2748.41914	0.00159
2747.45478	8.00E-05	2747.45478	3.70E-04	2747.45478	0.00158
2746.49043	8.00E-05	2746.49043	3.70E-04	2746.49043	0.00157
2745.52607	8.00E-05	2745.52607	3.70E-04	2745.52607	0.00156
2744.56171	8.00E-05	2744.56171	3.80E-04	2744.56171	0.00155
2743.59735	8.00E-05	2743.59735	3.80E-04	2743.59735	0.00155
2742.633	7.00E-05	2742.633	3.80E-04	2742.633	0.00155
2741.66864	7.00E-05	2741.66864	3.70E-04	2741.66864	0.00156
2740.70428	7.00E-05	2740.70428	3.70E-04	2740.70428	0.00156
2739.73992	7.00E-05	2739.73992	3.70E-04	2739.73992	0.00157
2738.77557	8.00E-05	2738.77557	3.70E-04	2738.77557	0.00157
2737.81121	8.00E-05	2737.81121	3.60E-04	2737.81121	0.00156
2736.84685	9.00E-05	2736.84685	3.60E-04	2736.84685	0.00155
2735.88249	9.00E-05	2735.88249	3.50E-04	2735.88249	0.00153
2734.91814	9.00E-05	2734.91814	3.50E-04	2734.91814	0.00153
2733.95378	9.00E-05	2733.95378	3.50E-04	2733.95378	0.00153
2732.98942	9.00E-05	2732.98942	3.50E-04	2732.98942	0.00153
2732.02506	8.00E-05	2732.02506	3.40E-04	2732.02506	0.00153
2731.06071	7.00E-05	2731.06071	3.40E-04	2731.06071	0.00154
2730.09635	7.00E-05	2730.09635	3.40E-04	2730.09635	0.00154
2729.13199	7.00E-05	2729.13199	3.40E-04	2729.13199	0.00153
2728.16763	8.00E-05	2728.16763	3.50E-04	2728.16763	0.00153
2727.20328	8.00E-05	2727.20328	3.50E-04	2727.20328	0.00153
2726.23892	9.00E-05	2726.23892	3.60E-04	2726.23892	0.00152
2725.27456	9.00E-05	2725.27456	3.60E-04	2725.27456	0.00152
2724.3102	9.00E-05	2724.3102	3.50E-04	2724.3102	0.00153
2723.34584	9.00E-05	2723.34584	3.40E-04	2723.34584	0.00153
2722.38149	9.00E-05	2722.38149	3.40E-04	2722.38149	0.00153
2721.41713	1.00E-04	2721.41713	3.30E-04	2721.41713	0.00153
2720.45277	1.00E-04	2720.45277	3.30E-04	2720.45277	0.00152
2719.48841	1.00E-04	2719.48841	3.40E-04	2719.48841	0.00151
2718.52406	1.00E-04	2718.52406	3.50E-04	2718.52406	0.0015
2717.5597	1.00E-04	2717.5597	3.50E-04	2717.5597	0.00149
2716.59534	1.00E-04	2716.59534	3.60E-04	2716.59534	0.00149

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2715.63098	9.00E-05	2715.63098	3.50E-04	2715.63098	0.00148
2714.66663	7.00E-05	2714.66663	3.50E-04	2714.66663	0.00148
2713.70227	5.00E-05	2713.70227	3.40E-04	2713.70227	0.00148
2712.73791	4.00E-05	2712.73791	3.40E-04	2712.73791	0.00149
2711.77355	4.00E-05	2711.77355	3.40E-04	2711.77355	0.00149
2710.8092	4.00E-05	2710.8092	3.40E-04	2710.8092	0.00149
2709.84484	5.00E-05	2709.84484	3.40E-04	2709.84484	0.00148
2708.88048	7.00E-05	2708.88048	3.40E-04	2708.88048	0.00147
2707.91612	7.00E-05	2707.91612	3.40E-04	2707.91612	0.00147
2706.95177	7.00E-05	2706.95177	3.40E-04	2706.95177	0.00146
2705.98741	7.00E-05	2705.98741	3.40E-04	2705.98741	0.00146
2705.02305	7.00E-05	2705.02305	3.30E-04	2705.02305	0.00146
2704.05869	8.00E-05	2704.05869	3.30E-04	2704.05869	0.00146
2703.09434	8.00E-05	2703.09434	3.30E-04	2703.09434	0.00146
2702.12998	8.00E-05	2702.12998	3.30E-04	2702.12998	0.00145
2701.16562	9.00E-05	2701.16562	3.30E-04	2701.16562	0.00145
2700.20126	9.00E-05	2700.20126	3.40E-04	2700.20126	0.00145
2699.23691	9.00E-05	2699.23691	3.40E-04	2699.23691	0.00144
2698.27255	8.00E-05	2698.27255	3.40E-04	2698.27255	0.00143
2697.30819	8.00E-05	2697.30819	3.40E-04	2697.30819	0.00142
2696.34383	9.00E-05	2696.34383	3.30E-04	2696.34383	0.00141
2695.37947	8.00E-05	2695.37947	3.30E-04	2695.37947	0.0014
2694.41512	8.00E-05	2694.41512	3.40E-04	2694.41512	0.0014
2693.45076	8.00E-05	2693.45076	3.50E-04	2693.45076	0.00139
2692.4864	7.00E-05	2692.4864	3.60E-04	2692.4864	0.00139
2691.52204	7.00E-05	2691.52204	3.70E-04	2691.52204	0.00139
2690.55769	7.00E-05	2690.55769	3.70E-04	2690.55769	0.00138
2689.59333	7.00E-05	2689.59333	3.70E-04	2689.59333	0.00138
2688.62897	7.00E-05	2688.62897	3.60E-04	2688.62897	0.00139
2687.66461	7.00E-05	2687.66461	3.50E-04	2687.66461	0.00139
2686.70026	8.00E-05	2686.70026	3.40E-04	2686.70026	0.00139
2685.7359	8.00E-05	2685.7359	3.30E-04	2685.7359	0.00139
2684.77154	8.00E-05	2684.77154	3.30E-04	2684.77154	0.0014
2683.80718	8.00E-05	2683.80718	3.30E-04	2683.80718	0.0014
2682.84283	7.00E-05	2682.84283	3.30E-04	2682.84283	0.00139
2681.87847	7.00E-05	2681.87847	3.30E-04	2681.87847	0.00139
2680.91411	7.00E-05	2680.91411	3.30E-04	2680.91411	0.00138
2679.94975	7.00E-05	2679.94975	3.30E-04	2679.94975	0.00138
2678.9854	7.00E-05	2678.9854	3.30E-04	2678.9854	0.00137

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2678.02104	6.00E-05	2678.02104	3.30E-04	2678.02104	0.00137
2677.05668	5.00E-05	2677.05668	3.40E-04	2677.05668	0.00136
2676.09232	5.00E-05	2676.09232	3.40E-04	2676.09232	0.00136
2675.12797	4.00E-05	2675.12797	3.40E-04	2675.12797	0.00135
2674.16361	4.00E-05	2674.16361	3.40E-04	2674.16361	0.00135
2673.19925	4.00E-05	2673.19925	3.30E-04	2673.19925	0.00136
2672.23489	4.00E-05	2672.23489	3.30E-04	2672.23489	0.00136
2671.27053	5.00E-05	2671.27053	3.20E-04	2671.27053	0.00135
2670.30618	6.00E-05	2670.30618	3.20E-04	2670.30618	0.00134
2669.34182	6.00E-05	2669.34182	3.30E-04	2669.34182	0.00133
2668.37746	7.00E-05	2668.37746	3.30E-04	2668.37746	0.00132
2667.4131	7.00E-05	2667.4131	3.30E-04	2667.4131	0.00131
2666.44875	7.00E-05	2666.44875	3.30E-04	2666.44875	0.00131
2665.48439	7.00E-05	2665.48439	3.20E-04	2665.48439	0.00131
2664.52003	7.00E-05	2664.52003	3.10E-04	2664.52003	0.00131
2663.55567	7.00E-05	2663.55567	3.10E-04	2663.55567	0.00131
2662.59132	7.00E-05	2662.59132	3.10E-04	2662.59132	0.00131
2661.62696	7.00E-05	2661.62696	3.20E-04	2661.62696	0.0013
2660.6626	7.00E-05	2660.6626	3.20E-04	2660.6626	0.0013
2659.69824	8.00E-05	2659.69824	3.20E-04	2659.69824	0.00129
2658.73389	9.00E-05	2658.73389	3.20E-04	2658.73389	0.00128
2657.76953	9.00E-05	2657.76953	3.10E-04	2657.76953	0.00127
2656.80517	8.00E-05	2656.80517	3.10E-04	2656.80517	0.00126
2655.84081	8.00E-05	2655.84081	3.10E-04	2655.84081	0.00125
2654.87646	7.00E-05	2654.87646	3.00E-04	2654.87646	0.00126
2653.9121	7.00E-05	2653.9121	3.10E-04	2653.9121	0.00126
2652.94774	7.00E-05	2652.94774	3.10E-04	2652.94774	0.00126
2651.98338	7.00E-05	2651.98338	3.20E-04	2651.98338	0.00126
2651.01903	8.00E-05	2651.01903	3.20E-04	2651.01903	0.00126
2650.05467	8.00E-05	2650.05467	3.20E-04	2650.05467	0.00125
2649.09031	9.00E-05	2649.09031	3.10E-04	2649.09031	0.00124
2648.12595	9.00E-05	2648.12595	3.10E-04	2648.12595	0.00124
2647.1616	9.00E-05	2647.1616	3.00E-04	2647.1616	0.00124
2646.19724	9.00E-05	2646.19724	2.90E-04	2646.19724	0.00124
2645.23288	9.00E-05	2645.23288	2.90E-04	2645.23288	0.00124
2644.26852	9.00E-05	2644.26852	2.80E-04	2644.26852	0.00125
2643.30416	1.00E-04	2643.30416	2.80E-04	2643.30416	0.00125
2642.33981	1.00E-04	2642.33981	2.80E-04	2642.33981	0.00125
2641.37545	9.00E-05	2641.37545	2.90E-04	2641.37545	0.00125

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2640.41109	9.00E-05	2640.41109	3.00E-04	2640.41109	0.00124
2639.44673	9.00E-05	2639.44673	3.00E-04	2639.44673	0.00123
2638.48238	8.00E-05	2638.48238	2.90E-04	2638.48238	0.00122
2637.51802	8.00E-05	2637.51802	2.90E-04	2637.51802	0.00121
2636.55366	8.00E-05	2636.55366	2.80E-04	2636.55366	0.00121
2635.5893	8.00E-05	2635.5893	2.80E-04	2635.5893	0.00121
2634.62495	8.00E-05	2634.62495	2.90E-04	2634.62495	0.00121
2633.66059	7.00E-05	2633.66059	3.00E-04	2633.66059	0.00121
2632.69623	6.00E-05	2632.69623	3.10E-04	2632.69623	0.00121
2631.73187	6.00E-05	2631.73187	3.10E-04	2631.73187	0.00121
2630.76752	6.00E-05	2630.76752	3.00E-04	2630.76752	0.00121
2629.80316	6.00E-05	2629.80316	2.90E-04	2629.80316	0.00121
2628.8388	7.00E-05	2628.8388	2.70E-04	2628.8388	0.0012
2627.87444	6.00E-05	2627.87444	2.70E-04	2627.87444	0.0012
2626.91009	5.00E-05	2626.91009	2.70E-04	2626.91009	0.00119
2625.94573	4.00E-05	2625.94573	2.70E-04	2625.94573	0.00118
2624.98137	3.00E-05	2624.98137	2.80E-04	2624.98137	0.00117
2624.01701	3.00E-05	2624.01701	2.90E-04	2624.01701	0.00117
2623.05266	3.00E-05	2623.05266	2.90E-04	2623.05266	0.00117
2622.0883	4.00E-05	2622.0883	3.00E-04	2622.0883	0.00117
2621.12394	5.00E-05	2621.12394	3.00E-04	2621.12394	0.00117
2620.15958	5.00E-05	2620.15958	3.00E-04	2620.15958	0.00117
2619.19522	5.00E-05	2619.19522	3.00E-04	2619.19522	0.00117
2618.23087	5.00E-05	2618.23087	2.90E-04	2618.23087	0.00117
2617.26651	5.00E-05	2617.26651	2.80E-04	2617.26651	0.00117
2616.30215	5.00E-05	2616.30215	2.80E-04	2616.30215	0.00117
2615.33779	6.00E-05	2615.33779	2.80E-04	2615.33779	0.00117
2614.37344	6.00E-05	2614.37344	2.80E-04	2614.37344	0.00116
2613.40908	7.00E-05	2613.40908	2.80E-04	2613.40908	0.00116
2612.44472	7.00E-05	2612.44472	2.80E-04	2612.44472	0.00115
2611.48036	7.00E-05	2611.48036	2.80E-04	2611.48036	0.00115
2610.51601	7.00E-05	2610.51601	2.90E-04	2610.51601	0.00114
2609.55165	6.00E-05	2609.55165	2.90E-04	2609.55165	0.00114
2608.58729	5.00E-05	2608.58729	2.80E-04	2608.58729	0.00113
2607.62293	4.00E-05	2607.62293	2.70E-04	2607.62293	0.00112
2606.65858	4.00E-05	2606.65858	2.60E-04	2606.65858	0.00112
2605.69422	4.00E-05	2605.69422	2.50E-04	2605.69422	0.00112
2604.72986	4.00E-05	2604.72986	2.50E-04	2604.72986	0.00112
2603.7655	4.00E-05	2603.7655	2.50E-04	2603.7655	0.00113

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2602.80115	4.00E-05	2602.80115	2.60E-04	2602.80115	0.00113
2601.83679	4.00E-05	2601.83679	2.70E-04	2601.83679	0.00112
2600.87243	4.00E-05	2600.87243	2.70E-04	2600.87243	0.00111
2599.90807	5.00E-05	2599.90807	2.60E-04	2599.90807	0.0011
2598.94372	5.00E-05	2598.94372	2.60E-04	2598.94372	0.0011
2597.97936	5.00E-05	2597.97936	2.50E-04	2597.97936	0.00109
2597.015	5.00E-05	2597.015	2.50E-04	2597.015	0.00109
2596.05064	4.00E-05	2596.05064	2.50E-04	2596.05064	0.00109
2595.08628	4.00E-05	2595.08628	2.50E-04	2595.08628	0.00109
2594.12193	4.00E-05	2594.12193	2.60E-04	2594.12193	0.00109
2593.15757	4.00E-05	2593.15757	2.60E-04	2593.15757	0.00109
2592.19321	4.00E-05	2592.19321	2.60E-04	2592.19321	0.00109
2591.22885	3.00E-05	2591.22885	2.60E-04	2591.22885	0.00109
2590.2645	3.00E-05	2590.2645	2.60E-04	2590.2645	0.00109
2589.30014	3.00E-05	2589.30014	2.70E-04	2589.30014	0.00109
2588.33578	3.00E-05	2588.33578	2.70E-04	2588.33578	0.00109
2587.37142	4.00E-05	2587.37142	2.70E-04	2587.37142	0.00109
2586.40707	4.00E-05	2586.40707	2.70E-04	2586.40707	0.00108
2585.44271	4.00E-05	2585.44271	2.60E-04	2585.44271	0.00108
2584.47835	4.00E-05	2584.47835	2.60E-04	2584.47835	0.00107
2583.51399	4.00E-05	2583.51399	2.50E-04	2583.51399	0.00106
2582.54964	5.00E-05	2582.54964	2.50E-04	2582.54964	0.00105
2581.58528	5.00E-05	2581.58528	2.50E-04	2581.58528	0.00104
2580.62092	5.00E-05	2580.62092	2.50E-04	2580.62092	0.00103
2579.65656	5.00E-05	2579.65656	2.60E-04	2579.65656	0.00103
2578.69221	4.00E-05	2578.69221	2.60E-04	2578.69221	0.00103
2577.72785	3.00E-05	2577.72785	2.50E-04	2577.72785	0.00103
2576.76349	3.00E-05	2576.76349	2.40E-04	2576.76349	0.00103
2575.79913	3.00E-05	2575.79913	2.40E-04	2575.79913	0.00103
2574.83478	3.00E-05	2574.83478	2.40E-04	2574.83478	0.00103
2573.87042	4.00E-05	2573.87042	2.40E-04	2573.87042	0.00102
2572.90606	4.00E-05	2572.90606	2.40E-04	2572.90606	0.00102
2571.9417	4.00E-05	2571.9417	2.50E-04	2571.9417	0.00103
2570.97735	4.00E-05	2570.97735	2.40E-04	2570.97735	0.00103
2570.01299	4.00E-05	2570.01299	2.30E-04	2570.01299	0.00103
2569.04863	4.00E-05	2569.04863	2.20E-04	2569.04863	0.00103
2568.08427	4.00E-05	2568.08427	2.20E-04	2568.08427	0.00103
2567.11991	3.00E-05	2567.11991	2.10E-04	2567.11991	0.00103
2566.15556	3.00E-05	2566.15556	2.10E-04	2566.15556	0.00103

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2565.1912	3.00E-05	2565.1912	2.20E-04	2565.1912	0.00103
2564.22684	3.00E-05	2564.22684	2.30E-04	2564.22684	0.00103
2563.26248	4.00E-05	2563.26248	2.40E-04	2563.26248	0.00103
2562.29813	4.00E-05	2562.29813	2.40E-04	2562.29813	0.00103
2561.33377	4.00E-05	2561.33377	2.40E-04	2561.33377	0.00103
2560.36941	4.00E-05	2560.36941	2.40E-04	2560.36941	0.00103
2559.40505	3.00E-05	2559.40505	2.30E-04	2559.40505	0.00103
2558.4407	3.00E-05	2558.4407	2.30E-04	2558.4407	0.00103
2557.47634	2.00E-05	2557.47634	2.20E-04	2557.47634	0.00103
2556.51198	2.00E-05	2556.51198	2.20E-04	2556.51198	0.00102
2555.54762	2.00E-05	2555.54762	2.20E-04	2555.54762	0.00101
2554.58327	3.00E-05	2554.58327	2.20E-04	2554.58327	0.00101
2553.61891	3.00E-05	2553.61891	2.20E-04	2553.61891	1.00E-03
2552.65455	4.00E-05	2552.65455	2.20E-04	2552.65455	9.90E-04
2551.69019	4.00E-05	2551.69019	2.20E-04	2551.69019	9.90E-04
2550.72584	3.00E-05	2550.72584	2.30E-04	2550.72584	1.00E-03
2549.76148	3.00E-05	2549.76148	2.30E-04	2549.76148	1.00E-03
2548.79712	2.00E-05	2548.79712	2.40E-04	2548.79712	1.00E-03
2547.83276	2.00E-05	2547.83276	2.40E-04	2547.83276	9.90E-04
2546.86841	2.00E-05	2546.86841	2.40E-04	2546.86841	9.90E-04
2545.90405	2.00E-05	2545.90405	2.30E-04	2545.90405	9.80E-04
2544.93969	3.00E-05	2544.93969	2.30E-04	2544.93969	9.70E-04
2543.97533	4.00E-05	2543.97533	2.30E-04	2543.97533	9.60E-04
2543.01097	4.00E-05	2543.01097	2.30E-04	2543.01097	9.60E-04
2542.04662	4.00E-05	2542.04662	2.30E-04	2542.04662	9.60E-04
2541.08226	2.00E-05	2541.08226	2.20E-04	2541.08226	9.60E-04
2540.1179	1.00E-05	2540.1179	2.20E-04	2540.1179	9.60E-04
2539.15354	1.00E-05	2539.15354	2.10E-04	2539.15354	9.60E-04
2538.18919	1.00E-05	2538.18919	2.10E-04	2538.18919	9.50E-04
2537.22483	1.00E-05	2537.22483	2.20E-04	2537.22483	9.50E-04
2536.26047	2.00E-05	2536.26047	2.20E-04	2536.26047	9.40E-04
2535.29611	2.00E-05	2535.29611	2.20E-04	2535.29611	9.40E-04
2534.33176	2.00E-05	2534.33176	2.10E-04	2534.33176	9.40E-04
2533.3674	1.00E-05	2533.3674	2.10E-04	2533.3674	9.40E-04
2532.40304	1.00E-05	2532.40304	2.10E-04	2532.40304	9.30E-04
2531.43868	1.00E-05	2531.43868	2.10E-04	2531.43868	9.30E-04
2530.47433	2.00E-05	2530.47433	2.10E-04	2530.47433	9.20E-04
2529.50997	3.00E-05	2529.50997	2.20E-04	2529.50997	9.10E-04
2528.54561	3.00E-05	2528.54561	2.20E-04	2528.54561	9.00E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2527.58125	3.00E-05	2527.58125	2.20E-04	2527.58125	8.90E-04
2526.6169	3.00E-05	2526.6169	2.10E-04	2526.6169	8.90E-04
2525.65254	2.00E-05	2525.65254	2.10E-04	2525.65254	8.90E-04
2524.68818	1.00E-05	2524.68818	2.10E-04	2524.68818	9.00E-04
2523.72382	1.00E-05	2523.72382	2.00E-04	2523.72382	9.10E-04
2522.75947	1.00E-05	2522.75947	2.00E-04	2522.75947	9.20E-04
2521.79511	1.00E-05	2521.79511	2.00E-04	2521.79511	9.20E-04
2520.83075	1.00E-05	2520.83075	2.00E-04	2520.83075	9.20E-04
2519.86639	2.00E-05	2519.86639	2.00E-04	2519.86639	9.20E-04
2518.90204	2.00E-05	2518.90204	2.10E-04	2518.90204	9.10E-04
2517.93768	2.00E-05	2517.93768	2.10E-04	2517.93768	9.10E-04
2516.97332	2.00E-05	2516.97332	2.10E-04	2516.97332	9.10E-04
2516.00896	2.00E-05	2516.00896	2.10E-04	2516.00896	9.10E-04
2515.0446	3.00E-05	2515.0446	2.10E-04	2515.0446	9.20E-04
2514.08025	3.00E-05	2514.08025	2.10E-04	2514.08025	9.20E-04
2513.11589	3.00E-05	2513.11589	2.10E-04	2513.11589	9.10E-04
2512.15153	3.00E-05	2512.15153	2.10E-04	2512.15153	9.00E-04
2511.18717	4.00E-05	2511.18717	2.10E-04	2511.18717	8.90E-04
2510.22282	4.00E-05	2510.22282	2.00E-04	2510.22282	8.80E-04
2509.25846	4.00E-05	2509.25846	2.00E-04	2509.25846	8.80E-04
2508.2941	4.00E-05	2508.2941	2.00E-04	2508.2941	8.70E-04
2507.32974	3.00E-05	2507.32974	2.00E-04	2507.32974	8.70E-04
2506.36539	2.00E-05	2506.36539	2.00E-04	2506.36539	8.70E-04
2505.40103	1.00E-05	2505.40103	1.90E-04	2505.40103	8.60E-04
2504.43667	1.00E-05	2504.43667	1.90E-04	2504.43667	8.60E-04
2503.47231	1.00E-05	2503.47231	1.90E-04	2503.47231	8.60E-04
2502.50796	2.00E-05	2502.50796	2.00E-04	2502.50796	8.60E-04
2501.5436	2.00E-05	2501.5436	2.10E-04	2501.5436	8.60E-04
2500.57924	3.00E-05	2500.57924	2.10E-04	2500.57924	8.50E-04
2499.61488	3.00E-05	2499.61488	2.00E-04	2499.61488	8.50E-04
2498.65053	3.00E-05	2498.65053	1.90E-04	2498.65053	8.50E-04
2497.68617	2.00E-05	2497.68617	1.80E-04	2497.68617	8.40E-04
2496.72181	1.00E-05	2496.72181	1.80E-04	2496.72181	8.40E-04
2495.75745	0	2495.75745	1.80E-04	2495.75745	8.40E-04
2494.7931	0	2494.7931	1.90E-04	2494.7931	8.30E-04
2493.82874	0	2493.82874	2.00E-04	2493.82874	8.20E-04
2492.86438	0	2492.86438	2.00E-04	2492.86438	8.20E-04
2491.90002	1.00E-05	2491.90002	2.10E-04	2491.90002	8.10E-04
2490.93566	1.00E-05	2490.93566	2.00E-04	2490.93566	8.10E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2489.97131	1.00E-05	2489.97131	2.00E-04	2489.97131	8.20E-04
2489.00695	2.00E-05	2489.00695	1.90E-04	2489.00695	8.20E-04
2488.04259	2.00E-05	2488.04259	1.90E-04	2488.04259	8.10E-04
2487.07823	2.00E-05	2487.07823	1.80E-04	2487.07823	8.00E-04
2486.11388	1.00E-05	2486.11388	1.80E-04	2486.11388	8.00E-04
2485.14952	1.00E-05	2485.14952	1.70E-04	2485.14952	8.00E-04
2484.18516	1.00E-05	2484.18516	1.70E-04	2484.18516	8.00E-04
2483.2208	1.00E-05	2483.2208	1.70E-04	2483.2208	8.00E-04
2482.25645	1.00E-05	2482.25645	1.70E-04	2482.25645	8.00E-04
2481.29209	2.00E-05	2481.29209	1.80E-04	2481.29209	7.90E-04
2480.32773	2.00E-05	2480.32773	1.90E-04	2480.32773	7.80E-04
2479.36337	2.00E-05	2479.36337	2.00E-04	2479.36337	7.60E-04
2478.39902	2.00E-05	2478.39902	2.10E-04	2478.39902	7.60E-04
2477.43466	3.00E-05	2477.43466	2.10E-04	2477.43466	7.70E-04
2476.4703	3.00E-05	2476.4703	2.00E-04	2476.4703	7.80E-04
2475.50594	3.00E-05	2475.50594	1.80E-04	2475.50594	7.80E-04
2474.54159	3.00E-05	2474.54159	1.70E-04	2474.54159	7.80E-04
2473.57723	2.00E-05	2473.57723	1.60E-04	2473.57723	7.70E-04
2472.61287	2.00E-05	2472.61287	1.60E-04	2472.61287	7.70E-04
2471.64851	2.00E-05	2471.64851	1.70E-04	2471.64851	7.60E-04
2470.68416	2.00E-05	2470.68416	1.80E-04	2470.68416	7.60E-04
2469.7198	2.00E-05	2469.7198	1.90E-04	2469.7198	7.70E-04
2468.75544	3.00E-05	2468.75544	1.90E-04	2468.75544	7.70E-04
2467.79108	3.00E-05	2467.79108	1.90E-04	2467.79108	7.70E-04
2466.82672	4.00E-05	2466.82672	1.80E-04	2466.82672	7.70E-04
2465.86237	4.00E-05	2465.86237	1.80E-04	2465.86237	7.70E-04
2464.89801	4.00E-05	2464.89801	1.80E-04	2464.89801	7.70E-04
2463.93365	4.00E-05	2463.93365	1.80E-04	2463.93365	7.70E-04
2462.96929	3.00E-05	2462.96929	1.80E-04	2462.96929	7.70E-04
2462.00494	2.00E-05	2462.00494	1.70E-04	2462.00494	7.70E-04
2461.04058	1.00E-05	2461.04058	1.60E-04	2461.04058	7.70E-04
2460.07622	1.00E-05	2460.07622	1.60E-04	2460.07622	7.70E-04
2459.11186	2.00E-05	2459.11186	1.60E-04	2459.11186	7.60E-04
2458.14751	2.00E-05	2458.14751	1.50E-04	2458.14751	7.50E-04
2457.18315	3.00E-05	2457.18315	1.50E-04	2457.18315	7.40E-04
2456.21879	3.00E-05	2456.21879	1.50E-04	2456.21879	7.40E-04
2455.25443	3.00E-05	2455.25443	1.50E-04	2455.25443	7.50E-04
2454.29008	3.00E-05	2454.29008	1.50E-04	2454.29008	7.50E-04
2453.32572	2.00E-05	2453.32572	1.50E-04	2453.32572	7.50E-04



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2452.36136	2.00E-05	2452.36136	1.60E-04	2452.36136	7.40E-04
2451.397	1.00E-05	2451.397	1.70E-04	2451.397	7.20E-04
2450.43265	1.00E-05	2450.43265	1.80E-04	2450.43265	7.20E-04
2449.46829	1.00E-05	2449.46829	1.90E-04	2449.46829	7.20E-04
2448.50393	2.00E-05	2448.50393	1.90E-04	2448.50393	7.20E-04
2447.53957	2.00E-05	2447.53957	1.90E-04	2447.53957	7.30E-04
2446.57522	2.00E-05	2446.57522	1.90E-04	2446.57522	7.30E-04
2445.61086	2.00E-05	2445.61086	1.90E-04	2445.61086	7.30E-04
2444.6465	2.00E-05	2444.6465	1.90E-04	2444.6465	7.30E-04
2443.68214	1.00E-05	2443.68214	1.90E-04	2443.68214	7.20E-04
2442.71779	1.00E-05	2442.71779	1.80E-04	2442.71779	7.20E-04
2441.75343	2.00E-05	2441.75343	1.80E-04	2441.75343	7.10E-04
2440.78907	3.00E-05	2440.78907	1.70E-04	2440.78907	7.10E-04
2439.82471	3.00E-05	2439.82471	1.80E-04	2439.82471	7.00E-04
2438.86035	3.00E-05	2438.86035	1.90E-04	2438.86035	7.00E-04
2437.896	2.00E-05	2437.896	1.90E-04	2437.896	6.90E-04
2436.93164	1.00E-05	2436.93164	2.00E-04	2436.93164	6.90E-04
2435.96728	1.00E-05	2435.96728	1.90E-04	2435.96728	6.90E-04
2435.00292	0	2435.00292	1.90E-04	2435.00292	6.90E-04
2434.03857	0	2434.03857	1.80E-04	2434.03857	6.90E-04
2433.07421	1.00E-05	2433.07421	1.80E-04	2433.07421	7.00E-04
2432.10985	1.00E-05	2432.10985	1.80E-04	2432.10985	7.00E-04
2431.14549	1.00E-05	2431.14549	1.80E-04	2431.14549	7.00E-04
2430.18114	2.00E-05	2430.18114	1.80E-04	2430.18114	7.00E-04
2429.21678	3.00E-05	2429.21678	1.80E-04	2429.21678	7.00E-04
2428.25242	3.00E-05	2428.25242	1.90E-04	2428.25242	7.00E-04
2427.28806	3.00E-05	2427.28806	1.90E-04	2427.28806	6.90E-04
2426.32371	2.00E-05	2426.32371	1.90E-04	2426.32371	6.90E-04
2425.35935	2.00E-05	2425.35935	1.90E-04	2425.35935	6.80E-04
2424.39499	2.00E-05	2424.39499	1.90E-04	2424.39499	6.90E-04
2423.43063	2.00E-05	2423.43063	1.80E-04	2423.43063	6.90E-04
2422.46628	2.00E-05	2422.46628	1.80E-04	2422.46628	6.90E-04
2421.50192	2.00E-05	2421.50192	1.70E-04	2421.50192	6.90E-04
2420.53756	3.00E-05	2420.53756	1.70E-04	2420.53756	6.90E-04
2419.5732	3.00E-05	2419.5732	1.60E-04	2419.5732	6.80E-04
2418.60885	4.00E-05	2418.60885	1.60E-04	2418.60885	6.80E-04
2417.64449	4.00E-05	2417.64449	1.70E-04	2417.64449	6.80E-04
2416.68013	5.00E-05	2416.68013	1.70E-04	2416.68013	6.80E-04
2415.71577	5.00E-05	2415.71577	1.80E-04	2415.71577	6.90E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2414.75141	5.00E-05	2414.75141	1.80E-04	2414.75141	6.90E-04
2413.78706	5.00E-05	2413.78706	1.90E-04	2413.78706	6.90E-04
2412.8227	5.00E-05	2412.8227	1.80E-04	2412.8227	6.90E-04
2411.85834	5.00E-05	2411.85834	1.80E-04	2411.85834	6.90E-04
2410.89398	4.00E-05	2410.89398	1.70E-04	2410.89398	6.80E-04
2409.92963	4.00E-05	2409.92963	1.70E-04	2409.92963	6.80E-04
2408.96527	3.00E-05	2408.96527	1.70E-04	2408.96527	6.80E-04
2408.00091	3.00E-05	2408.00091	1.70E-04	2408.00091	6.70E-04
2407.03655	3.00E-05	2407.03655	1.70E-04	2407.03655	6.60E-04
2406.0722	3.00E-05	2406.0722	1.70E-04	2406.0722	6.60E-04
2405.10784	3.00E-05	2405.10784	1.80E-04	2405.10784	6.60E-04
2404.14348	3.00E-05	2404.14348	1.80E-04	2404.14348	6.70E-04
2403.17912	3.00E-05	2403.17912	1.70E-04	2403.17912	6.80E-04
2402.21477	3.00E-05	2402.21477	1.70E-04	2402.21477	6.90E-04
2401.25041	3.00E-05	2401.25041	1.70E-04	2401.25041	6.90E-04
2400.28605	3.00E-05	2400.28605	1.70E-04	2400.28605	6.90E-04
2399.32169	3.00E-05	2399.32169	1.70E-04	2399.32169	6.90E-04
2398.35734	3.00E-05	2398.35734	1.70E-04	2398.35734	6.90E-04
2397.39298	3.00E-05	2397.39298	1.70E-04	2397.39298	6.90E-04
2396.42862	3.00E-05	2396.42862	1.70E-04	2396.42862	6.90E-04
2395.46426	3.00E-05	2395.46426	1.60E-04	2395.46426	6.80E-04
2394.49991	3.00E-05	2394.49991	1.60E-04	2394.49991	6.70E-04
2393.53555	4.00E-05	2393.53555	1.60E-04	2393.53555	6.70E-04
2392.57119	5.00E-05	2392.57119	1.60E-04	2392.57119	6.70E-04
2391.60683	5.00E-05	2391.60683	1.60E-04	2391.60683	6.70E-04
2390.64248	6.00E-05	2390.64248	1.60E-04	2390.64248	6.70E-04
2389.67812	6.00E-05	2389.67812	1.60E-04	2389.67812	6.60E-04
2388.71376	6.00E-05	2388.71376	1.60E-04	2388.71376	6.60E-04
2387.7494	5.00E-05	2387.7494	1.60E-04	2387.7494	6.50E-04
2386.78504	5.00E-05	2386.78504	1.60E-04	2386.78504	6.40E-04
2385.82069	6.00E-05	2385.82069	1.60E-04	2385.82069	6.40E-04
2384.85633	7.00E-05	2384.85633	1.70E-04	2384.85633	6.20E-04
2383.89197	8.00E-05	2383.89197	1.70E-04	2383.89197	6.10E-04
2382.92761	9.00E-05	2382.92761	1.80E-04	2382.92761	5.90E-04
2381.96326	1.10E-04	2381.96326	2.00E-04	2381.96326	5.70E-04
2380.9989	1.20E-04	2380.9989	2.10E-04	2380.9989	5.50E-04
2380.03454	1.30E-04	2380.03454	2.20E-04	2380.03454	5.40E-04
2379.07018	1.60E-04	2379.07018	2.40E-04	2379.07018	5.40E-04
2378.10583	1.90E-04	2378.10583	2.60E-04	2378.10583	5.30E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2377.14147	2.30E-04	2377.14147	2.90E-04	2377.14147	5.20E-04
2376.17711	2.60E-04	2376.17711	3.30E-04	2376.17711	4.90E-04
2375.21275	3.00E-04	2375.21275	3.70E-04	2375.21275	4.70E-04
2374.2484	3.40E-04	2374.2484	4.00E-04	2374.2484	4.50E-04
2373.28404	3.80E-04	2373.28404	4.30E-04	2373.28404	4.30E-04
2372.31968	4.20E-04	2372.31968	4.70E-04	2372.31968	4.00E-04
2371.35532	4.70E-04	2371.35532	5.10E-04	2371.35532	3.60E-04
2370.39097	5.20E-04	2370.39097	5.50E-04	2370.39097	3.00E-04
2369.42661	5.40E-04	2369.42661	6.00E-04	2369.42661	2.30E-04
2368.46225	5.60E-04	2368.46225	6.60E-04	2368.46225	1.60E-04
2367.49789	5.90E-04	2367.49789	7.10E-04	2367.49789	1.10E-04
2366.53354	6.30E-04	2366.53354	7.30E-04	2366.53354	1.00E-04
2365.56918	6.90E-04	2365.56918	7.60E-04	2365.56918	1.00E-04
2364.60482	7.30E-04	2364.60482	7.90E-04	2364.60482	1.20E-04
2363.64046	7.60E-04	2363.64046	8.00E-04	2363.64046	1.30E-04
2362.6761	7.60E-04	2362.6761	8.10E-04	2362.6761	1.30E-04
2361.71175	7.40E-04	2361.71175	8.30E-04	2361.71175	1.20E-04
2360.74739	7.10E-04	2360.74739	8.60E-04	2360.74739	1.20E-04
2359.78303	6.80E-04	2359.78303	8.90E-04	2359.78303	1.30E-04
2358.81867	6.40E-04	2358.81867	9.20E-04	2358.81867	1.60E-04
2357.85432	5.80E-04	2357.85432	9.50E-04	2357.85432	1.80E-04
2356.88996	5.00E-04	2356.88996	9.50E-04	2356.88996	1.90E-04
2355.9256	4.10E-04	2355.9256	9.20E-04	2355.9256	2.00E-04
2354.96124	3.40E-04	2354.96124	8.70E-04	2354.96124	2.20E-04
2353.99689	3.00E-04	2353.99689	8.10E-04	2353.99689	2.30E-04
2353.03253	2.70E-04	2353.03253	7.60E-04	2353.03253	2.60E-04
2352.06817	2.50E-04	2352.06817	7.10E-04	2352.06817	3.10E-04
2351.10381	2.50E-04	2351.10381	6.70E-04	2351.10381	3.70E-04
2350.13946	2.50E-04	2350.13946	6.00E-04	2350.13946	4.10E-04
2349.1751	2.70E-04	2349.1751	5.40E-04	2349.1751	4.30E-04
2348.21074	3.00E-04	2348.21074	4.90E-04	2348.21074	4.10E-04
2347.24638	3.40E-04	2347.24638	4.80E-04	2347.24638	3.60E-04
2346.28203	3.60E-04	2346.28203	5.10E-04	2346.28203	2.90E-04
2345.31767	3.60E-04	2345.31767	5.70E-04	2345.31767	2.20E-04
2344.35331	3.80E-04	2344.35331	6.40E-04	2344.35331	1.80E-04
2343.38895	4.00E-04	2343.38895	6.90E-04	2343.38895	1.80E-04
2342.4246	4.30E-04	2342.4246	7.10E-04	2342.4246	1.80E-04
2341.46024	4.60E-04	2341.46024	6.90E-04	2341.46024	1.90E-04
2340.49588	4.90E-04	2340.49588	6.60E-04	2340.49588	2.10E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2339.53152	5.20E-04	2339.53152	6.30E-04	2339.53152	2.30E-04
2338.56716	5.40E-04	2338.56716	6.30E-04	2338.56716	2.40E-04
2337.60281	5.40E-04	2337.60281	6.20E-04	2337.60281	2.40E-04
2336.63845	5.30E-04	2336.63845	6.20E-04	2336.63845	2.60E-04
2335.67409	5.10E-04	2335.67409	6.10E-04	2335.67409	2.80E-04
2334.70973	4.90E-04	2334.70973	6.00E-04	2334.70973	3.00E-04
2333.74538	4.60E-04	2333.74538	5.80E-04	2333.74538	2.90E-04
2332.78102	4.50E-04	2332.78102	5.70E-04	2332.78102	2.90E-04
2331.81666	4.40E-04	2331.81666	5.80E-04	2331.81666	2.90E-04
2330.8523	4.30E-04	2330.8523	5.90E-04	2330.8523	2.90E-04
2329.88795	4.10E-04	2329.88795	6.00E-04	2329.88795	3.10E-04
2328.92359	4.00E-04	2328.92359	6.00E-04	2328.92359	3.40E-04
2327.95923	3.80E-04	2327.95923	5.80E-04	2327.95923	3.70E-04
2326.99487	3.80E-04	2326.99487	5.50E-04	2326.99487	3.80E-04
2326.03052	3.80E-04	2326.03052	5.30E-04	2326.03052	3.70E-04
2325.06616	3.70E-04	2325.06616	5.30E-04	2325.06616	3.60E-04
2324.1018	3.60E-04	2324.1018	5.40E-04	2324.1018	3.50E-04
2323.13744	3.30E-04	2323.13744	5.50E-04	2323.13744	3.50E-04
2322.17309	3.00E-04	2322.17309	5.50E-04	2322.17309	3.70E-04
2321.20873	2.70E-04	2321.20873	5.40E-04	2321.20873	4.00E-04
2320.24437	2.40E-04	2320.24437	5.10E-04	2320.24437	4.10E-04
2319.28001	2.20E-04	2319.28001	4.90E-04	2319.28001	4.20E-04
2318.31566	2.10E-04	2318.31566	4.50E-04	2318.31566	4.40E-04
2317.3513	2.00E-04	2317.3513	4.30E-04	2317.3513	4.50E-04
2316.38694	2.00E-04	2316.38694	4.00E-04	2316.38694	4.60E-04
2315.42258	1.90E-04	2315.42258	3.80E-04	2315.42258	4.70E-04
2314.45823	1.90E-04	2314.45823	3.60E-04	2314.45823	4.70E-04
2313.49387	1.90E-04	2313.49387	3.50E-04	2313.49387	4.70E-04
2312.52951	1.80E-04	2312.52951	3.40E-04	2312.52951	4.70E-04
2311.56515	1.80E-04	2311.56515	3.40E-04	2311.56515	4.60E-04
2310.60079	1.60E-04	2310.60079	3.40E-04	2310.60079	4.50E-04
2309.63644	1.40E-04	2309.63644	3.30E-04	2309.63644	4.60E-04
2308.67208	1.20E-04	2308.67208	3.10E-04	2308.67208	4.60E-04
2307.70772	1.10E-04	2307.70772	3.00E-04	2307.70772	4.70E-04
2306.74336	1.00E-04	2306.74336	2.80E-04	2306.74336	4.80E-04
2305.77901	9.00E-05	2305.77901	2.70E-04	2305.77901	4.90E-04
2304.81465	9.00E-05	2304.81465	2.60E-04	2304.81465	5.00E-04
2303.85029	9.00E-05	2303.85029	2.50E-04	2303.85029	5.00E-04
2302.88593	9.00E-05	2302.88593	2.50E-04	2302.88593	4.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2301.92158	8.00E-05	2301.92158	2.30E-04	2301.92158	4.90E-04
2300.95722	8.00E-05	2300.95722	2.20E-04	2300.95722	5.00E-04
2299.99286	8.00E-05	2299.99286	2.10E-04	2299.99286	5.00E-04
2299.0285	8.00E-05	2299.0285	2.00E-04	2299.0285	5.10E-04
2298.06415	8.00E-05	2298.06415	2.00E-04	2298.06415	5.20E-04
2297.09979	8.00E-05	2297.09979	1.90E-04	2297.09979	5.30E-04
2296.13543	7.00E-05	2296.13543	1.80E-04	2296.13543	5.20E-04
2295.17107	7.00E-05	2295.17107	1.80E-04	2295.17107	5.20E-04
2294.20672	7.00E-05	2294.20672	1.70E-04	2294.20672	5.10E-04
2293.24236	7.00E-05	2293.24236	1.70E-04	2293.24236	5.10E-04
2292.278	7.00E-05	2292.278	1.70E-04	2292.278	5.10E-04
2291.31364	6.00E-05	2291.31364	1.70E-04	2291.31364	5.20E-04
2290.34929	6.00E-05	2290.34929	1.60E-04	2290.34929	5.30E-04
2289.38493	5.00E-05	2289.38493	1.50E-04	2289.38493	5.40E-04
2288.42057	4.00E-05	2288.42057	1.50E-04	2288.42057	5.40E-04
2287.45621	4.00E-05	2287.45621	1.50E-04	2287.45621	5.50E-04
2286.49185	4.00E-05	2286.49185	1.50E-04	2286.49185	5.50E-04
2285.5275	5.00E-05	2285.5275	1.50E-04	2285.5275	5.50E-04
2284.56314	5.00E-05	2284.56314	1.50E-04	2284.56314	5.40E-04
2283.59878	5.00E-05	2283.59878	1.50E-04	2283.59878	5.30E-04
2282.63442	5.00E-05	2282.63442	1.40E-04	2282.63442	5.30E-04
2281.67007	5.00E-05	2281.67007	1.30E-04	2281.67007	5.30E-04
2280.70571	4.00E-05	2280.70571	1.30E-04	2280.70571	5.30E-04
2279.74135	4.00E-05	2279.74135	1.30E-04	2279.74135	5.30E-04
2278.77699	4.00E-05	2278.77699	1.40E-04	2278.77699	5.30E-04
2277.81264	4.00E-05	2277.81264	1.40E-04	2277.81264	5.30E-04
2276.84828	4.00E-05	2276.84828	1.40E-04	2276.84828	5.20E-04
2275.88392	4.00E-05	2275.88392	1.40E-04	2275.88392	5.20E-04
2274.91956	3.00E-05	2274.91956	1.40E-04	2274.91956	5.20E-04
2273.95521	2.00E-05	2273.95521	1.40E-04	2273.95521	5.20E-04
2272.99085	2.00E-05	2272.99085	1.40E-04	2272.99085	5.30E-04
2272.02649	2.00E-05	2272.02649	1.50E-04	2272.02649	5.30E-04
2271.06213	2.00E-05	2271.06213	1.50E-04	2271.06213	5.40E-04
2270.09778	3.00E-05	2270.09778	1.50E-04	2270.09778	5.40E-04
2269.13342	4.00E-05	2269.13342	1.40E-04	2269.13342	5.40E-04
2268.16906	4.00E-05	2268.16906	1.40E-04	2268.16906	5.40E-04
2267.2047	4.00E-05	2267.2047	1.40E-04	2267.2047	5.30E-04
2266.24035	3.00E-05	2266.24035	1.40E-04	2266.24035	5.30E-04
2265.27599	3.00E-05	2265.27599	1.40E-04	2265.27599	5.40E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2264.31163	4.00E-05	2264.31163	1.40E-04	2264.31163	5.40E-04
2263.34727	4.00E-05	2263.34727	1.40E-04	2263.34727	5.40E-04
2262.38292	4.00E-05	2262.38292	1.40E-04	2262.38292	5.30E-04
2261.41856	5.00E-05	2261.41856	1.40E-04	2261.41856	5.30E-04
2260.4542	5.00E-05	2260.4542	1.40E-04	2260.4542	5.30E-04
2259.48984	5.00E-05	2259.48984	1.40E-04	2259.48984	5.20E-04
2258.52548	4.00E-05	2258.52548	1.40E-04	2258.52548	5.10E-04
2257.56113	4.00E-05	2257.56113	1.40E-04	2257.56113	5.20E-04
2256.59677	4.00E-05	2256.59677	1.40E-04	2256.59677	5.20E-04
2255.63241	4.00E-05	2255.63241	1.50E-04	2255.63241	5.20E-04
2254.66805	5.00E-05	2254.66805	1.50E-04	2254.66805	5.20E-04
2253.7037	5.00E-05	2253.7037	1.50E-04	2253.7037	5.20E-04
2252.73934	6.00E-05	2252.73934	1.50E-04	2252.73934	5.20E-04
2251.77498	6.00E-05	2251.77498	1.50E-04	2251.77498	5.20E-04
2250.81062	6.00E-05	2250.81062	1.40E-04	2250.81062	5.20E-04
2249.84627	6.00E-05	2249.84627	1.40E-04	2249.84627	5.20E-04
2248.88191	6.00E-05	2248.88191	1.30E-04	2248.88191	5.20E-04
2247.91755	6.00E-05	2247.91755	1.30E-04	2247.91755	5.20E-04
2246.95319	6.00E-05	2246.95319	1.20E-04	2246.95319	5.20E-04
2245.98884	5.00E-05	2245.98884	1.20E-04	2245.98884	5.20E-04
2245.02448	4.00E-05	2245.02448	1.10E-04	2245.02448	5.10E-04
2244.06012	4.00E-05	2244.06012	1.10E-04	2244.06012	5.10E-04
2243.09576	4.00E-05	2243.09576	1.10E-04	2243.09576	5.10E-04
2242.13141	5.00E-05	2242.13141	1.10E-04	2242.13141	5.10E-04
2241.16705	5.00E-05	2241.16705	1.10E-04	2241.16705	5.10E-04
2240.20269	4.00E-05	2240.20269	1.10E-04	2240.20269	5.10E-04
2239.23833	3.00E-05	2239.23833	1.00E-04	2239.23833	5.20E-04
2238.27398	3.00E-05	2238.27398	1.10E-04	2238.27398	5.30E-04
2237.30962	3.00E-05	2237.30962	1.10E-04	2237.30962	5.30E-04
2236.34526	4.00E-05	2236.34526	1.10E-04	2236.34526	5.30E-04
2235.3809	4.00E-05	2235.3809	1.20E-04	2235.3809	5.30E-04
2234.41654	4.00E-05	2234.41654	1.20E-04	2234.41654	5.20E-04
2233.45219	4.00E-05	2233.45219	1.20E-04	2233.45219	5.10E-04
2232.48783	4.00E-05	2232.48783	1.20E-04	2232.48783	5.00E-04
2231.52347	4.00E-05	2231.52347	1.20E-04	2231.52347	5.00E-04
2230.55911	4.00E-05	2230.55911	1.10E-04	2230.55911	5.00E-04
2229.59476	5.00E-05	2229.59476	1.00E-04	2229.59476	5.10E-04
2228.6304	5.00E-05	2228.6304	1.00E-04	2228.6304	5.20E-04
2227.66604	5.00E-05	2227.66604	1.00E-04	2227.66604	5.20E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2226.70168	5.00E-05	2226.70168	1.10E-04	2226.70168	5.20E-04
2225.73733	5.00E-05	2225.73733	1.20E-04	2225.73733	5.10E-04
2224.77297	5.00E-05	2224.77297	1.20E-04	2224.77297	5.10E-04
2223.80861	4.00E-05	2223.80861	1.20E-04	2223.80861	5.00E-04
2222.84425	4.00E-05	2222.84425	1.00E-04	2222.84425	5.00E-04
2221.8799	4.00E-05	2221.8799	1.00E-04	2221.8799	5.10E-04
2220.91554	4.00E-05	2220.91554	1.00E-04	2220.91554	5.10E-04
2219.95118	5.00E-05	2219.95118	1.00E-04	2219.95118	5.10E-04
2218.98682	5.00E-05	2218.98682	1.10E-04	2218.98682	5.00E-04
2218.02247	6.00E-05	2218.02247	1.20E-04	2218.02247	5.00E-04
2217.05811	6.00E-05	2217.05811	1.20E-04	2217.05811	5.00E-04
2216.09375	5.00E-05	2216.09375	1.20E-04	2216.09375	5.10E-04
2215.12939	4.00E-05	2215.12939	1.20E-04	2215.12939	5.10E-04
2214.16504	4.00E-05	2214.16504	1.20E-04	2214.16504	5.10E-04
2213.20068	4.00E-05	2213.20068	1.20E-04	2213.20068	5.20E-04
2212.23632	4.00E-05	2212.23632	1.10E-04	2212.23632	5.10E-04
2211.27196	4.00E-05	2211.27196	1.10E-04	2211.27196	5.10E-04
2210.30761	3.00E-05	2210.30761	1.10E-04	2210.30761	5.10E-04
2209.34325	4.00E-05	2209.34325	1.10E-04	2209.34325	5.10E-04
2208.37889	4.00E-05	2208.37889	1.10E-04	2208.37889	5.10E-04
2207.41453	4.00E-05	2207.41453	1.20E-04	2207.41453	5.10E-04
2206.45017	5.00E-05	2206.45017	1.20E-04	2206.45017	5.20E-04
2205.48582	5.00E-05	2205.48582	1.20E-04	2205.48582	5.20E-04
2204.52146	5.00E-05	2204.52146	1.20E-04	2204.52146	5.20E-04
2203.5571	5.00E-05	2203.5571	1.20E-04	2203.5571	5.20E-04
2202.59274	6.00E-05	2202.59274	1.10E-04	2202.59274	5.10E-04
2201.62839	6.00E-05	2201.62839	1.10E-04	2201.62839	5.00E-04
2200.66403	6.00E-05	2200.66403	1.20E-04	2200.66403	5.00E-04
2199.69967	6.00E-05	2199.69967	1.20E-04	2199.69967	5.00E-04
2198.73531	5.00E-05	2198.73531	1.20E-04	2198.73531	5.00E-04
2197.77096	4.00E-05	2197.77096	1.20E-04	2197.77096	5.00E-04
2196.8066	3.00E-05	2196.8066	1.20E-04	2196.8066	5.00E-04
2195.84224	3.00E-05	2195.84224	1.20E-04	2195.84224	5.00E-04
2194.87788	3.00E-05	2194.87788	1.20E-04	2194.87788	5.00E-04
2193.91353	4.00E-05	2193.91353	1.20E-04	2193.91353	5.10E-04
2192.94917	4.00E-05	2192.94917	1.20E-04	2192.94917	5.10E-04
2191.98481	4.00E-05	2191.98481	1.10E-04	2191.98481	5.20E-04
2191.02045	3.00E-05	2191.02045	1.10E-04	2191.02045	5.20E-04
2190.0561	3.00E-05	2190.0561	1.10E-04	2190.0561	5.30E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2189.09174	3.00E-05	2189.09174	1.20E-04	2189.09174	5.30E-04
2188.12738	3.00E-05	2188.12738	1.20E-04	2188.12738	5.30E-04
2187.16302	4.00E-05	2187.16302	1.30E-04	2187.16302	5.30E-04
2186.19867	4.00E-05	2186.19867	1.30E-04	2186.19867	5.30E-04
2185.23431	4.00E-05	2185.23431	1.20E-04	2185.23431	5.30E-04
2184.26995	5.00E-05	2184.26995	1.20E-04	2184.26995	5.20E-04
2183.30559	6.00E-05	2183.30559	1.10E-04	2183.30559	5.20E-04
2182.34123	6.00E-05	2182.34123	1.10E-04	2182.34123	5.20E-04
2181.37688	7.00E-05	2181.37688	1.10E-04	2181.37688	5.30E-04
2180.41252	7.00E-05	2180.41252	1.10E-04	2180.41252	5.30E-04
2179.44816	6.00E-05	2179.44816	1.10E-04	2179.44816	5.30E-04
2178.4838	6.00E-05	2178.4838	1.10E-04	2178.4838	5.30E-04
2177.51945	5.00E-05	2177.51945	1.10E-04	2177.51945	5.30E-04
2176.55509	4.00E-05	2176.55509	1.10E-04	2176.55509	5.30E-04
2175.59073	4.00E-05	2175.59073	1.10E-04	2175.59073	5.30E-04
2174.62637	4.00E-05	2174.62637	1.20E-04	2174.62637	5.20E-04
2173.66202	5.00E-05	2173.66202	1.20E-04	2173.66202	5.10E-04
2172.69766	5.00E-05	2172.69766	1.30E-04	2172.69766	5.10E-04
2171.7333	5.00E-05	2171.7333	1.30E-04	2171.7333	5.00E-04
2170.76894	5.00E-05	2170.76894	1.30E-04	2170.76894	5.00E-04
2169.80459	5.00E-05	2169.80459	1.30E-04	2169.80459	5.00E-04
2168.84023	6.00E-05	2168.84023	1.20E-04	2168.84023	5.10E-04
2167.87587	5.00E-05	2167.87587	1.20E-04	2167.87587	5.10E-04
2166.91151	5.00E-05	2166.91151	1.10E-04	2166.91151	5.20E-04
2165.94716	4.00E-05	2165.94716	1.10E-04	2165.94716	5.20E-04
2164.9828	4.00E-05	2164.9828	1.10E-04	2164.9828	5.30E-04
2164.01844	4.00E-05	2164.01844	1.20E-04	2164.01844	5.30E-04
2163.05408	4.00E-05	2163.05408	1.20E-04	2163.05408	5.30E-04
2162.08973	4.00E-05	2162.08973	1.30E-04	2162.08973	5.20E-04
2161.12537	4.00E-05	2161.12537	1.30E-04	2161.12537	5.10E-04
2160.16101	4.00E-05	2160.16101	1.20E-04	2160.16101	5.00E-04
2159.19665	5.00E-05	2159.19665	1.20E-04	2159.19665	5.00E-04
2158.23229	5.00E-05	2158.23229	1.20E-04	2158.23229	5.10E-04
2157.26794	5.00E-05	2157.26794	1.20E-04	2157.26794	5.10E-04
2156.30358	5.00E-05	2156.30358	1.20E-04	2156.30358	5.00E-04
2155.33922	5.00E-05	2155.33922	1.30E-04	2155.33922	5.00E-04
2154.37486	6.00E-05	2154.37486	1.30E-04	2154.37486	4.90E-04
2153.41051	6.00E-05	2153.41051	1.30E-04	2153.41051	5.00E-04
2152.44615	6.00E-05	2152.44615	1.30E-04	2152.44615	5.00E-04



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2151.48179	6.00E-05	2151.48179	1.30E-04	2151.48179	5.10E-04
2150.51743	6.00E-05	2150.51743	1.30E-04	2150.51743	5.20E-04
2149.55308	6.00E-05	2149.55308	1.30E-04	2149.55308	5.20E-04
2148.58872	7.00E-05	2148.58872	1.20E-04	2148.58872	5.10E-04
2147.62436	7.00E-05	2147.62436	1.20E-04	2147.62436	5.10E-04
2146.66	7.00E-05	2146.66	1.20E-04	2146.66	5.00E-04
2145.69565	7.00E-05	2145.69565	1.10E-04	2145.69565	5.00E-04
2144.73129	6.00E-05	2144.73129	1.10E-04	2144.73129	5.00E-04
2143.76693	6.00E-05	2143.76693	1.10E-04	2143.76693	5.10E-04
2142.80257	5.00E-05	2142.80257	1.20E-04	2142.80257	5.10E-04
2141.83822	5.00E-05	2141.83822	1.20E-04	2141.83822	5.10E-04
2140.87386	5.00E-05	2140.87386	1.30E-04	2140.87386	5.00E-04
2139.9095	5.00E-05	2139.9095	1.30E-04	2139.9095	5.00E-04
2138.94514	6.00E-05	2138.94514	1.30E-04	2138.94514	5.00E-04
2137.98079	6.00E-05	2137.98079	1.30E-04	2137.98079	4.90E-04
2137.01643	6.00E-05	2137.01643	1.30E-04	2137.01643	4.90E-04
2136.05207	5.00E-05	2136.05207	1.20E-04	2136.05207	4.80E-04
2135.08771	4.00E-05	2135.08771	1.20E-04	2135.08771	4.80E-04
2134.12336	2.00E-05	2134.12336	1.20E-04	2134.12336	4.80E-04
2133.159	2.00E-05	2133.159	1.20E-04	2133.159	4.80E-04
2132.19464	2.00E-05	2132.19464	1.20E-04	2132.19464	4.80E-04
2131.23028	2.00E-05	2131.23028	1.20E-04	2131.23028	4.80E-04
2130.26592	3.00E-05	2130.26592	1.20E-04	2130.26592	4.90E-04
2129.30157	3.00E-05	2129.30157	1.30E-04	2129.30157	4.90E-04
2128.33721	4.00E-05	2128.33721	1.30E-04	2128.33721	4.80E-04
2127.37285	4.00E-05	2127.37285	1.30E-04	2127.37285	4.80E-04
2126.40849	4.00E-05	2126.40849	1.40E-04	2126.40849	4.70E-04
2125.44414	4.00E-05	2125.44414	1.40E-04	2125.44414	4.70E-04
2124.47978	4.00E-05	2124.47978	1.30E-04	2124.47978	4.70E-04
2123.51542	4.00E-05	2123.51542	1.30E-04	2123.51542	4.70E-04
2122.55106	4.00E-05	2122.55106	1.30E-04	2122.55106	4.70E-04
2121.58671	5.00E-05	2121.58671	1.30E-04	2121.58671	4.70E-04
2120.62235	5.00E-05	2120.62235	1.30E-04	2120.62235	4.60E-04
2119.65799	5.00E-05	2119.65799	1.20E-04	2119.65799	4.60E-04
2118.69363	5.00E-05	2118.69363	1.20E-04	2118.69363	4.50E-04
2117.72928	4.00E-05	2117.72928	1.10E-04	2117.72928	4.50E-04
2116.76492	3.00E-05	2116.76492	1.10E-04	2116.76492	4.50E-04
2115.80056	2.00E-05	2115.80056	1.10E-04	2115.80056	4.50E-04
2114.8362	2.00E-05	2114.8362	1.00E-04	2114.8362	4.40E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2113.87185	2.00E-05	2113.87185	1.00E-04	2113.87185	4.40E-04
2112.90749	2.00E-05	2112.90749	1.00E-04	2112.90749	4.30E-04
2111.94313	2.00E-05	2111.94313	1.00E-04	2111.94313	4.30E-04
2110.97877	1.00E-05	2110.97877	1.10E-04	2110.97877	4.30E-04
2110.01442	1.00E-05	2110.01442	1.10E-04	2110.01442	4.40E-04
2109.05006	1.00E-05	2109.05006	1.20E-04	2109.05006	4.50E-04
2108.0857	1.00E-05	2108.0857	1.30E-04	2108.0857	4.40E-04
2107.12134	2.00E-05	2107.12134	1.30E-04	2107.12134	4.40E-04
2106.15698	3.00E-05	2106.15698	1.40E-04	2106.15698	4.30E-04
2105.19263	4.00E-05	2105.19263	1.30E-04	2105.19263	4.20E-04
2104.22827	5.00E-05	2104.22827	1.30E-04	2104.22827	4.20E-04
2103.26391	6.00E-05	2103.26391	1.20E-04	2103.26391	4.20E-04
2102.29955	6.00E-05	2102.29955	1.10E-04	2102.29955	4.10E-04
2101.3352	5.00E-05	2101.3352	1.20E-04	2101.3352	4.10E-04
2100.37084	4.00E-05	2100.37084	1.20E-04	2100.37084	4.00E-04
2099.40648	4.00E-05	2099.40648	1.30E-04	2099.40648	4.10E-04
2098.44212	4.00E-05	2098.44212	1.30E-04	2098.44212	4.10E-04
2097.47777	4.00E-05	2097.47777	1.30E-04	2097.47777	4.10E-04
2096.51341	5.00E-05	2096.51341	1.20E-04	2096.51341	4.10E-04
2095.54905	5.00E-05	2095.54905	1.10E-04	2095.54905	4.10E-04
2094.58469	5.00E-05	2094.58469	1.10E-04	2094.58469	4.10E-04
2093.62034	5.00E-05	2093.62034	1.10E-04	2093.62034	4.10E-04
2092.65598	5.00E-05	2092.65598	1.20E-04	2092.65598	4.10E-04
2091.69162	4.00E-05	2091.69162	1.30E-04	2091.69162	4.10E-04
2090.72726	4.00E-05	2090.72726	1.40E-04	2090.72726	4.00E-04
2089.76291	4.00E-05	2089.76291	1.40E-04	2089.76291	4.00E-04
2088.79855	3.00E-05	2088.79855	1.40E-04	2088.79855	3.90E-04
2087.83419	3.00E-05	2087.83419	1.30E-04	2087.83419	3.90E-04
2086.86983	3.00E-05	2086.86983	1.20E-04	2086.86983	3.90E-04
2085.90548	4.00E-05	2085.90548	1.30E-04	2085.90548	4.00E-04
2084.94112	5.00E-05	2084.94112	1.30E-04	2084.94112	4.00E-04
2083.97676	6.00E-05	2083.97676	1.40E-04	2083.97676	4.00E-04
2083.0124	6.00E-05	2083.0124	1.40E-04	2083.0124	3.90E-04
2082.04805	6.00E-05	2082.04805	1.40E-04	2082.04805	3.90E-04
2081.08369	5.00E-05	2081.08369	1.40E-04	2081.08369	3.90E-04
2080.11933	5.00E-05	2080.11933	1.30E-04	2080.11933	3.80E-04
2079.15497	5.00E-05	2079.15497	1.30E-04	2079.15497	3.80E-04
2078.19061	6.00E-05	2078.19061	1.20E-04	2078.19061	3.70E-04
2077.22626	5.00E-05	2077.22626	1.20E-04	2077.22626	3.60E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2076.2619	5.00E-05	2076.2619	1.20E-04	2076.2619	3.50E-04
2075.29754	4.00E-05	2075.29754	1.10E-04	2075.29754	3.50E-04
2074.33318	3.00E-05	2074.33318	1.10E-04	2074.33318	3.50E-04
2073.36883	2.00E-05	2073.36883	1.10E-04	2073.36883	3.50E-04
2072.40447	2.00E-05	2072.40447	1.10E-04	2072.40447	3.60E-04
2071.44011	3.00E-05	2071.44011	1.20E-04	2071.44011	3.60E-04
2070.47575	3.00E-05	2070.47575	1.20E-04	2070.47575	3.60E-04
2069.5114	2.00E-05	2069.5114	1.20E-04	2069.5114	3.50E-04
2068.54704	2.00E-05	2068.54704	1.20E-04	2068.54704	3.50E-04
2067.58268	2.00E-05	2067.58268	1.20E-04	2067.58268	3.40E-04
2066.61832	3.00E-05	2066.61832	1.20E-04	2066.61832	3.40E-04
2065.65397	3.00E-05	2065.65397	1.20E-04	2065.65397	3.40E-04
2064.68961	4.00E-05	2064.68961	1.20E-04	2064.68961	3.50E-04
2063.72525	4.00E-05	2063.72525	1.20E-04	2063.72525	3.40E-04
2062.76089	4.00E-05	2062.76089	1.20E-04	2062.76089	3.40E-04
2061.79654	3.00E-05	2061.79654	1.30E-04	2061.79654	3.30E-04
2060.83218	2.00E-05	2060.83218	1.30E-04	2060.83218	3.20E-04
2059.86782	2.00E-05	2059.86782	1.30E-04	2059.86782	3.20E-04
2058.90346	2.00E-05	2058.90346	1.30E-04	2058.90346	3.20E-04
2057.93911	2.00E-05	2057.93911	1.30E-04	2057.93911	3.30E-04
2056.97475	2.00E-05	2056.97475	1.20E-04	2056.97475	3.40E-04
2056.01039	2.00E-05	2056.01039	1.20E-04	2056.01039	3.40E-04
2055.04603	2.00E-05	2055.04603	1.20E-04	2055.04603	3.40E-04
2054.08167	2.00E-05	2054.08167	1.10E-04	2054.08167	3.30E-04
2053.11732	2.00E-05	2053.11732	1.10E-04	2053.11732	3.30E-04
2052.15296	3.00E-05	2052.15296	1.10E-04	2052.15296	3.20E-04
2051.1886	4.00E-05	2051.1886	1.10E-04	2051.1886	3.20E-04
2050.22424	4.00E-05	2050.22424	1.10E-04	2050.22424	3.20E-04
2049.25989	5.00E-05	2049.25989	1.20E-04	2049.25989	3.20E-04
2048.29553	5.00E-05	2048.29553	1.20E-04	2048.29553	3.20E-04
2047.33117	4.00E-05	2047.33117	1.30E-04	2047.33117	3.20E-04
2046.36681	3.00E-05	2046.36681	1.30E-04	2046.36681	3.20E-04
2045.40246	3.00E-05	2045.40246	1.30E-04	2045.40246	3.10E-04
2044.4381	4.00E-05	2044.4381	1.20E-04	2044.4381	3.10E-04
2043.47374	4.00E-05	2043.47374	1.10E-04	2043.47374	3.10E-04
2042.50938	5.00E-05	2042.50938	1.20E-04	2042.50938	3.00E-04
2041.54503	5.00E-05	2041.54503	1.20E-04	2041.54503	3.00E-04
2040.58067	6.00E-05	2040.58067	1.30E-04	2040.58067	3.00E-04
2039.61631	6.00E-05	2039.61631	1.30E-04	2039.61631	2.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2038.65195	6.00E-05	2038.65195	1.30E-04	2038.65195	2.90E-04
2037.6876	5.00E-05	2037.6876	1.20E-04	2037.6876	2.90E-04
2036.72324	5.00E-05	2036.72324	1.20E-04	2036.72324	3.00E-04
2035.75888	4.00E-05	2035.75888	1.20E-04	2035.75888	3.00E-04
2034.79452	3.00E-05	2034.79452	1.20E-04	2034.79452	3.00E-04
2033.83017	2.00E-05	2033.83017	1.20E-04	2033.83017	3.00E-04
2032.86581	3.00E-05	2032.86581	1.20E-04	2032.86581	2.90E-04
2031.90145	3.00E-05	2031.90145	1.10E-04	2031.90145	2.90E-04
2030.93709	4.00E-05	2030.93709	1.10E-04	2030.93709	2.80E-04
2029.97273	4.00E-05	2029.97273	1.10E-04	2029.97273	2.70E-04
2029.00838	4.00E-05	2029.00838	1.10E-04	2029.00838	2.70E-04
2028.04402	4.00E-05	2028.04402	1.10E-04	2028.04402	2.70E-04
2027.07966	5.00E-05	2027.07966	1.10E-04	2027.07966	2.70E-04
2026.1153	5.00E-05	2026.1153	1.10E-04	2026.1153	2.70E-04
2025.15095	4.00E-05	2025.15095	1.10E-04	2025.15095	2.70E-04
2024.18659	4.00E-05	2024.18659	1.20E-04	2024.18659	2.70E-04
2023.22223	4.00E-05	2023.22223	1.20E-04	2023.22223	2.70E-04
2022.25787	3.00E-05	2022.25787	1.20E-04	2022.25787	2.70E-04
2021.29352	3.00E-05	2021.29352	1.20E-04	2021.29352	2.60E-04
2020.32916	4.00E-05	2020.32916	1.20E-04	2020.32916	2.50E-04
2019.3648	4.00E-05	2019.3648	1.20E-04	2019.3648	2.50E-04
2018.40044	4.00E-05	2018.40044	1.10E-04	2018.40044	2.40E-04
2017.43609	4.00E-05	2017.43609	1.00E-04	2017.43609	2.40E-04
2016.47173	3.00E-05	2016.47173	1.00E-04	2016.47173	2.30E-04
2015.50737	3.00E-05	2015.50737	1.00E-04	2015.50737	2.30E-04
2014.54301	3.00E-05	2014.54301	1.00E-04	2014.54301	2.30E-04
2013.57866	4.00E-05	2013.57866	1.00E-04	2013.57866	2.30E-04
2012.6143	4.00E-05	2012.6143	1.00E-04	2012.6143	2.40E-04
2011.64994	4.00E-05	2011.64994	1.00E-04	2011.64994	2.40E-04
2010.68558	4.00E-05	2010.68558	1.00E-04	2010.68558	2.40E-04
2009.72123	4.00E-05	2009.72123	1.00E-04	2009.72123	2.40E-04
2008.75687	4.00E-05	2008.75687	1.00E-04	2008.75687	2.40E-04
2007.79251	4.00E-05	2007.79251	1.00E-04	2007.79251	2.40E-04
2006.82815	4.00E-05	2006.82815	1.10E-04	2006.82815	2.30E-04
2005.8638	3.00E-05	2005.8638	1.10E-04	2005.8638	2.40E-04
2004.89944	3.00E-05	2004.89944	1.10E-04	2004.89944	2.40E-04
2003.93508	3.00E-05	2003.93508	1.20E-04	2003.93508	2.30E-04
2002.97072	4.00E-05	2002.97072	1.20E-04	2002.97072	2.30E-04
2002.00636	4.00E-05	2002.00636	1.10E-04	2002.00636	2.30E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2001.04201	4.00E-05	2001.04201	1.10E-04	2001.04201	2.30E-04
2000.07765	5.00E-05	2000.07765	1.00E-04	2000.07765	2.30E-04
1999.11329	5.00E-05	1999.11329	1.00E-04	1999.11329	2.30E-04
1998.14893	5.00E-05	1998.14893	1.00E-04	1998.14893	2.30E-04
1997.18458	4.00E-05	1997.18458	1.00E-04	1997.18458	2.30E-04
1996.22022	4.00E-05	1996.22022	1.00E-04	1996.22022	2.30E-04
1995.25586	3.00E-05	1995.25586	1.00E-04	1995.25586	2.30E-04
1994.2915	3.00E-05	1994.2915	1.00E-04	1994.2915	2.20E-04
1993.32715	2.00E-05	1993.32715	1.00E-04	1993.32715	2.20E-04
1992.36279	2.00E-05	1992.36279	1.10E-04	1992.36279	2.10E-04
1991.39843	3.00E-05	1991.39843	1.00E-04	1991.39843	2.10E-04
1990.43407	4.00E-05	1990.43407	1.00E-04	1990.43407	2.10E-04
1989.46972	4.00E-05	1989.46972	1.00E-04	1989.46972	2.10E-04
1988.50536	5.00E-05	1988.50536	1.10E-04	1988.50536	2.00E-04
1987.541	5.00E-05	1987.541	1.10E-04	1987.541	2.00E-04
1986.57664	5.00E-05	1986.57664	1.10E-04	1986.57664	1.90E-04
1985.61229	4.00E-05	1985.61229	1.10E-04	1985.61229	1.90E-04
1984.64793	3.00E-05	1984.64793	1.20E-04	1984.64793	1.90E-04
1983.68357	3.00E-05	1983.68357	1.20E-04	1983.68357	2.00E-04
1982.71921	3.00E-05	1982.71921	1.10E-04	1982.71921	2.10E-04
1981.75486	3.00E-05	1981.75486	1.10E-04	1981.75486	2.10E-04
1980.7905	3.00E-05	1980.7905	1.00E-04	1980.7905	2.10E-04
1979.82614	3.00E-05	1979.82614	1.00E-04	1979.82614	2.00E-04
1978.86178	4.00E-05	1978.86178	1.00E-04	1978.86178	2.00E-04
1977.89742	4.00E-05	1977.89742	1.00E-04	1977.89742	2.00E-04
1976.93307	5.00E-05	1976.93307	1.10E-04	1976.93307	2.00E-04
1975.96871	5.00E-05	1975.96871	1.10E-04	1975.96871	2.00E-04
1975.00435	5.00E-05	1975.00435	1.10E-04	1975.00435	1.90E-04
1974.03999	5.00E-05	1974.03999	1.10E-04	1974.03999	1.90E-04
1973.07564	5.00E-05	1973.07564	1.00E-04	1973.07564	1.90E-04
1972.11128	4.00E-05	1972.11128	1.00E-04	1972.11128	1.90E-04
1971.14692	4.00E-05	1971.14692	9.00E-05	1971.14692	2.00E-04
1970.18256	4.00E-05	1970.18256	9.00E-05	1970.18256	1.90E-04
1969.21821	4.00E-05	1969.21821	8.00E-05	1969.21821	1.90E-04
1968.25385	4.00E-05	1968.25385	9.00E-05	1968.25385	1.80E-04
1967.28949	4.00E-05	1967.28949	9.00E-05	1967.28949	1.80E-04
1966.32513	4.00E-05	1966.32513	1.00E-04	1966.32513	1.80E-04
1965.36078	5.00E-05	1965.36078	1.00E-04	1965.36078	1.80E-04
1964.39642	5.00E-05	1964.39642	1.10E-04	1964.39642	1.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1963.43206	5.00E-05	1963.43206	1.10E-04	1963.43206	2.00E-04
1962.4677	5.00E-05	1962.4677	1.10E-04	1962.4677	2.10E-04
1961.50335	4.00E-05	1961.50335	1.10E-04	1961.50335	2.20E-04
1960.53899	4.00E-05	1960.53899	1.00E-04	1960.53899	2.20E-04
1959.57463	4.00E-05	1959.57463	1.00E-04	1959.57463	2.20E-04
1958.61027	5.00E-05	1958.61027	1.00E-04	1958.61027	2.10E-04
1957.64592	5.00E-05	1957.64592	9.00E-05	1957.64592	1.90E-04
1956.68156	6.00E-05	1956.68156	1.00E-04	1956.68156	1.80E-04
1955.7172	6.00E-05	1955.7172	1.00E-04	1955.7172	1.70E-04
1954.75284	7.00E-05	1954.75284	1.10E-04	1954.75284	1.70E-04
1953.78849	7.00E-05	1953.78849	1.20E-04	1953.78849	1.70E-04
1952.82413	6.00E-05	1952.82413	1.20E-04	1952.82413	1.80E-04
1951.85977	6.00E-05	1951.85977	1.30E-04	1951.85977	1.80E-04
1950.89541	6.00E-05	1950.89541	1.30E-04	1950.89541	1.80E-04
1949.93105	6.00E-05	1949.93105	1.20E-04	1949.93105	1.80E-04
1948.9667	5.00E-05	1948.9667	1.20E-04	1948.9667	1.70E-04
1948.00234	6.00E-05	1948.00234	1.20E-04	1948.00234	1.60E-04
1947.03798	7.00E-05	1947.03798	1.20E-04	1947.03798	1.60E-04
1946.07362	7.00E-05	1946.07362	1.10E-04	1946.07362	1.50E-04
1945.10927	7.00E-05	1945.10927	1.00E-04	1945.10927	1.50E-04
1944.14491	7.00E-05	1944.14491	9.00E-05	1944.14491	1.50E-04
1943.18055	7.00E-05	1943.18055	1.00E-04	1943.18055	1.50E-04
1942.21619	6.00E-05	1942.21619	1.00E-04	1942.21619	1.60E-04
1941.25184	6.00E-05	1941.25184	1.20E-04	1941.25184	1.60E-04
1940.28748	5.00E-05	1940.28748	1.30E-04	1940.28748	1.60E-04
1939.32312	5.00E-05	1939.32312	1.50E-04	1939.32312	1.60E-04
1938.35876	5.00E-05	1938.35876	1.50E-04	1938.35876	1.60E-04
1937.39441	5.00E-05	1937.39441	1.40E-04	1937.39441	1.60E-04
1936.43005	6.00E-05	1936.43005	1.40E-04	1936.43005	1.50E-04
1935.46569	7.00E-05	1935.46569	1.30E-04	1935.46569	1.50E-04
1934.50133	8.00E-05	1934.50133	1.20E-04	1934.50133	1.50E-04
1933.53698	8.00E-05	1933.53698	1.10E-04	1933.53698	1.50E-04
1932.57262	8.00E-05	1932.57262	1.10E-04	1932.57262	1.50E-04
1931.60826	8.00E-05	1931.60826	1.20E-04	1931.60826	1.60E-04
1930.6439	7.00E-05	1930.6439	1.20E-04	1930.6439	1.60E-04
1929.67955	7.00E-05	1929.67955	1.20E-04	1929.67955	1.60E-04
1928.71519	7.00E-05	1928.71519	1.30E-04	1928.71519	1.50E-04
1927.75083	8.00E-05	1927.75083	1.20E-04	1927.75083	1.50E-04
1926.78647	9.00E-05	1926.78647	1.20E-04	1926.78647	1.50E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1925.82211	1.00E-04	1925.82211	1.10E-04	1925.82211	1.50E-04
1924.85776	1.10E-04	1924.85776	1.00E-04	1924.85776	1.50E-04
1923.8934	1.00E-04	1923.8934	1.00E-04	1923.8934	1.50E-04
1922.92904	1.00E-04	1922.92904	1.10E-04	1922.92904	1.50E-04
1921.96468	1.00E-04	1921.96468	1.20E-04	1921.96468	1.60E-04
1921.00033	9.00E-05	1921.00033	1.10E-04	1921.00033	1.60E-04
1920.03597	8.00E-05	1920.03597	1.10E-04	1920.03597	1.60E-04
1919.07161	8.00E-05	1919.07161	1.10E-04	1919.07161	1.60E-04
1918.10725	7.00E-05	1918.10725	1.10E-04	1918.10725	1.50E-04
1917.1429	7.00E-05	1917.1429	1.10E-04	1917.1429	1.50E-04
1916.17854	7.00E-05	1916.17854	1.30E-04	1916.17854	1.50E-04
1915.21418	7.00E-05	1915.21418	1.40E-04	1915.21418	1.50E-04
1914.24982	9.00E-05	1914.24982	1.50E-04	1914.24982	1.50E-04
1913.28547	9.00E-05	1913.28547	1.50E-04	1913.28547	1.50E-04
1912.32111	9.00E-05	1912.32111	1.50E-04	1912.32111	1.40E-04
1911.35675	9.00E-05	1911.35675	1.50E-04	1911.35675	1.40E-04
1910.39239	9.00E-05	1910.39239	1.60E-04	1910.39239	1.30E-04
1909.42804	9.00E-05	1909.42804	1.60E-04	1909.42804	1.30E-04
1908.46368	9.00E-05	1908.46368	1.60E-04	1908.46368	1.40E-04
1907.49932	9.00E-05	1907.49932	1.60E-04	1907.49932	1.40E-04
1906.53496	9.00E-05	1906.53496	1.60E-04	1906.53496	1.40E-04
1905.57061	9.00E-05	1905.57061	1.60E-04	1905.57061	1.40E-04
1904.60625	9.00E-05	1904.60625	1.50E-04	1904.60625	1.40E-04
1903.64189	9.00E-05	1903.64189	1.60E-04	1903.64189	1.40E-04
1902.67753	9.00E-05	1902.67753	1.60E-04	1902.67753	1.50E-04
1901.71317	9.00E-05	1901.71317	1.70E-04	1901.71317	1.50E-04
1900.74882	8.00E-05	1900.74882	1.70E-04	1900.74882	1.40E-04
1899.78446	8.00E-05	1899.78446	1.70E-04	1899.78446	1.40E-04
1898.8201	8.00E-05	1898.8201	1.70E-04	1898.8201	1.30E-04
1897.85574	7.00E-05	1897.85574	1.60E-04	1897.85574	1.20E-04
1896.89139	7.00E-05	1896.89139	1.50E-04	1896.89139	1.20E-04
1895.92703	7.00E-05	1895.92703	1.50E-04	1895.92703	1.20E-04
1894.96267	7.00E-05	1894.96267	1.40E-04	1894.96267	1.20E-04
1893.99831	7.00E-05	1893.99831	1.40E-04	1893.99831	1.20E-04
1893.03396	6.00E-05	1893.03396	1.40E-04	1893.03396	1.20E-04
1892.0696	6.00E-05	1892.0696	1.40E-04	1892.0696	1.20E-04
1891.10524	5.00E-05	1891.10524	1.40E-04	1891.10524	1.20E-04
1890.14088	5.00E-05	1890.14088	1.30E-04	1890.14088	1.20E-04
1889.17653	6.00E-05	1889.17653	1.40E-04	1889.17653	1.20E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1888.21217	6.00E-05	1888.21217	1.40E-04	1888.21217	1.20E-04
1887.24781	7.00E-05	1887.24781	1.50E-04	1887.24781	1.20E-04
1886.28345	7.00E-05	1886.28345	1.60E-04	1886.28345	1.20E-04
1885.3191	7.00E-05	1885.3191	1.60E-04	1885.3191	1.20E-04
1884.35474	7.00E-05	1884.35474	1.60E-04	1884.35474	1.20E-04
1883.39038	6.00E-05	1883.39038	1.60E-04	1883.39038	1.20E-04
1882.42602	6.00E-05	1882.42602	1.60E-04	1882.42602	1.20E-04
1881.46167	6.00E-05	1881.46167	1.60E-04	1881.46167	1.20E-04
1880.49731	5.00E-05	1880.49731	1.60E-04	1880.49731	1.10E-04
1879.53295	5.00E-05	1879.53295	1.60E-04	1879.53295	1.00E-04
1878.56859	6.00E-05	1878.56859	1.60E-04	1878.56859	1.00E-04
1877.60424	6.00E-05	1877.60424	1.60E-04	1877.60424	1.00E-04
1876.63988	7.00E-05	1876.63988	1.60E-04	1876.63988	1.10E-04
1875.67552	7.00E-05	1875.67552	1.60E-04	1875.67552	1.10E-04
1874.71116	8.00E-05	1874.71116	1.60E-04	1874.71116	1.10E-04
1873.7468	8.00E-05	1873.7468	1.50E-04	1873.7468	1.10E-04
1872.78245	9.00E-05	1872.78245	1.30E-04	1872.78245	1.00E-04
1871.81809	9.00E-05	1871.81809	1.00E-04	1871.81809	9.00E-05
1870.85373	9.00E-05	1870.85373	8.00E-05	1870.85373	9.00E-05
1869.88937	8.00E-05	1869.88937	7.00E-05	1869.88937	1.00E-04
1868.92502	6.00E-05	1868.92502	8.00E-05	1868.92502	1.10E-04
1867.96066	5.00E-05	1867.96066	9.00E-05	1867.96066	1.10E-04
1866.9963	4.00E-05	1866.9963	1.20E-04	1866.9963	1.10E-04
1866.03194	4.00E-05	1866.03194	1.30E-04	1866.03194	1.10E-04
1865.06759	5.00E-05	1865.06759	1.40E-04	1865.06759	1.10E-04
1864.10323	6.00E-05	1864.10323	1.50E-04	1864.10323	1.00E-04
1863.13887	7.00E-05	1863.13887	1.50E-04	1863.13887	1.00E-04
1862.17451	7.00E-05	1862.17451	1.60E-04	1862.17451	1.10E-04
1861.21016	8.00E-05	1861.21016	1.60E-04	1861.21016	1.10E-04
1860.2458	8.00E-05	1860.2458	1.60E-04	1860.2458	1.10E-04
1859.28144	7.00E-05	1859.28144	1.60E-04	1859.28144	1.10E-04
1858.31708	7.00E-05	1858.31708	1.60E-04	1858.31708	1.10E-04
1857.35273	7.00E-05	1857.35273	1.50E-04	1857.35273	1.10E-04
1856.38837	7.00E-05	1856.38837	1.40E-04	1856.38837	1.00E-04
1855.42401	7.00E-05	1855.42401	1.40E-04	1855.42401	9.00E-05
1854.45965	8.00E-05	1854.45965	1.30E-04	1854.45965	9.00E-05
1853.4953	9.00E-05	1853.4953	1.20E-04	1853.4953	1.00E-04
1852.53094	9.00E-05	1852.53094	1.20E-04	1852.53094	1.10E-04
1851.56658	9.00E-05	1851.56658	1.20E-04	1851.56658	1.10E-04



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1850.60222	9.00E-05	1850.60222	1.20E-04	1850.60222	1.10E-04
1849.63786	8.00E-05	1849.63786	1.20E-04	1849.63786	1.00E-04
1848.67351	9.00E-05	1848.67351	1.10E-04	1848.67351	9.00E-05
1847.70915	1.00E-04	1847.70915	9.00E-05	1847.70915	8.00E-05
1846.74479	9.00E-05	1846.74479	6.00E-05	1846.74479	7.00E-05
1845.78043	8.00E-05	1845.78043	5.00E-05	1845.78043	7.00E-05
1844.81608	6.00E-05	1844.81608	5.00E-05	1844.81608	8.00E-05
1843.85172	5.00E-05	1843.85172	7.00E-05	1843.85172	9.00E-05
1842.88736	4.00E-05	1842.88736	1.00E-04	1842.88736	1.00E-04
1841.923	4.00E-05	1841.923	1.30E-04	1841.923	1.10E-04
1840.95865	6.00E-05	1840.95865	1.50E-04	1840.95865	1.20E-04
1839.99429	8.00E-05	1839.99429	1.50E-04	1839.99429	1.20E-04
1839.02993	8.00E-05	1839.02993	1.30E-04	1839.02993	1.10E-04
1838.06557	7.00E-05	1838.06557	1.20E-04	1838.06557	1.10E-04
1837.10122	6.00E-05	1837.10122	1.20E-04	1837.10122	1.10E-04
1836.13686	6.00E-05	1836.13686	1.20E-04	1836.13686	1.10E-04
1835.1725	6.00E-05	1835.1725	1.20E-04	1835.1725	1.10E-04
1834.20814	6.00E-05	1834.20814	1.10E-04	1834.20814	1.10E-04
1833.24379	6.00E-05	1833.24379	1.00E-04	1833.24379	1.10E-04
1832.27943	6.00E-05	1832.27943	8.00E-05	1832.27943	1.00E-04
1831.31507	4.00E-05	1831.31507	6.00E-05	1831.31507	1.00E-04
1830.35071	3.00E-05	1830.35071	5.00E-05	1830.35071	1.00E-04
1829.38636	3.00E-05	1829.38636	5.00E-05	1829.38636	1.00E-04
1828.422	3.00E-05	1828.422	6.00E-05	1828.422	1.00E-04
1827.45764	3.00E-05	1827.45764	7.00E-05	1827.45764	9.00E-05
1826.49328	3.00E-05	1826.49328	8.00E-05	1826.49328	9.00E-05
1825.52893	3.00E-05	1825.52893	8.00E-05	1825.52893	8.00E-05
1824.56457	3.00E-05	1824.56457	8.00E-05	1824.56457	7.00E-05
1823.60021	2.00E-05	1823.60021	9.00E-05	1823.60021	7.00E-05
1822.63585	2.00E-05	1822.63585	1.00E-04	1822.63585	7.00E-05
1821.67149	3.00E-05	1821.67149	1.10E-04	1821.67149	7.00E-05
1820.70714	3.00E-05	1820.70714	1.10E-04	1820.70714	7.00E-05
1819.74278	2.00E-05	1819.74278	1.00E-04	1819.74278	7.00E-05
1818.77842	0	1818.77842	1.00E-04	1818.77842	6.00E-05
1817.81406	-1.00E-05	1817.81406	1.00E-04	1817.81406	5.00E-05
1816.84971	-1.00E-05	1816.84971	1.00E-04	1816.84971	4.00E-05
1815.88535	-1.00E-05	1815.88535	1.00E-04	1815.88535	3.00E-05
1814.92099	-1.00E-05	1814.92099	1.00E-04	1814.92099	3.00E-05
1813.95663	0	1813.95663	1.00E-04	1813.95663	2.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1812.99228	0	1812.99228	9.00E-05	1812.99228	1.00E-05
1812.02792	0	1812.02792	8.00E-05	1812.02792	1.00E-05
1811.06356	0	1811.06356	7.00E-05	1811.06356	0
1810.0992	-1.00E-05	1810.0992	7.00E-05	1810.0992	0
1809.13485	-2.00E-05	1809.13485	8.00E-05	1809.13485	0
1808.17049	-3.00E-05	1808.17049	9.00E-05	1808.17049	0
1807.20613	-3.00E-05	1807.20613	1.00E-04	1807.20613	1.00E-05
1806.24177	-2.00E-05	1806.24177	1.00E-04	1806.24177	1.00E-05
1805.27742	-2.00E-05	1805.27742	1.00E-04	1805.27742	1.00E-05
1804.31306	-1.00E-05	1804.31306	9.00E-05	1804.31306	0
1803.3487	0	1803.3487	7.00E-05	1803.3487	0
1802.38434	0	1802.38434	6.00E-05	1802.38434	0
1801.41999	0	1801.41999	5.00E-05	1801.41999	1.00E-05
1800.45563	0	1800.45563	6.00E-05	1800.45563	1.00E-05
1799.49127	0	1799.49127	8.00E-05	1799.49127	2.00E-05
1798.52691	0	1798.52691	1.00E-04	1798.52691	3.00E-05
1797.56255	0	1797.56255	1.10E-04	1797.56255	4.00E-05
1796.5982	2.00E-05	1796.5982	1.10E-04	1796.5982	4.00E-05
1795.63384	3.00E-05	1795.63384	8.00E-05	1795.63384	4.00E-05
1794.66948	3.00E-05	1794.66948	4.00E-05	1794.66948	3.00E-05
1793.70512	2.00E-05	1793.70512	2.00E-05	1793.70512	4.00E-05
1792.74077	1.00E-05	1792.74077	1.00E-05	1792.74077	4.00E-05
1791.77641	0	1791.77641	2.00E-05	1791.77641	5.00E-05
1790.81205	-1.00E-05	1790.81205	5.00E-05	1790.81205	7.00E-05
1789.84769	-1.00E-05	1789.84769	9.00E-05	1789.84769	8.00E-05
1788.88334	1.00E-05	1788.88334	1.10E-04	1788.88334	1.00E-04
1787.91898	3.00E-05	1787.91898	1.10E-04	1787.91898	1.00E-04
1786.95462	3.00E-05	1786.95462	9.00E-05	1786.95462	1.00E-04
1785.99026	2.00E-05	1785.99026	9.00E-05	1785.99026	1.00E-04
1785.02591	2.00E-05	1785.02591	9.00E-05	1785.02591	9.00E-05
1784.06155	2.00E-05	1784.06155	1.00E-04	1784.06155	9.00E-05
1783.09719	1.00E-05	1783.09719	1.00E-04	1783.09719	9.00E-05
1782.13283	1.00E-05	1782.13283	1.00E-04	1782.13283	9.00E-05
1781.16848	2.00E-05	1781.16848	1.00E-04	1781.16848	9.00E-05
1780.20412	3.00E-05	1780.20412	1.10E-04	1780.20412	9.00E-05
1779.23976	3.00E-05	1779.23976	1.20E-04	1779.23976	9.00E-05
1778.2754	4.00E-05	1778.2754	1.40E-04	1778.2754	9.00E-05
1777.31105	5.00E-05	1777.31105	1.50E-04	1777.31105	9.00E-05
1776.34669	6.00E-05	1776.34669	1.30E-04	1776.34669	8.00E-05

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1775.38233	7.00E-05	1775.38233	9.00E-05	1775.38233	7.00E-05
1774.41797	6.00E-05	1774.41797	5.00E-05	1774.41797	7.00E-05
1773.45362	4.00E-05	1773.45362	4.00E-05	1773.45362	7.00E-05
1772.48926	2.00E-05	1772.48926	6.00E-05	1772.48926	7.00E-05
1771.5249	2.00E-05	1771.5249	7.00E-05	1771.5249	7.00E-05
1770.56054	1.00E-05	1770.56054	9.00E-05	1770.56054	8.00E-05
1769.59618	0	1769.59618	1.10E-04	1769.59618	9.00E-05
1768.63183	1.00E-05	1768.63183	1.10E-04	1768.63183	9.00E-05
1767.66747	2.00E-05	1767.66747	1.10E-04	1767.66747	9.00E-05
1766.70311	2.00E-05	1766.70311	1.10E-04	1766.70311	9.00E-05
1765.73875	2.00E-05	1765.73875	1.10E-04	1765.73875	9.00E-05
1764.7744	3.00E-05	1764.7744	1.00E-04	1764.7744	9.00E-05
1763.81004	3.00E-05	1763.81004	8.00E-05	1763.81004	9.00E-05
1762.84568	2.00E-05	1762.84568	7.00E-05	1762.84568	9.00E-05
1761.88132	1.00E-05	1761.88132	7.00E-05	1761.88132	1.00E-04
1760.91697	0	1760.91697	7.00E-05	1760.91697	1.10E-04
1759.95261	1.00E-05	1759.95261	8.00E-05	1759.95261	1.20E-04
1758.98825	1.00E-05	1758.98825	1.00E-04	1758.98825	1.20E-04
1758.02389	2.00E-05	1758.02389	1.00E-04	1758.02389	1.20E-04
1757.05954	3.00E-05	1757.05954	1.00E-04	1757.05954	1.20E-04
1756.09518	4.00E-05	1756.09518	1.10E-04	1756.09518	1.30E-04
1755.13082	5.00E-05	1755.13082	1.20E-04	1755.13082	1.50E-04
1754.16646	7.00E-05	1754.16646	1.20E-04	1754.16646	1.70E-04
1753.20211	8.00E-05	1753.20211	1.10E-04	1753.20211	1.80E-04
1752.23775	9.00E-05	1752.23775	1.00E-04	1752.23775	1.90E-04
1751.27339	9.00E-05	1751.27339	1.00E-04	1751.27339	2.00E-04
1750.30903	9.00E-05	1750.30903	1.10E-04	1750.30903	2.20E-04
1749.34468	9.00E-05	1749.34468	1.30E-04	1749.34468	2.30E-04
1748.38032	1.00E-04	1748.38032	1.70E-04	1748.38032	2.50E-04
1747.41596	1.30E-04	1747.41596	2.00E-04	1747.41596	2.70E-04
1746.4516	1.50E-04	1746.4516	2.10E-04	1746.4516	2.90E-04
1745.48724	1.70E-04	1745.48724	2.30E-04	1745.48724	3.10E-04
1744.52289	2.00E-04	1744.52289	2.50E-04	1744.52289	3.40E-04
1743.55853	2.20E-04	1743.55853	2.60E-04	1743.55853	3.60E-04
1742.59417	2.40E-04	1742.59417	2.50E-04	1742.59417	3.80E-04
1741.62981	2.50E-04	1741.62981	2.50E-04	1741.62981	4.00E-04
1740.66546	2.60E-04	1740.66546	2.60E-04	1740.66546	4.20E-04
1739.7011	2.70E-04	1739.7011	2.80E-04	1739.7011	4.50E-04
1738.73674	2.90E-04	1738.73674	3.00E-04	1738.73674	4.90E-04

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1737.77238	3.10E-04	1737.77238	2.90E-04	1737.77238	5.20E-04
1736.80803	3.30E-04	1736.80803	2.60E-04	1736.80803	5.40E-04
1735.84367	3.30E-04	1735.84367	2.20E-04	1735.84367	5.60E-04
1734.87931	3.20E-04	1734.87931	2.10E-04	1734.87931	5.80E-04
1733.91495	3.10E-04	1733.91495	2.30E-04	1733.91495	6.10E-04
1732.9506	3.10E-04	1732.9506	2.80E-04	1732.9506	6.50E-04
1731.98624	3.20E-04	1731.98624	3.40E-04	1731.98624	7.00E-04
1731.02188	3.50E-04	1731.02188	4.00E-04	1731.02188	7.40E-04
1730.05752	3.80E-04	1730.05752	4.20E-04	1730.05752	7.80E-04
1729.09317	4.00E-04	1729.09317	4.10E-04	1729.09317	8.10E-04
1728.12881	4.10E-04	1728.12881	4.10E-04	1728.12881	8.40E-04
1727.16445	4.10E-04	1727.16445	4.20E-04	1727.16445	8.70E-04
1726.20009	4.20E-04	1726.20009	4.20E-04	1726.20009	9.00E-04
1725.23574	4.30E-04	1725.23574	4.20E-04	1725.23574	9.30E-04
1724.27138	4.30E-04	1724.27138	4.20E-04	1724.27138	9.60E-04
1723.30702	4.30E-04	1723.30702	4.30E-04	1723.30702	1.00E-03
1722.34266	4.40E-04	1722.34266	4.30E-04	1722.34266	0.00104
1721.3783	4.60E-04	1721.3783	4.00E-04	1721.3783	0.00108
1720.41395	4.60E-04	1720.41395	3.50E-04	1720.41395	0.0011
1719.44959	4.60E-04	1719.44959	3.00E-04	1719.44959	0.00113
1718.48523	4.40E-04	1718.48523	2.80E-04	1718.48523	0.00118
1717.52087	4.30E-04	1717.52087	2.70E-04	1717.52087	0.00122
1716.55652	4.00E-04	1716.55652	3.00E-04	1716.55652	0.00128
1715.59216	3.90E-04	1715.59216	3.50E-04	1715.59216	0.00134
1714.6278	4.00E-04	1714.6278	4.10E-04	1714.6278	0.00141
1713.66344	4.10E-04	1713.66344	4.30E-04	1713.66344	0.00147
1712.69909	4.20E-04	1712.69909	4.40E-04	1712.69909	0.00153
1711.73473	4.40E-04	1711.73473	4.50E-04	1711.73473	0.0016
1710.77037	4.60E-04	1710.77037	4.60E-04	1710.77037	0.00168
1709.80601	4.90E-04	1709.80601	4.60E-04	1709.80601	0.00176
1708.84166	5.10E-04	1708.84166	4.40E-04	1708.84166	0.00184
1707.8773	5.20E-04	1707.8773	4.40E-04	1707.8773	0.00194
1706.91294	5.10E-04	1706.91294	4.40E-04	1706.91294	0.00205
1705.94858	5.00E-04	1705.94858	4.60E-04	1705.94858	0.00219
1704.98423	5.10E-04	1704.98423	5.00E-04	1704.98423	0.00233
1704.01987	5.40E-04	1704.01987	5.10E-04	1704.01987	0.00248
1703.05551	5.60E-04	1703.05551	4.90E-04	1703.05551	0.00264
1702.09115	5.80E-04	1702.09115	4.90E-04	1702.09115	0.00282
1701.1268	6.00E-04	1701.1268	5.30E-04	1701.1268	0.00302

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1700.16244	6.40E-04	1700.16244	5.90E-04	1700.16244	0.00325
1699.19808	6.80E-04	1699.19808	6.40E-04	1699.19808	0.00348
1698.23372	7.00E-04	1698.23372	7.30E-04	1698.23372	0.00373
1697.26937	7.50E-04	1697.26937	8.40E-04	1697.26937	0.00401
1696.30501	8.30E-04	1696.30501	9.30E-04	1696.30501	0.0043
1695.34065	9.00E-04	1695.34065	0.00101	1695.34065	0.0046
1694.37629	9.70E-04	1694.37629	0.00113	1694.37629	0.00493
1693.41193	0.00107	1693.41193	0.00129	1693.41193	0.00527
1692.44758	0.00119	1692.44758	0.00143	1692.44758	0.00561
1691.48322	0.00131	1691.48322	0.00153	1691.48322	0.00594
1690.51886	0.0014	1690.51886	0.00165	1690.51886	0.00629
1689.5545	0.00151	1689.5545	0.00179	1689.5545	0.00668
1688.59015	0.00164	1688.59015	0.00192	1688.59015	0.00707
1687.62579	0.00177	1687.62579	0.002	1687.62579	0.00745
1686.66143	0.00189	1686.66143	0.00207	1686.66143	0.00783
1685.69707	0.00198	1685.69707	0.00218	1685.69707	0.00823
1684.73272	0.00208	1684.73272	0.00232	1684.73272	0.00864
1683.76836	0.00218	1683.76836	0.00249	1683.76836	0.00906
1682.804	0.00228	1682.804	0.00268	1682.804	0.0095
1681.83964	0.0024	1681.83964	0.00288	1681.83964	0.00993
1680.87529	0.00254	1680.87529	0.00305	1680.87529	0.01036
1679.91093	0.00267	1679.91093	0.00316	1679.91093	0.01077
1678.94657	0.00279	1678.94657	0.00323	1678.94657	0.01117
1677.98221	0.00288	1677.98221	0.00329	1677.98221	0.0116
1677.01786	0.00295	1677.01786	0.00336	1677.01786	0.01204
1676.0535	0.00302	1676.0535	0.00345	1676.0535	0.01249
1675.08914	0.0031	1675.08914	0.00352	1675.08914	0.01294
1674.12478	0.00317	1674.12478	0.0036	1674.12478	0.01341
1673.16043	0.00325	1673.16043	0.00368	1673.16043	0.01388
1672.19607	0.00333	1672.19607	0.00372	1672.19607	0.01435
1671.23171	0.00339	1671.23171	0.00374	1671.23171	0.01483
1670.26735	0.00343	1670.26735	0.00377	1670.26735	0.01534
1669.30299	0.00347	1669.30299	0.00382	1669.30299	0.01587
1668.33864	0.00351	1668.33864	0.00389	1668.33864	0.01642
1667.37428	0.00357	1667.37428	0.00396	1667.37428	0.01698
1666.40992	0.00363	1666.40992	0.00401	1666.40992	0.01754
1665.44556	0.00367	1665.44556	0.00401	1665.44556	0.0181
1664.48121	0.0037	1664.48121	0.004	1664.48121	0.01866
1663.51685	0.00371	1663.51685	0.00399	1663.51685	0.01921

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1662.55249	0.00372	1662.55249	0.00399	1662.55249	0.01976
1661.58813	0.00373	1661.58813	0.00399	1661.58813	0.02029
1660.62378	0.00374	1660.62378	0.00399	1660.62378	0.02079
1659.65942	0.00375	1659.65942	0.00399	1659.65942	0.02126
1658.69506	0.00376	1658.69506	0.00398	1658.69506	0.02168
1657.7307	0.00376	1657.7307	0.00394	1657.7307	0.02208
1656.76635	0.00378	1656.76635	0.00386	1656.76635	0.02245
1655.80199	0.00376	1655.80199	0.00373	1655.80199	0.02273
1654.83763	0.0037	1654.83763	0.00362	1654.83763	0.02289
1653.87327	0.00362	1653.87327	0.00354	1653.87327	0.02298
1652.90892	0.00354	1652.90892	0.00351	1652.90892	0.02302
1651.94456	0.00347	1651.94456	0.0035	1651.94456	0.02304
1650.9802	0.00342	1650.9802	0.00351	1650.9802	0.02306
1650.01584	0.0034	1650.01584	0.00348	1650.01584	0.0231
1649.05149	0.00339	1649.05149	0.00339	1649.05149	0.02313
1648.08713	0.00333	1648.08713	0.00327	1648.08713	0.02308
1647.12277	0.00325	1647.12277	0.00319	1647.12277	0.02295
1646.15841	0.00317	1646.15841	0.00314	1646.15841	0.02282
1645.19406	0.00311	1645.19406	0.00311	1645.19406	0.02271
1644.2297	0.00307	1644.2297	0.00308	1644.2297	0.02261
1643.26534	0.00303	1643.26534	0.00305	1643.26534	0.02255
1642.30098	0.00299	1642.30098	0.00299	1642.30098	0.02249
1641.33662	0.00295	1641.33662	0.00291	1641.33662	0.02244
1640.37227	0.0029	1640.37227	0.00283	1640.37227	0.02237
1639.40791	0.00286	1639.40791	0.00274	1639.40791	0.02233
1638.44355	0.00282	1638.44355	0.00263	1638.44355	0.02228
1637.47919	0.00275	1637.47919	0.00253	1637.47919	0.02221
1636.51484	0.00268	1636.51484	0.00247	1636.51484	0.02212
1635.55048	0.00261	1635.55048	0.00244	1635.55048	0.02205
1634.58612	0.00256	1634.58612	0.00244	1634.58612	0.02198
1633.62176	0.00252	1633.62176	0.00245	1633.62176	0.02194
1632.65741	0.00251	1632.65741	0.00247	1632.65741	0.02193
1631.69305	0.00251	1631.69305	0.00247	1631.69305	0.02196
1630.72869	0.00251	1630.72869	0.00242	1630.72869	0.02198
1629.76433	0.00248	1629.76433	0.00239	1629.76433	0.02198
1628.79998	0.00246	1628.79998	0.00239	1628.79998	0.02198
1627.83562	0.00246	1627.83562	0.0024	1627.83562	0.02199
1626.87126	0.00247	1626.87126	0.00242	1626.87126	0.02202
1625.9069	0.00248	1625.9069	0.00244	1625.9069	0.02205

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1624.94255	0.0025	1624.94255	0.00249	1624.94255	0.02209
1623.97819	0.00254	1623.97819	0.00257	1623.97819	0.02214
1623.01383	0.00259	1623.01383	0.00267	1623.01383	0.0222
1622.04947	0.00264	1622.04947	0.00281	1622.04947	0.02226
1621.08512	0.00273	1621.08512	0.00296	1621.08512	0.02235
1620.12076	0.00283	1620.12076	0.00309	1620.12076	0.02248
1619.1564	0.00293	1619.1564	0.00322	1619.1564	0.02261
1618.19204	0.00303	1618.19204	0.00339	1618.19204	0.02272
1617.22768	0.00313	1617.22768	0.00359	1617.22768	0.02283
1616.26333	0.00324	1616.26333	0.00383	1616.26333	0.02295
1615.29897	0.00336	1615.29897	0.00408	1615.29897	0.02306
1614.33461	0.00348	1614.33461	0.00432	1614.33461	0.02318
1613.37025	0.0036	1613.37025	0.00451	1613.37025	0.02331
1612.4059	0.00369	1612.4059	0.00463	1612.4059	0.02344
1611.44154	0.00374	1611.44154	0.00471	1611.44154	0.02354
1610.47718	0.00376	1610.47718	0.00476	1610.47718	0.02362
1609.51282	0.00375	1609.51282	0.00478	1609.51282	0.02369
1608.54847	0.00372	1608.54847	0.00475	1608.54847	0.02374
1607.58411	0.00366	1607.58411	0.00468	1607.58411	0.02379
1606.61975	0.00358	1606.61975	0.00457	1606.61975	0.02383
1605.65539	0.00349	1605.65539	0.00442	1605.65539	0.02387
1604.69104	0.00339	1604.69104	0.00424	1604.69104	0.02389
1603.72668	0.00328	1603.72668	0.00406	1603.72668	0.02388
1602.76232	0.00317	1602.76232	0.00388	1602.76232	0.02385
1601.79796	0.00306	1601.79796	0.00371	1601.79796	0.02379
1600.83361	0.00297	1600.83361	0.00355	1600.83361	0.02371
1599.86925	0.00289	1599.86925	0.00342	1599.86925	0.02361
1598.90489	0.00283	1598.90489	0.00331	1598.90489	0.0235
1597.94053	0.00279	1597.94053	0.00322	1597.94053	0.02337
1596.97618	0.00278	1596.97618	0.00317	1596.97618	0.0232
1596.01182	0.00279	1596.01182	0.00317	1596.01182	0.023
1595.04746	0.00284	1595.04746	0.00322	1595.04746	0.02277
1594.0831	0.00293	1594.0831	0.00332	1594.0831	0.02251
1593.11874	0.00305	1593.11874	0.00346	1593.11874	0.02222
1592.15439	0.00319	1592.15439	0.00364	1592.15439	0.02192
1591.19003	0.00333	1591.19003	0.00383	1591.19003	0.02159
1590.22567	0.00347	1590.22567	0.00403	1590.22567	0.02125
1589.26131	0.00359	1589.26131	0.0042	1589.26131	0.02088
1588.29696	0.00367	1588.29696	0.00434	1588.29696	0.0205

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1587.3326	0.0037	1587.3326	0.00441	1587.3326	0.0201
1586.36824	0.00366	1586.36824	0.00441	1586.36824	0.01969
1585.40388	0.00357	1585.40388	0.00434	1585.40388	0.01927
1584.43953	0.00342	1584.43953	0.0042	1584.43953	0.01883
1583.47517	0.00323	1583.47517	0.00401	1583.47517	0.01839
1582.51081	0.00302	1582.51081	0.0038	1582.51081	0.01794
1581.54645	0.00282	1581.54645	0.00357	1581.54645	0.01749
1580.5821	0.00265	1580.5821	0.00334	1580.5821	0.01707
1579.61774	0.0025	1579.61774	0.0031	1579.61774	0.01668
1578.65338	0.00234	1578.65338	0.00285	1578.65338	0.01627
1577.68902	0.00217	1577.68902	0.00263	1577.68902	0.01585
1576.72467	0.00201	1576.72467	0.00245	1576.72467	0.01544
1575.76031	0.00185	1575.76031	0.00232	1575.76031	0.01505
1574.79595	0.00172	1574.79595	0.00223	1574.79595	0.0147
1573.83159	0.00164	1573.83159	0.00217	1573.83159	0.01439
1572.86724	0.00162	1572.86724	0.00211	1572.86724	0.01414
1571.90288	0.00163	1571.90288	0.00206	1571.90288	0.01391
1570.93852	0.00162	1570.93852	0.00203	1570.93852	0.01365
1569.97416	0.00162	1569.97416	0.00206	1569.97416	0.0134
1569.00981	0.00163	1569.00981	0.00211	1569.00981	0.01317
1568.04545	0.00166	1568.04545	0.00218	1568.04545	0.01299
1567.08109	0.00169	1567.08109	0.00226	1567.08109	0.01283
1566.11673	0.00174	1566.11673	0.00235	1566.11673	0.01273
1565.15237	0.00181	1565.15237	0.00244	1565.15237	0.01265
1564.18802	0.0019	1564.18802	0.00253	1564.18802	0.0126
1563.22366	0.00199	1563.22366	0.00261	1563.22366	0.01257
1562.2593	0.00209	1562.2593	0.00264	1562.2593	0.01257
1561.29494	0.00217	1561.29494	0.00266	1561.29494	0.01258
1560.33059	0.00223	1560.33059	0.00271	1560.33059	0.0126
1559.36623	0.00228	1559.36623	0.00284	1559.36623	0.01265
1558.40187	0.00235	1558.40187	0.00303	1558.40187	0.01273
1557.43751	0.00245	1557.43751	0.00324	1557.43751	0.01285
1556.47316	0.00257	1556.47316	0.00347	1556.47316	0.01301
1555.5088	0.00271	1555.5088	0.00367	1555.5088	0.0132
1554.54444	0.00285	1554.54444	0.00383	1554.54444	0.01342
1553.58008	0.00297	1553.58008	0.00396	1553.58008	0.01363
1552.61573	0.00308	1552.61573	0.0041	1552.61573	0.01385
1551.65137	0.00318	1551.65137	0.00425	1551.65137	0.01406
1550.68701	0.0033	1550.68701	0.00439	1550.68701	0.01426



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1549.72265	0.00342	1549.72265	0.00452	1549.72265	0.01446
1548.7583	0.00352	1548.7583	0.00465	1548.7583	0.01464
1547.79394	0.00361	1547.79394	0.00478	1547.79394	0.01479
1546.82958	0.00369	1546.82958	0.0049	1546.82958	0.01492
1545.86522	0.00376	1545.86522	0.00499	1545.86522	0.01503
1544.90087	0.00382	1544.90087	0.00504	1544.90087	0.01511
1543.93651	0.00386	1543.93651	0.00507	1543.93651	0.01515
1542.97215	0.0039	1542.97215	0.00508	1542.97215	0.01516
1542.00779	0.00391	1542.00779	0.00505	1542.00779	0.01512
1541.04343	0.00388	1541.04343	0.00503	1541.04343	0.01502
1540.07908	0.00381	1540.07908	0.00503	1540.07908	0.01489
1539.11472	0.00374	1539.11472	0.00504	1539.11472	0.01476
1538.15036	0.00368	1538.15036	0.00505	1538.15036	0.01463
1537.186	0.00363	1537.186	0.00502	1537.186	0.01451
1536.22165	0.00357	1536.22165	0.00495	1536.22165	0.01438
1535.25729	0.0035	1535.25729	0.00482	1535.25729	0.01422
1534.29293	0.00338	1534.29293	0.00467	1534.29293	0.01401
1533.32857	0.00324	1533.32857	0.00452	1533.32857	0.01375
1532.36422	0.00308	1532.36422	0.00439	1532.36422	0.01349
1531.39986	0.00293	1531.39986	0.00426	1531.39986	0.01324
1530.4355	0.00279	1530.4355	0.00411	1530.4355	0.01299
1529.47114	0.00266	1529.47114	0.00395	1529.47114	0.01276
1528.50679	0.00252	1528.50679	0.00376	1528.50679	0.01252
1527.54243	0.00235	1527.54243	0.00358	1527.54243	0.01225
1526.57807	0.00218	1526.57807	0.00342	1526.57807	0.01198
1525.61371	0.00203	1525.61371	0.00328	1525.61371	0.01172
1524.64936	0.0019	1524.64936	0.00313	1524.64936	0.01149
1523.685	0.00175	1523.685	0.00297	1523.685	0.01125
1522.72064	0.00159	1522.72064	0.00283	1522.72064	0.01102
1521.75628	0.00144	1521.75628	0.00271	1521.75628	0.01082
1520.79193	0.00131	1520.79193	0.00262	1520.79193	0.01065
1519.82757	0.00118	1519.82757	0.00253	1519.82757	0.01049
1518.86321	0.00107	1518.86321	0.00248	1518.86321	0.01034
1517.89885	9.90E-04	1517.89885	0.00245	1517.89885	0.0102
1516.9345	9.30E-04	1516.9345	0.00243	1516.9345	0.01003
1515.97014	8.80E-04	1515.97014	0.00242	1515.97014	0.0098
1515.00578	8.30E-04	1515.00578	0.00244	1515.00578	0.00952
1514.04142	8.20E-04	1514.04142	0.0025	1514.04142	0.00921
1513.07706	8.60E-04	1513.07706	0.00259	1513.07706	0.00888

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1512.11271	9.40E-04	1512.11271	0.00269	1512.11271	0.00856
1511.14835	0.00107	1511.14835	0.00283	1511.14835	0.00824
1510.18399	0.00126	1510.18399	0.00298	1510.18399	0.00793
1509.21963	0.0015	1509.21963	0.00318	1509.21963	0.00763
1508.25528	0.00178	1508.25528	0.00345	1508.25528	0.0073
1507.29092	0.00207	1507.29092	0.0038	1507.29092	0.00697
1506.32656	0.00236	1506.32656	0.00419	1506.32656	0.00664
1505.3622	0.00259	1505.3622	0.00453	1505.3622	0.00633
1504.39785	0.00275	1504.39785	0.00477	1504.39785	0.00604
1503.43349	0.0028	1503.43349	0.00485	1503.43349	0.0058
1502.46913	0.00277	1502.46913	0.00477	1502.46913	0.00559
1501.50477	0.00266	1501.50477	0.00457	1501.50477	0.00539
1500.54042	0.00252	1500.54042	0.00435	1500.54042	0.00517
1499.57606	0.0024	1499.57606	0.00417	1499.57606	0.00497
1498.6117	0.00234	1498.6117	0.00407	1498.6117	0.00475
1497.64734	0.00238	1497.64734	0.0041	1497.64734	0.00452
1496.68299	0.00255	1496.68299	0.00429	1496.68299	0.00429
1495.71863	0.00286	1495.71863	0.00464	1495.71863	0.00406
1494.75427	0.00334	1494.75427	0.00513	1494.75427	0.00384
1493.78991	0.00395	1493.78991	0.00576	1493.78991	0.00363
1492.82556	0.00467	1492.82556	0.00652	1492.82556	0.00343
1491.8612	0.00545	1491.8612	0.00737	1491.8612	0.00325
1490.89684	0.00617	1490.89684	0.00822	1490.89684	0.00307
1489.93248	0.00674	1489.93248	0.00893	1489.93248	0.0029
1488.96812	0.00704	1488.96812	0.00937	1488.96812	0.00274
1488.00377	0.00703	1488.00377	0.00945	1488.00377	0.00259
1487.03941	0.00672	1487.03941	0.00916	1487.03941	0.00246
1486.07505	0.00618	1486.07505	0.00856	1486.07505	0.00236
1485.11069	0.00552	1485.11069	0.0078	1485.11069	0.00227
1484.14634	0.00484	1484.14634	0.007	1484.14634	0.00221
1483.18198	0.00422	1483.18198	0.00625	1483.18198	0.00216
1482.21762	0.00369	1482.21762	0.00559	1482.21762	0.00213
1481.25326	0.00326	1481.25326	0.00504	1481.25326	0.00211
1480.28891	0.00292	1480.28891	0.00458	1480.28891	0.00211
1479.32455	0.00263	1479.32455	0.00419	1479.32455	0.00213
1478.36019	0.00239	1478.36019	0.00384	1478.36019	0.00216
1477.39583	0.00218	1477.39583	0.00355	1477.39583	0.00222
1476.43148	0.00201	1476.43148	0.00328	1476.43148	0.0023
1475.46712	0.00186	1475.46712	0.00303	1475.46712	0.0024

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1474.50276	0.00171	1474.50276	0.00281	1474.50276	0.00251
1473.5384	0.00158	1473.5384	0.00264	1473.5384	0.00263
1472.57405	0.00148	1472.57405	0.00252	1472.57405	0.00278
1471.60969	0.00142	1471.60969	0.00243	1471.60969	0.00292
1470.64533	0.00138	1470.64533	0.00238	1470.64533	0.00306
1469.68097	0.00139	1469.68097	0.00236	1469.68097	0.00319
1468.71662	0.00145	1468.71662	0.00233	1468.71662	0.00331
1467.75226	0.0015	1467.75226	0.00229	1467.75226	0.0034
1466.7879	0.00154	1466.7879	0.00226	1466.7879	0.00348
1465.82354	0.00157	1465.82354	0.00225	1465.82354	0.00358
1464.85918	0.00161	1464.85918	0.00227	1464.85918	0.00369
1463.89483	0.00165	1463.89483	0.00231	1463.89483	0.00381
1462.93047	0.0017	1462.93047	0.00236	1462.93047	0.00396
1461.96611	0.00177	1461.96611	0.00242	1461.96611	0.00412
1461.00175	0.00186	1461.00175	0.00244	1461.00175	0.00429
1460.0374	0.00195	1460.0374	0.00243	1460.0374	0.00445
1459.07304	0.002	1459.07304	0.00242	1459.07304	0.00463
1458.10868	0.00204	1458.10868	0.00244	1458.10868	0.00482
1457.14432	0.00208	1457.14432	0.0025	1457.14432	0.00504
1456.17997	0.00215	1456.17997	0.00261	1456.17997	0.00526
1455.21561	0.00225	1455.21561	0.00274	1455.21561	0.00549
1454.25125	0.00237	1454.25125	0.00286	1454.25125	0.00571
1453.28689	0.0025	1453.28689	0.00297	1453.28689	0.00592
1452.32254	0.00262	1452.32254	0.00303	1452.32254	0.00611
1451.35818	0.0027	1451.35818	0.00307	1451.35818	0.00628
1450.39382	0.00274	1450.39382	0.0031	1450.39382	0.00645
1449.42946	0.00276	1449.42946	0.00313	1449.42946	0.00663
1448.46511	0.00278	1448.46511	0.00316	1448.46511	0.00682
1447.50075	0.00279	1447.50075	0.00317	1447.50075	0.00702
1446.53639	0.0028	1446.53639	0.00317	1446.53639	0.00722
1445.57203	0.0028	1445.57203	0.00317	1445.57203	0.00743
1444.60768	0.00279	1444.60768	0.00315	1444.60768	0.00765
1443.64332	0.00278	1443.64332	0.00313	1443.64332	0.00788
1442.67896	0.00275	1442.67896	0.0031	1442.67896	0.0081
1441.7146	0.00271	1441.7146	0.00306	1441.7146	0.00832
1440.75025	0.00269	1440.75025	0.00301	1440.75025	0.00854
1439.78589	0.00267	1439.78589	0.00293	1439.78589	0.00877
1438.82153	0.00261	1438.82153	0.00284	1438.82153	0.00899
1437.85717	0.00254	1437.85717	0.00277	1437.85717	0.00921

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1436.89281	0.00246	1436.89281	0.00273	1436.89281	0.00942
1435.92846	0.0024	1435.92846	0.0027	1435.92846	0.00961
1434.9641	0.00233	1434.9641	0.00269	1434.9641	0.0098
1433.99974	0.00229	1433.99974	0.00269	1433.99974	0.00999
1433.03538	0.00228	1433.03538	0.00266	1433.03538	0.01018
1432.07103	0.00226	1432.07103	0.00261	1432.07103	0.01038
1431.10667	0.00223	1431.10667	0.00255	1431.10667	0.01057
1430.14231	0.00219	1430.14231	0.0025	1430.14231	0.01076
1429.17795	0.00216	1429.17795	0.00248	1429.17795	0.01095
1428.2136	0.00213	1428.2136	0.00247	1428.2136	0.01114
1427.24924	0.00211	1427.24924	0.00248	1427.24924	0.01132
1426.28488	0.0021	1426.28488	0.0025	1426.28488	0.0115
1425.32052	0.0021	1425.32052	0.00252	1425.32052	0.01168
1424.35617	0.00211	1424.35617	0.00256	1424.35617	0.01184
1423.39181	0.00215	1423.39181	0.00261	1423.39181	0.012
1422.42745	0.00219	1422.42745	0.00264	1422.42745	0.01214
1421.46309	0.00222	1421.46309	0.00266	1421.46309	0.01225
1420.49874	0.00224	1420.49874	0.0027	1420.49874	0.01235
1419.53438	0.00227	1419.53438	0.00274	1419.53438	0.01243
1418.57002	0.0023	1418.57002	0.00279	1418.57002	0.01249
1417.60566	0.00233	1417.60566	0.00286	1417.60566	0.01253
1416.64131	0.00238	1416.64131	0.00292	1416.64131	0.01255
1415.67695	0.00243	1415.67695	0.00297	1415.67695	0.0125
1414.71259	0.00246	1414.71259	0.00298	1414.71259	0.01239
1413.74823	0.00247	1413.74823	0.00295	1413.74823	0.01226
1412.78387	0.00244	1412.78387	0.00289	1412.78387	0.01214
1411.81952	0.0024	1411.81952	0.00281	1411.81952	0.01204
1410.85516	0.00233	1410.85516	0.00271	1410.85516	0.01195
1409.8908	0.00226	1409.8908	0.0026	1409.8908	0.01188
1408.92644	0.00219	1408.92644	0.00247	1408.92644	0.01179
1407.96209	0.00211	1407.96209	0.00234	1407.96209	0.01164
1406.99773	0.00202	1406.99773	0.00221	1406.99773	0.01144
1406.03337	0.00194	1406.03337	0.00208	1406.03337	0.01123
1405.06901	0.00186	1405.06901	0.00196	1405.06901	0.01101
1404.10466	0.00177	1404.10466	0.00184	1404.10466	0.01078
1403.1403	0.00169	1403.1403	0.00173	1403.1403	0.01056
1402.17594	0.0016	1402.17594	0.00163	1402.17594	0.01034
1401.21158	0.00151	1401.21158	0.00155	1401.21158	0.01012
1400.24723	0.00141	1400.24723	0.00146	1400.24723	0.00989

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1399.28287	0.00133	1399.28287	0.00139	1399.28287	0.00966
1398.31851	0.00127	1398.31851	0.00132	1398.31851	0.00944
1397.35415	0.00122	1397.35415	0.00124	1397.35415	0.00921
1396.3898	0.00116	1396.3898	0.00117	1396.3898	0.00897
1395.42544	0.0011	1395.42544	0.00112	1395.42544	0.00873
1394.46108	0.00103	1394.46108	0.00108	1394.46108	0.00849
1393.49672	9.60E-04	1393.49672	0.00107	1393.49672	0.00825
1392.53237	9.10E-04	1392.53237	0.00108	1392.53237	0.00802
1391.56801	8.90E-04	1391.56801	0.00109	1391.56801	0.00779
1390.60365	9.10E-04	1390.60365	0.0011	1390.60365	0.00758
1389.63929	9.20E-04	1389.63929	0.00109	1389.63929	0.00735
1388.67494	9.10E-04	1388.67494	0.00109	1388.67494	0.00711
1387.71058	8.90E-04	1387.71058	0.0011	1387.71058	0.00686
1386.74622	8.60E-04	1386.74622	0.00112	1386.74622	0.00661
1385.78186	8.30E-04	1385.78186	0.00113	1385.78186	0.00637
1384.8175	8.00E-04	1384.8175	0.00113	1384.8175	0.00613
1383.85315	7.80E-04	1383.85315	0.00112	1383.85315	0.0059
1382.88879	7.70E-04	1382.88879	0.00109	1382.88879	0.00569
1381.92443	7.50E-04	1381.92443	0.00106	1381.92443	0.00549
1380.96007	7.30E-04	1380.96007	0.00103	1380.96007	0.0053
1379.99572	7.10E-04	1379.99572	1.00E-03	1379.99572	0.00513
1379.03136	7.00E-04	1379.03136	9.70E-04	1379.03136	0.00497
1378.067	6.90E-04	1378.067	9.50E-04	1378.067	0.00483
1377.10264	6.70E-04	1377.10264	9.20E-04	1377.10264	0.00471
1376.13829	6.50E-04	1376.13829	8.90E-04	1376.13829	0.00459
1375.17393	6.20E-04	1375.17393	8.80E-04	1375.17393	0.00449
1374.20957	5.90E-04	1374.20957	8.70E-04	1374.20957	0.00441
1373.24521	5.50E-04	1373.24521	8.70E-04	1373.24521	0.00434
1372.28086	5.30E-04	1372.28086	8.60E-04	1372.28086	0.0043
1371.3165	5.10E-04	1371.3165	8.60E-04	1371.3165	0.00429
1370.35214	5.00E-04	1370.35214	8.70E-04	1370.35214	0.00429
1369.38778	5.00E-04	1369.38778	8.80E-04	1369.38778	0.00428
1368.42343	5.10E-04	1368.42343	9.10E-04	1368.42343	0.00426
1367.45907	5.30E-04	1367.45907	9.60E-04	1367.45907	0.00422
1366.49471	5.50E-04	1366.49471	0.00101	1366.49471	0.00417
1365.53035	5.50E-04	1365.53035	0.00105	1365.53035	0.00411
1364.566	5.40E-04	1364.566	0.00108	1364.566	0.00405
1363.60164	5.00E-04	1363.60164	0.00108	1363.60164	0.004
1362.63728	4.50E-04	1362.63728	0.00105	1362.63728	0.00395

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1361.67292	3.90E-04	1361.67292	0.00101	1361.67292	0.00392
1360.70856	3.40E-04	1360.70856	9.60E-04	1360.70856	0.00389
1359.74421	3.10E-04	1359.74421	9.10E-04	1359.74421	0.00387
1358.77985	2.90E-04	1358.77985	8.70E-04	1358.77985	0.00385
1357.81549	2.70E-04	1357.81549	8.50E-04	1357.81549	0.00383
1356.85113	2.70E-04	1356.85113	8.50E-04	1356.85113	0.0038
1355.88678	2.80E-04	1355.88678	8.60E-04	1355.88678	0.00377
1354.92242	3.00E-04	1354.92242	8.80E-04	1354.92242	0.00375
1353.95806	3.20E-04	1353.95806	9.10E-04	1353.95806	0.00373
1352.9937	3.60E-04	1352.9937	9.40E-04	1352.9937	0.00371
1352.02935	3.90E-04	1352.02935	9.90E-04	1352.02935	0.00369
1351.06499	4.10E-04	1351.06499	0.00104	1351.06499	0.00367
1350.10063	4.30E-04	1350.10063	0.00109	1350.10063	0.00366
1349.13627	4.40E-04	1349.13627	0.00114	1349.13627	0.00366
1348.17192	4.70E-04	1348.17192	0.0012	1348.17192	0.00366
1347.20756	5.10E-04	1347.20756	0.00126	1347.20756	0.00366
1346.2432	5.60E-04	1346.2432	0.00132	1346.2432	0.00366
1345.27884	6.30E-04	1345.27884	0.00139	1345.27884	0.00367
1344.31449	7.10E-04	1344.31449	0.00146	1344.31449	0.00368
1343.35013	7.80E-04	1343.35013	0.00153	1343.35013	0.0037
1342.38577	8.50E-04	1342.38577	0.0016	1342.38577	0.00373
1341.42141	9.20E-04	1341.42141	0.00167	1341.42141	0.00375
1340.45706	9.90E-04	1340.45706	0.00175	1340.45706	0.00377
1339.4927	0.00107	1339.4927	0.00185	1339.4927	0.00378
1338.52834	0.00116	1338.52834	0.00196	1338.52834	0.00379
1337.56398	0.00126	1337.56398	0.00209	1337.56398	0.0038
1336.59963	0.00139	1336.59963	0.00225	1336.59963	0.00382
1335.63527	0.00154	1335.63527	0.00243	1335.63527	0.00384
1334.67091	0.0017	1334.67091	0.00262	1334.67091	0.00386
1333.70655	0.00187	1333.70655	0.00282	1333.70655	0.00388
1332.74219	0.00206	1332.74219	0.00302	1332.74219	0.0039
1331.77784	0.00225	1331.77784	0.00323	1331.77784	0.00392
1330.81348	0.00244	1330.81348	0.00343	1330.81348	0.00394
1329.84912	0.00262	1329.84912	0.00363	1329.84912	0.00396
1328.88476	0.00278	1328.88476	0.00382	1328.88476	0.00398
1327.92041	0.00293	1327.92041	0.00399	1327.92041	0.00401
1326.95605	0.00305	1326.95605	0.00413	1326.95605	0.00405
1325.99169	0.00315	1325.99169	0.00423	1325.99169	0.0041
1325.02733	0.0032	1325.02733	0.00428	1325.02733	0.00415

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1324.06298	0.00321	1324.06298	0.00429	1324.06298	0.0042
1323.09862	0.00318	1323.09862	0.00424	1323.09862	0.00425
1322.13426	0.00311	1322.13426	0.00415	1322.13426	0.0043
1321.1699	0.00303	1321.1699	0.00402	1321.1699	0.00436
1320.20555	0.00295	1320.20555	0.00389	1320.20555	0.00441
1319.24119	0.00288	1319.24119	0.00377	1319.24119	0.00446
1318.27683	0.00282	1318.27683	0.00368	1318.27683	0.00451
1317.31247	0.00277	1317.31247	0.00361	1317.31247	0.00454
1316.34812	0.00272	1316.34812	0.00355	1316.34812	0.00457
1315.38376	0.00268	1315.38376	0.00352	1315.38376	0.00459
1314.4194	0.00266	1314.4194	0.00351	1314.4194	0.00461
1313.45504	0.00268	1313.45504	0.00353	1313.45504	0.00463
1312.49069	0.00272	1312.49069	0.00358	1312.49069	0.00466
1311.52633	0.00279	1311.52633	0.00366	1311.52633	0.00468
1310.56197	0.00287	1310.56197	0.00375	1310.56197	0.00469
1309.59761	0.00294	1309.59761	0.00383	1309.59761	0.0047
1308.63325	0.003	1308.63325	0.0039	1308.63325	0.0047
1307.6689	0.00303	1307.6689	0.00394	1307.6689	0.00469
1306.70454	0.00304	1306.70454	0.00397	1306.70454	0.00469
1305.74018	0.00304	1305.74018	0.00398	1305.74018	0.00469
1304.77582	0.00304	1304.77582	0.00397	1304.77582	0.00469
1303.81147	0.00305	1303.81147	0.00396	1303.81147	0.0047
1302.84711	0.00307	1302.84711	0.00396	1302.84711	0.00471
1301.88275	0.00309	1301.88275	0.00399	1301.88275	0.00473
1300.91839	0.00313	1300.91839	0.00404	1300.91839	0.00476
1299.95404	0.00319	1299.95404	0.00413	1299.95404	0.00478
1298.98968	0.00326	1298.98968	0.00424	1298.98968	0.00481
1298.02532	0.00336	1298.02532	0.00436	1298.02532	0.00484
1297.06096	0.00347	1297.06096	0.00448	1297.06096	0.00485
1296.09661	0.00357	1296.09661	0.00455	1296.09661	0.00485
1295.13225	0.00362	1295.13225	0.00458	1295.13225	0.00484
1294.16789	0.0036	1294.16789	0.00453	1294.16789	0.00483
1293.20353	0.00352	1293.20353	0.00443	1293.20353	0.00482
1292.23918	0.00338	1292.23918	0.00429	1292.23918	0.00481
1291.27482	0.00322	1291.27482	0.00411	1291.27482	0.0048
1290.31046	0.00306	1290.31046	0.00392	1290.31046	0.00478
1289.3461	0.00292	1289.3461	0.00375	1289.3461	0.00475
1288.38175	0.00279	1288.38175	0.0036	1288.38175	0.00469
1287.41739	0.00269	1287.41739	0.00346	1287.41739	0.00463

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1286.45303	0.0026	1286.45303	0.00334	1286.45303	0.00455
1285.48867	0.00254	1285.48867	0.00324	1285.48867	0.00447
1284.52431	0.00248	1284.52431	0.00315	1284.52431	0.00438
1283.55996	0.00243	1283.55996	0.00307	1283.55996	0.00431
1282.5956	0.00237	1282.5956	0.003	1282.5956	0.00423
1281.63124	0.00231	1281.63124	0.00292	1281.63124	0.00414
1280.66688	0.00225	1280.66688	0.00284	1280.66688	0.00404
1279.70253	0.00218	1279.70253	0.00277	1279.70253	0.00393
1278.73817	0.00212	1278.73817	0.0027	1278.73817	0.00381
1277.77381	0.00206	1277.77381	0.00265	1277.77381	0.00369
1276.80945	0.00201	1276.80945	0.0026	1276.80945	0.00359
1275.8451	0.00197	1275.8451	0.00257	1275.8451	0.00351
1274.88074	0.00193	1274.88074	0.00257	1274.88074	0.00344
1273.91638	0.00192	1273.91638	0.0026	1273.91638	0.00338
1272.95202	0.00192	1272.95202	0.00265	1272.95202	0.00332
1271.98767	0.00192	1271.98767	0.00272	1271.98767	0.00327
1271.02331	0.00195	1271.02331	0.00281	1271.02331	0.00322
1270.05895	0.002	1270.05895	0.00292	1270.05895	0.00316
1269.09459	0.00208	1269.09459	0.00304	1269.09459	0.0031
1268.13024	0.00217	1268.13024	0.00317	1268.13024	0.00304
1267.16588	0.00228	1267.16588	0.00334	1267.16588	0.00299
1266.20152	0.00242	1266.20152	0.00354	1266.20152	0.00295
1265.23716	0.00259	1265.23716	0.00378	1265.23716	0.00292
1264.27281	0.0028	1264.27281	0.00407	1264.27281	0.00289
1263.30845	0.00306	1263.30845	0.00441	1263.30845	0.00285
1262.34409	0.00336	1262.34409	0.0048	1262.34409	0.00281
1261.37973	0.0037	1261.37973	0.00523	1261.37973	0.00276
1260.41538	0.0041	1260.41538	0.00571	1260.41538	0.00271
1259.45102	0.00455	1259.45102	0.00624	1259.45102	0.00267
1258.48666	0.00503	1258.48666	0.00681	1258.48666	0.00264
1257.5223	0.00555	1257.5223	0.00742	1257.5223	0.0026
1256.55794	0.00607	1256.55794	0.00805	1256.55794	0.00257
1255.59359	0.00659	1255.59359	0.00868	1255.59359	0.00253
1254.62923	0.00712	1254.62923	0.00931	1254.62923	0.00249
1253.66487	0.00763	1253.66487	0.00992	1253.66487	0.00244
1252.70051	0.00813	1252.70051	0.0105	1252.70051	0.00241
1251.73616	0.00861	1251.73616	0.01105	1251.73616	0.00239
1250.7718	0.00903	1250.7718	0.01156	1250.7718	0.00237
1249.80744	0.0094	1249.80744	0.012	1249.80744	0.00237



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1248.84308	0.00971	1248.84308	0.01238	1248.84308	0.00236
1247.87873	0.00996	1247.87873	0.01268	1247.87873	0.00234
1246.91437	0.01016	1246.91437	0.0129	1246.91437	0.00232
1245.95001	0.01029	1245.95001	0.01304	1245.95001	0.0023
1244.98565	0.01037	1244.98565	0.0131	1244.98565	0.00229
1244.0213	0.01038	1244.0213	0.01309	1244.0213	0.00228
1243.05694	0.01032	1243.05694	0.01299	1243.05694	0.00228
1242.09258	0.01019	1242.09258	0.01279	1242.09258	0.00228
1241.12822	0.00998	1241.12822	0.01249	1241.12822	0.00228
1240.16387	0.0097	1240.16387	0.01211	1240.16387	0.00226
1239.19951	0.00936	1239.19951	0.01166	1239.19951	0.00222
1238.23515	0.00896	1238.23515	0.01115	1238.23515	0.00217
1237.27079	0.00853	1237.27079	0.0106	1237.27079	0.00211
1236.30644	0.00807	1236.30644	0.01002	1236.30644	0.00205
1235.34208	0.0076	1235.34208	0.00941	1235.34208	0.00199
1234.37772	0.00714	1234.37772	0.0088	1234.37772	0.00194
1233.41336	0.00669	1233.41336	0.00819	1233.41336	0.00187
1232.449	0.00625	1232.449	0.00761	1232.449	0.00181
1231.48465	0.00583	1231.48465	0.00704	1231.48465	0.00175
1230.52029	0.00541	1230.52029	0.0065	1230.52029	0.00168
1229.55593	0.00502	1229.55593	0.00599	1229.55593	0.00162
1228.59157	0.00464	1228.59157	0.00552	1228.59157	0.00155
1227.62722	0.00429	1227.62722	0.00507	1227.62722	0.00148
1226.66286	0.00395	1226.66286	0.00465	1226.66286	0.00141
1225.6985	0.00365	1225.6985	0.00427	1225.6985	0.00134
1224.73414	0.00337	1224.73414	0.00392	1224.73414	0.00127
1223.76979	0.00311	1223.76979	0.0036	1223.76979	0.00121
1222.80543	0.00286	1222.80543	0.00331	1222.80543	0.00115
1221.84107	0.00263	1221.84107	0.00305	1221.84107	0.00109
1220.87671	0.00241	1220.87671	0.00281	1220.87671	0.00103
1219.91236	0.00222	1219.91236	0.0026	1219.91236	9.80E-04
1218.948	0.00205	1218.948	0.00241	1218.948	9.30E-04
1217.98364	0.00192	1217.98364	0.00224	1217.98364	8.90E-04
1217.01928	0.0018	1217.01928	0.00211	1217.01928	8.40E-04
1216.05493	0.00171	1216.05493	0.002	1216.05493	7.80E-04
1215.09057	0.00162	1215.09057	0.00191	1215.09057	7.40E-04
1214.12621	0.00156	1214.12621	0.00183	1214.12621	6.90E-04
1213.16185	0.00152	1213.16185	0.00177	1213.16185	6.50E-04
1212.1975	0.00152	1212.1975	0.00173	1212.1975	6.20E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1211.23314	0.00155	1211.23314	0.00172	1211.23314	5.80E-04
1210.26878	0.00161	1210.26878	0.00173	1210.26878	5.40E-04
1209.30442	0.00168	1209.30442	0.00177	1209.30442	4.90E-04
1208.34007	0.00175	1208.34007	0.00181	1208.34007	4.40E-04
1207.37571	0.0018	1207.37571	0.00184	1207.37571	4.00E-04
1206.41135	0.00184	1206.41135	0.00185	1206.41135	3.60E-04
1205.44699	0.00186	1205.44699	0.00183	1205.44699	3.40E-04
1204.48263	0.00186	1204.48263	0.00177	1204.48263	3.10E-04
1203.51828	0.00185	1203.51828	0.0017	1203.51828	2.70E-04
1202.55392	0.00183	1202.55392	0.00162	1202.55392	2.30E-04
1201.58956	0.0018	1201.58956	0.00154	1201.58956	1.80E-04
1200.6252	0.00177	1200.6252	0.00145	1200.6252	1.40E-04
1199.66085	0.00173	1199.66085	0.00138	1199.66085	1.00E-04
1198.69649	0.00171	1198.69649	0.00131	1198.69649	9.00E-05
1197.73213	0.0017	1197.73213	0.00125	1197.73213	8.00E-05
1196.76777	0.00171	1196.76777	0.00121	1196.76777	9.00E-05
1195.80342	0.00173	1195.80342	0.00118	1195.80342	1.00E-04
1194.83906	0.00177	1194.83906	0.00116	1194.83906	1.20E-04
1193.8747	0.00182	1193.8747	0.00114	1193.8747	1.40E-04
1192.91034	0.00186	1192.91034	0.00112	1192.91034	1.80E-04
1191.94599	0.00191	1191.94599	0.0011	1191.94599	2.50E-04
1190.98163	0.00195	1190.98163	0.00109	1190.98163	3.50E-04
1190.01727	0.00199	1190.01727	0.0011	1190.01727	4.60E-04
1189.05291	0.00202	1189.05291	0.00113	1189.05291	5.90E-04
1188.08856	0.00204	1188.08856	0.00116	1188.08856	7.10E-04
1187.1242	0.00206	1187.1242	0.0012	1187.1242	8.20E-04
1186.15984	0.00207	1186.15984	0.00125	1186.15984	9.30E-04
1185.19548	0.00209	1185.19548	0.0013	1185.19548	0.00106
1184.23113	0.00213	1184.23113	0.00136	1184.23113	0.0012
1183.26677	0.0022	1183.26677	0.00143	1183.26677	0.00135
1182.30241	0.0023	1182.30241	0.00153	1182.30241	0.00152
1181.33805	0.00245	1181.33805	0.00167	1181.33805	0.00167
1180.37369	0.00265	1180.37369	0.00185	1180.37369	0.00181
1179.40934	0.0029	1179.40934	0.00209	1179.40934	0.00194
1178.44498	0.0032	1178.44498	0.00239	1178.44498	0.00207
1177.48062	0.00354	1177.48062	0.00275	1177.48062	0.0022
1176.51626	0.00393	1176.51626	0.00317	1176.51626	0.00234
1175.55191	0.00435	1175.55191	0.00361	1175.55191	0.00248
1174.58755	0.00479	1174.58755	0.00406	1174.58755	0.00259

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1173.62319	0.00525	1173.62319	0.0045	1173.62319	0.00268
1172.65883	0.0057	1172.65883	0.00492	1172.65883	0.00274
1171.69448	0.00609	1171.69448	0.00529	1171.69448	0.00279
1170.73012	0.00636	1170.73012	0.00556	1170.73012	0.00284
1169.76576	0.00649	1169.76576	0.00568	1169.76576	0.00288
1168.8014	0.00647	1168.8014	0.00563	1168.8014	0.00291
1167.83705	0.0063	1167.83705	0.00541	1167.83705	0.00294
1166.87269	0.00603	1166.87269	0.00506	1166.87269	0.00295
1165.90833	0.00572	1165.90833	0.00464	1165.90833	0.00295
1164.94397	0.00543	1164.94397	0.00423	1164.94397	0.00294
1163.97962	0.00518	1163.97962	0.00386	1163.97962	0.00292
1163.01526	0.00498	1163.01526	0.00355	1163.01526	0.00289
1162.0509	0.00485	1162.0509	0.00333	1162.0509	0.00286
1161.08654	0.00483	1161.08654	0.00327	1161.08654	0.00284
1160.12219	0.00495	1160.12219	0.0034	1160.12219	0.00281
1159.15783	0.00526	1159.15783	0.0038	1159.15783	0.00279
1158.19347	0.00582	1158.19347	0.00449	1158.19347	0.00279
1157.22911	0.00662	1157.22911	0.00545	1157.22911	0.00281
1156.26475	0.00759	1156.26475	0.00656	1156.26475	0.00283
1155.3004	0.0086	1155.3004	0.00768	1155.3004	0.00284
1154.33604	0.00949	1154.33604	0.00865	1154.33604	0.00285
1153.37168	0.01016	1153.37168	0.00934	1153.37168	0.00283
1152.40732	0.01054	1152.40732	0.00969	1152.40732	0.00279
1151.44297	0.01063	1151.44297	0.00968	1151.44297	0.00275
1150.47861	0.01048	1150.47861	0.00936	1150.47861	0.00273
1149.51425	0.01017	1149.51425	0.00882	1149.51425	0.0027
1148.54989	0.00972	1148.54989	0.00814	1148.54989	0.00264
1147.58554	0.00919	1147.58554	0.00741	1147.58554	0.00253
1146.62118	0.0086	1146.62118	0.00668	1146.62118	0.00237
1145.65682	0.00801	1145.65682	0.00597	1145.65682	0.00216
1144.69246	0.00749	1144.69246	0.00531	1144.69246	0.00192
1143.72811	0.00704	1143.72811	0.00473	1143.72811	0.00165
1142.76375	0.0067	1142.76375	0.00422	1142.76375	0.00136
1141.79939	0.00643	1141.79939	0.00379	1141.79939	0.00111
1140.83503	0.00624	1140.83503	0.00343	1140.83503	9.70E-04
1139.87068	0.00608	1139.87068	0.00317	1139.87068	9.70E-04
1138.90632	0.00597	1138.90632	0.00299	1138.90632	0.00115
1137.94196	0.00589	1137.94196	0.00285	1137.94196	0.0015
1136.9776	0.00585	1136.9776	0.00276	1136.9776	0.00195

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1136.01325	0.00584	1136.01325	0.00272	1136.01325	0.00241
1135.04889	0.00584	1135.04889	0.00272	1135.04889	0.00286
1134.08453	0.00587	1134.08453	0.00272	1134.08453	0.00332
1133.12017	0.00593	1133.12017	0.00274	1133.12017	0.00382
1132.15582	0.006	1132.15582	0.00279	1132.15582	0.00437
1131.19146	0.00608	1131.19146	0.00284	1131.19146	0.00494
1130.2271	0.00615	1130.2271	0.00286	1130.2271	0.00548
1129.26274	0.0062	1129.26274	0.00286	1129.26274	0.00594
1128.29838	0.00625	1128.29838	0.00285	1128.29838	0.0063
1127.33403	0.0063	1127.33403	0.00285	1127.33403	0.00659
1126.36967	0.00635	1126.36967	0.00283	1126.36967	0.0068
1125.40531	0.00638	1125.40531	0.00283	1125.40531	0.00697
1124.44095	0.00642	1124.44095	0.00284	1124.44095	0.00711
1123.4766	0.00647	1123.4766	0.00288	1123.4766	0.00723
1122.51224	0.00654	1122.51224	0.00293	1122.51224	0.00734
1121.54788	0.00663	1121.54788	0.00299	1121.54788	0.00742
1120.58352	0.00672	1120.58352	0.00305	1120.58352	0.00746
1119.61917	0.00684	1119.61917	0.00313	1119.61917	0.00747
1118.65481	0.00695	1118.65481	0.00321	1118.65481	0.00744
1117.69045	0.00708	1117.69045	0.00333	1117.69045	0.00737
1116.72609	0.00724	1116.72609	0.00351	1116.72609	0.00732
1115.76174	0.00745	1115.76174	0.0038	1115.76174	0.00731
1114.79738	0.00773	1114.79738	0.00418	1114.79738	0.00734
1113.83302	0.00808	1113.83302	0.00465	1113.83302	0.00739
1112.86866	0.00852	1112.86866	0.00518	1112.86866	0.00746
1111.90431	0.00902	1111.90431	0.00578	1111.90431	0.00757
1110.93995	0.00958	1110.93995	0.0064	1110.93995	0.00775
1109.97559	0.01012	1109.97559	0.00703	1109.97559	0.00797
1109.01123	0.01059	1109.01123	0.00758	1109.01123	0.00826
1108.04688	0.01091	1108.04688	0.00798	1108.04688	0.0086
1107.08252	0.01107	1107.08252	0.00821	1107.08252	0.00895
1106.11816	0.01108	1106.11816	0.00823	1106.11816	0.00931
1105.1538	0.01092	1105.1538	0.00803	1105.1538	0.00969
1104.18944	0.0106	1104.18944	0.00765	1104.18944	0.01008
1103.22509	0.01016	1103.22509	0.00716	1103.22509	0.01046
1102.26073	0.00965	1102.26073	0.00659	1102.26073	0.01082
1101.29637	0.00912	1101.29637	0.00597	1101.29637	0.01115
1100.33201	0.00858	1100.33201	0.00537	1100.33201	0.01146
1099.36766	0.00809	1099.36766	0.00482	1099.36766	0.01174

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1098.4033	0.00769	1098.4033	0.00434	1098.4033	0.012
1097.43894	0.00734	1097.43894	0.00391	1097.43894	0.01222
1096.47458	0.00702	1096.47458	0.00354	1096.47458	0.01242
1095.51023	0.00672	1095.51023	0.00324	1095.51023	0.0126
1094.54587	0.00647	1094.54587	0.003	1094.54587	0.01281
1093.58151	0.00625	1093.58151	0.00281	1093.58151	0.01302
1092.61715	0.00605	1092.61715	0.00266	1092.61715	0.01324
1091.6528	0.00586	1091.6528	0.00252	1091.6528	0.01348
1090.68844	0.00571	1090.68844	0.00238	1090.68844	0.01368
1089.72408	0.00558	1089.72408	0.00226	1089.72408	0.01381
1088.75972	0.00545	1088.75972	0.00219	1088.75972	0.01388
1087.79537	0.00535	1087.79537	0.0022	1087.79537	0.01392
1086.83101	0.00527	1086.83101	0.00226	1086.83101	0.01392
1085.86665	0.00524	1085.86665	0.00234	1085.86665	0.0139
1084.90229	0.00525	1084.90229	0.00244	1084.90229	0.01386
1083.93794	0.00529	1083.93794	0.00253	1083.93794	0.01379
1082.97358	0.00532	1082.97358	0.00262	1082.97358	0.01367
1082.00922	0.0053	1082.00922	0.00268	1082.00922	0.01347
1081.04486	0.00521	1081.04486	0.00267	1081.04486	0.01321
1080.08051	0.00507	1080.08051	0.00261	1080.08051	0.01293
1079.11615	0.0049	1079.11615	0.00249	1079.11615	0.01264
1078.15179	0.00472	1078.15179	0.00233	1078.15179	0.01235
1077.18743	0.00457	1077.18743	0.00217	1077.18743	0.01208
1076.22307	0.00443	1076.22307	0.00205	1076.22307	0.01182
1075.25872	0.00429	1075.25872	0.00195	1075.25872	0.01157
1074.29436	0.00412	1074.29436	0.00187	1074.29436	0.01133
1073.33	0.00393	1073.33	0.00177	1073.33	0.0111
1072.36564	0.0037	1072.36564	0.00164	1072.36564	0.0109
1071.40129	0.00348	1071.40129	0.00148	1071.40129	0.01071
1070.43693	0.00327	1070.43693	0.0013	1070.43693	0.01058
1069.47257	0.00307	1069.47257	0.00112	1069.47257	0.01052
1068.50821	0.00288	1068.50821	9.50E-04	1068.50821	0.01053
1067.54386	0.00269	1067.54386	8.00E-04	1067.54386	0.01057
1066.5795	0.00251	1066.5795	6.90E-04	1066.5795	0.01065
1065.61514	0.00236	1065.61514	6.10E-04	1065.61514	0.01076
1064.65078	0.00222	1064.65078	5.40E-04	1064.65078	0.01088
1063.68643	0.0021	1063.68643	4.70E-04	1063.68643	0.01099
1062.72207	0.00199	1062.72207	4.10E-04	1062.72207	0.01111
1061.75771	0.00189	1061.75771	3.60E-04	1061.75771	0.01124

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
1060.79335	0.00178	1060.79335	3.20E-04	1060.79335	0.01136
1059.829	0.00168	1059.829	3.00E-04	1059.829	0.01146
1058.86464	0.00157	1058.86464	2.80E-04	1058.86464	0.01154
1057.90028	0.00147	1057.90028	2.60E-04	1057.90028	0.01161
1056.93592	0.00138	1056.93592	2.40E-04	1056.93592	0.01167
1055.97157	0.00131	1055.97157	2.10E-04	1055.97157	0.01172
1055.00721	0.00123	1055.00721	1.80E-04	1055.00721	0.01174
1054.04285	0.00116	1054.04285	1.50E-04	1054.04285	0.01175
1053.07849	0.0011	1053.07849	1.30E-04	1053.07849	0.01176
1052.11413	0.00104	1052.11413	1.10E-04	1052.11413	0.01179
1051.14978	9.60E-04	1051.14978	9.00E-05	1051.14978	0.01185
1050.18542	8.80E-04	1050.18542	7.00E-05	1050.18542	0.01195
1049.22106	8.20E-04	1049.22106	7.00E-05	1049.22106	0.0121
1048.2567	7.60E-04	1048.2567	8.00E-05	1048.2567	0.0123
1047.29235	7.00E-04	1047.29235	1.00E-04	1047.29235	0.01255
1046.32799	6.40E-04	1046.32799	1.30E-04	1046.32799	0.01284
1045.36363	5.90E-04	1045.36363	1.50E-04	1045.36363	0.01318
1044.39927	5.20E-04	1044.39927	1.40E-04	1044.39927	0.01359
1043.43492	4.40E-04	1043.43492	1.20E-04	1043.43492	0.01406
1042.47056	3.70E-04	1042.47056	9.00E-05	1042.47056	0.01459
1041.5062	3.30E-04	1041.5062	5.00E-05	1041.5062	0.01518
1040.54184	3.00E-04	1040.54184	3.00E-05	1040.54184	0.01582
1039.57749	2.70E-04	1039.57749	3.00E-05	1039.57749	0.01647
1038.61313	2.50E-04	1038.61313	4.00E-05	1038.61313	0.01709
1037.64877	2.10E-04	1037.64877	5.00E-05	1037.64877	0.01765
1036.68441	1.70E-04	1036.68441	7.00E-05	1036.68441	0.01814
1035.72006	1.30E-04	1035.72006	7.00E-05	1035.72006	0.01854
1034.7557	1.10E-04	1034.7557	6.00E-05	1034.7557	0.01887
1033.79134	1.20E-04	1033.79134	3.00E-05	1033.79134	0.01913
1032.82698	1.40E-04	1032.82698	2.00E-05	1032.82698	0.01931
1031.86263	1.60E-04	1031.86263	1.00E-05	1031.86263	0.01942
1030.89827	1.60E-04	1030.89827	0	1030.89827	0.01946
1029.93391	1.30E-04	1029.93391	1.00E-05	1029.93391	0.01942
1028.96955	8.00E-05	1028.96955	1.00E-05	1028.96955	0.01929
1028.0052	5.00E-05	1028.0052	0	1028.0052	0.01905
1027.04084	3.00E-05	1027.04084	-1.00E-05	1027.04084	0.01873
1026.07648	3.00E-05	1026.07648	-3.00E-05	1026.07648	0.01831
1025.11212	5.00E-05	1025.11212	-5.00E-05	1025.11212	0.01781
1024.14776	7.00E-05	1024.14776	-5.00E-05	1024.14776	0.01726

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1023.18341	1.00E-04	1023.18341	-2.00E-05	1023.18341	0.01669
1022.21905	1.50E-04	1022.21905	5.00E-05	1022.21905	0.0161
1021.25469	2.70E-04	1021.25469	1.80E-04	1021.25469	0.01551
1020.29033	4.60E-04	1020.29033	3.90E-04	1020.29033	0.01495
1019.32598	7.40E-04	1019.32598	6.60E-04	1019.32598	0.01444
1018.36162	0.00107	1018.36162	0.00101	1018.36162	0.01396
1017.39726	0.00144	1017.39726	0.00141	1017.39726	0.01352
1016.4329	0.00177	1016.4329	0.00178	1016.4329	0.01309
1015.46855	0.00201	1015.46855	0.00207	1015.46855	0.01267
1014.50419	0.00213	1014.50419	0.00221	1014.50419	0.01224
1013.53983	0.00212	1013.53983	0.0022	1013.53983	0.01182
1012.57547	0.00201	1012.57547	0.00203	1012.57547	0.01141
1011.61112	0.00185	1011.61112	0.00178	1011.61112	0.01097
1010.64676	0.00169	1010.64676	0.0015	1010.64676	0.01049
1009.6824	0.00153	1009.6824	0.00125	1009.6824	0.00997
1008.71804	0.00136	1008.71804	0.00103	1008.71804	0.00941
1007.75369	0.00121	1007.75369	8.60E-04	1007.75369	0.00879
1006.78933	0.00108	1006.78933	7.30E-04	1006.78933	0.00816
1005.82497	0.00101	1005.82497	6.40E-04	1005.82497	0.00753
1004.86061	0.00101	1004.86061	5.60E-04	1004.86061	0.00694
1003.89626	0.00107	1003.89626	5.10E-04	1003.89626	0.00639
1002.9319	0.00118	1002.9319	4.80E-04	1002.9319	0.00591
1001.96754	0.00131	1001.96754	4.80E-04	1001.96754	0.00553
1001.00318	0.00143	1001.00318	4.70E-04	1001.00318	0.00525
1000.03882	0.00152	1000.03882	4.50E-04	1000.03882	0.00504
999.07447	0.00162	999.07447	4.30E-04	999.07447	0.00487
998.11011	0.00175	998.11011	4.10E-04	998.11011	0.00475
997.14575	0.00189	997.14575	4.20E-04	997.14575	0.00464
996.18139	0.00202	996.18139	4.80E-04	996.18139	0.00455
995.21704	0.00216	995.21704	5.90E-04	995.21704	0.00447
994.25268	0.00232	994.25268	7.00E-04	994.25268	0.00438
993.28832	0.00248	993.28832	7.90E-04	993.28832	0.00425
992.32396	0.00264	992.32396	8.60E-04	992.32396	0.00407
991.35961	0.00282	991.35961	9.50E-04	991.35961	0.00383
990.39525	0.00305	990.39525	0.00107	990.39525	0.00352
989.43089	0.00332	989.43089	0.00124	989.43089	0.00319
988.46653	0.00358	988.46653	0.00141	988.46653	0.00287
987.50218	0.00384	987.50218	0.00155	987.50218	0.00257
986.53782	0.00409	986.53782	0.00163	986.53782	0.00228

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
985.57346	0.00432	985.57346	0.00167	985.57346	0.00202
984.6091	0.00456	984.6091	0.0017	984.6091	0.0018
983.64475	0.00485	983.64475	0.00178	983.64475	0.00162
982.68039	0.0052	982.68039	0.00193	982.68039	0.00146
981.71603	0.00557	981.71603	0.00211	981.71603	0.00131
980.75167	0.00594	980.75167	0.00227	980.75167	0.00111
979.78732	0.00628	979.78732	0.00238	979.78732	8.80E-04
978.82296	0.00656	978.82296	0.00247	978.82296	6.70E-04
977.8586	0.00676	977.8586	0.00256	977.8586	5.30E-04
976.89424	0.00692	976.89424	0.00264	976.89424	4.80E-04
975.92988	0.00709	975.92988	0.00271	975.92988	5.10E-04
974.96553	0.00729	974.96553	0.0028	974.96553	5.90E-04
974.00117	0.00753	974.00117	0.00288	974.00117	6.40E-04
973.03681	0.00779	973.03681	0.00296	973.03681	6.00E-04
972.07245	0.00802	972.07245	0.00302	972.07245	5.30E-04
971.1081	0.00823	971.1081	0.00304	971.1081	5.30E-04
970.14374	0.00844	970.14374	0.00306	970.14374	6.30E-04
969.17938	0.00869	969.17938	0.00308	969.17938	7.80E-04
968.21502	0.00896	968.21502	0.00317	968.21502	9.70E-04
967.25067	0.00923	967.25067	0.00333	967.25067	0.00114
966.28631	0.00945	966.28631	0.00351	966.28631	0.00129
965.32195	0.0096	965.32195	0.00367	965.32195	0.00139
964.35759	0.00966	964.35759	0.00376	964.35759	0.00144
963.39324	0.00967	963.39324	0.00377	963.39324	0.0014
962.42888	0.00966	962.42888	0.00371	962.42888	0.00131
961.46452	0.00967	961.46452	0.00367	961.46452	0.00119
960.50016	0.00972	960.50016	0.0037	960.50016	0.00109
959.53581	0.00976	959.53581	0.00379	959.53581	0.00104
958.57145	0.00977	958.57145	0.00388	958.57145	0.00105
957.60709	0.00974	957.60709	0.00392	957.60709	0.00111
956.64273	0.00966	956.64273	0.00389	956.64273	0.00113
955.67838	0.00956	955.67838	0.00383	955.67838	0.00109
954.71402	0.00944	954.71402	0.00374	954.71402	0.00103
953.74966	0.00931	953.74966	0.00366	953.74966	9.90E-04
952.7853	0.00921	952.7853	0.00361	952.7853	9.80E-04
951.82095	0.00917	951.82095	0.0036	951.82095	9.60E-04
950.85659	0.00914	950.85659	0.0036	950.85659	9.40E-04
949.89223	0.00909	949.89223	0.00355	949.89223	9.10E-04
948.92787	0.00901	948.92787	0.00345	948.92787	8.50E-04



Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
947.96351	0.00891	947.96351	0.00336	947.96351	7.80E-04
946.99916	0.00881	946.99916	0.00333	946.99916	7.70E-04
946.0348	0.00874	946.0348	0.00331	946.0348	8.30E-04
945.07044	0.00871	945.07044	0.0033	945.07044	9.10E-04
944.10608	0.00872	944.10608	0.00332	944.10608	0.00103
943.14173	0.0087	943.14173	0.00337	943.14173	0.00119
942.17737	0.00861	942.17737	0.00335	942.17737	0.00131
941.21301	0.00848	941.21301	0.00327	941.21301	0.00135
940.24865	0.00841	940.24865	0.00321	940.24865	0.00136
939.2843	0.00847	939.2843	0.0032	939.2843	0.00142
938.31994	0.00867	938.31994	0.00322	938.31994	0.0015
937.35558	0.00898	937.35558	0.00328	937.35558	0.0016
936.39122	0.00936	936.39122	0.00344	936.39122	0.00169
935.42687	0.00972	935.42687	0.00369	935.42687	0.00176
934.46251	0.01003	934.46251	0.00392	934.46251	0.00176
933.49815	0.01027	933.49815	0.00403	933.49815	0.00171
932.53379	0.01045	932.53379	0.00402	932.53379	0.00168
931.56944	0.01061	931.56944	0.00398	931.56944	0.00168
930.60508	0.01074	930.60508	0.00399	930.60508	0.00168
929.64072	0.01089	929.64072	0.00408	929.64072	0.00171
928.67636	0.01116	928.67636	0.00426	928.67636	0.00177
927.71201	0.01155	927.71201	0.00456	927.71201	0.00186
926.74765	0.01196	926.74765	0.00492	926.74765	0.00191
925.78329	0.01235	925.78329	0.00523	925.78329	0.00193
924.81893	0.01268	924.81893	0.00541	924.81893	0.00196
923.85457	0.01302	923.85457	0.00551	923.85457	0.00204
922.89022	0.01338	922.89022	0.00561	922.89022	0.00214
921.92586	0.0138	921.92586	0.00575	921.92586	0.00231
920.9615	0.01433	920.9615	0.00592	920.9615	0.00257
919.99714	0.01489	919.99714	0.0061	919.99714	0.00283
919.03279	0.01541	919.03279	0.00637	919.03279	0.00303
918.06843	0.01585	918.06843	0.00673	918.06843	0.00322
917.10407	0.01625	917.10407	0.00712	917.10407	0.00341
916.13971	0.01677	916.13971	0.00746	916.13971	0.00357
915.17536	0.01748	915.17536	0.00777	915.17536	0.00371
914.211	0.0183	914.211	0.00804	914.211	0.0039
913.24664	0.01915	913.24664	0.00817	913.24664	0.00414
912.28228	0.01998	912.28228	0.00811	912.28228	0.00443
911.31793	0.02069	911.31793	0.008	911.31793	0.00482

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
910.35357	0.0212	910.35357	0.00807	910.35357	0.00521
909.38921	0.02156	909.38921	0.0084	909.38921	0.00545
908.42485	0.02197	908.42485	0.00891	908.42485	0.00551
907.4605	0.0225	907.4605	0.00936	907.4605	0.0056
906.49614	0.02306	906.49614	0.0097	906.49614	0.00577
905.53178	0.02354	905.53178	0.00995	905.53178	0.00594
904.56742	0.02389	904.56742	0.01006	904.56742	0.00608
903.60307	0.02411	903.60307	0.01009	903.60307	0.0063
902.63871	0.02431	902.63871	0.0102	902.63871	0.00648
901.67435	0.02461	901.67435	0.01045	901.67435	0.00649
900.70999	0.02492	900.70999	0.01072	900.70999	0.00637
899.74564	0.02512	899.74564	0.0108	899.74564	0.0063
898.78128	0.02523	898.78128	0.01073	898.78128	0.00629
897.81692	0.02534	897.81692	0.01061	897.81692	0.00627
896.85256	0.02541	896.85256	0.01043	896.85256	0.00635
895.8882	0.0254	895.8882	0.01022	895.8882	0.00677
894.92385	0.02538	894.92385	0.01016	894.92385	0.0075
893.95949	0.0255	893.95949	0.01035	893.95949	0.00813
892.99513	0.02571	892.99513	0.01071	892.99513	0.00837
892.03077	0.0259	892.03077	0.01111	892.03077	0.00831
891.06642	0.02613	891.06642	0.01139	891.06642	0.00816
890.10206	0.02643	890.10206	0.01143	890.10206	0.00793
889.1377	0.02669	889.1377	0.01125	889.1377	0.00777
888.17334	0.02676	888.17334	0.01101	888.17334	0.00788
887.20899	0.02664	887.20899	0.01079	887.20899	0.00813
886.24463	0.02652	886.24463	0.01054	886.24463	0.00811
885.28027	0.02652	885.28027	0.01023	885.28027	0.00769
884.31591	0.02657	884.31591	0.00998	884.31591	0.00722
883.35156	0.02654	883.35156	0.0099	883.35156	0.00699
882.3872	0.02643	882.3872	0.01	882.3872	0.0069
881.42284	0.0263	881.42284	0.01041	881.42284	0.00687
880.45848	0.02625	880.45848	0.01112	880.45848	0.00693
879.49413	0.02631	879.49413	0.01179	879.49413	0.00696
878.52977	0.02641	878.52977	0.01218	878.52977	0.00672
877.56541	0.02652	877.56541	0.01229	877.56541	0.0063
876.60105	0.0266	876.60105	0.01224	876.60105	0.00602
875.6367	0.02657	875.6367	0.01211	875.6367	0.00597
874.67234	0.02642	874.67234	0.01194	874.67234	0.006
873.70798	0.02613	873.70798	0.01177	873.70798	0.00596

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
872.74362	0.02574	872.74362	0.01146	872.74362	0.00585
871.77926	0.02536	871.77926	0.01092	871.77926	0.0057
870.81491	0.02499	870.81491	0.01027	870.81491	0.00551
869.85055	0.02455	869.85055	0.00976	869.85055	0.00535
868.88619	0.0241	868.88619	0.00948	868.88619	0.00529
867.92183	0.02368	867.92183	0.00946	867.92183	0.00524
866.95748	0.02327	866.95748	0.00963	866.95748	0.00509
865.99312	0.02282	865.99312	0.00986	865.99312	0.00473
865.02876	0.02237	865.02876	0.00995	865.02876	0.00419
864.0644	0.02201	864.0644	0.00979	864.0644	0.00366
863.10005	0.02166	863.10005	0.00946	863.10005	0.00331
862.13569	0.02118	862.13569	0.00908	862.13569	0.00314
861.17133	0.02051	861.17133	0.00872	861.17133	0.0031
860.20697	0.01978	860.20697	0.00837	860.20697	0.00311
859.24262	0.01909	859.24262	0.00806	859.24262	0.00312
858.27826	0.0185	858.27826	0.00787	858.27826	0.00304
857.3139	0.01804	857.3139	0.00778	857.3139	0.0028
856.34954	0.01771	856.34954	0.00772	856.34954	0.0025
855.38519	0.01744	855.38519	0.00764	855.38519	0.00226
854.42083	0.01709	854.42083	0.00753	854.42083	0.002
853.45647	0.01658	853.45647	0.0074	853.45647	0.00165
852.49211	0.01599	852.49211	0.00723	852.49211	0.00121
851.52776	0.01538	851.52776	0.00703	851.52776	8.10E-04
850.5634	0.01472	850.5634	0.00683	850.5634	5.00E-04
849.59904	0.0141	849.59904	0.00661	849.59904	2.80E-04
848.63468	0.01369	848.63468	0.00634	848.63468	1.70E-04
847.67032	0.01349	847.67032	0.00601	847.67032	1.80E-04
846.70597	0.01334	846.70597	0.00569	846.70597	2.50E-04
845.74161	0.01314	845.74161	0.00546	845.74161	2.80E-04
844.77725	0.01285	844.77725	0.00536	844.77725	2.60E-04
843.81289	0.01245	843.81289	0.00536	843.81289	1.90E-04
842.84854	0.012	842.84854	0.00547	842.84854	1.20E-04
841.88418	0.01174	841.88418	0.00568	841.88418	7.00E-05
840.91982	0.01182	840.91982	0.00591	840.91982	3.00E-05
839.95546	0.01215	839.95546	0.00614	839.95546	0
838.99111	0.01253	838.99111	0.00639	838.99111	5.00E-05
838.02675	0.01282	838.02675	0.00668	838.02675	2.40E-04
837.06239	0.01295	837.06239	0.007	837.06239	5.40E-04
836.09803	0.013	836.09803	0.0073	836.09803	8.60E-04

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
835.13368	0.0131	835.13368	0.00753	835.13368	0.0012
834.16932	0.01339	834.16932	0.00767	834.16932	0.00163
833.20496	0.01398	833.20496	0.00767	833.20496	0.00214
832.2406	0.01474	832.2406	0.00759	832.2406	0.00263
831.27625	0.01551	831.27625	0.00757	831.27625	0.00301
830.31189	0.0162	830.31189	0.00771	830.31189	0.00333
829.34753	0.01686	829.34753	0.00798	829.34753	0.00363
828.38317	0.01752	828.38317	0.0082	828.38317	0.00398
827.41882	0.01817	827.41882	0.00826	827.41882	0.00446
826.45446	0.0188	826.45446	0.00817	826.45446	0.00507
825.4901	0.01932	825.4901	0.00804	825.4901	0.00571
824.52574	0.01966	824.52574	0.00796	824.52574	0.00629
823.56139	0.01992	823.56139	0.00799	823.56139	0.00679
822.59703	0.02027	822.59703	0.00815	822.59703	0.0072
821.63267	0.02075	821.63267	0.0083	821.63267	0.00748
820.66831	0.02129	820.66831	0.0083	820.66831	0.0077
819.70395	0.02177	819.70395	0.00815	819.70395	0.0079
818.7396	0.02202	818.7396	0.00801	818.7396	0.00801
817.77524	0.02187	817.77524	0.00799	817.77524	0.00785
816.81088	0.02139	816.81088	0.00814	816.81088	0.00746
815.84652	0.02083	815.84652	0.00844	815.84652	0.00705
814.88217	0.02036	814.88217	0.00875	814.88217	0.0067
813.91781	0.02004	813.91781	0.00891	813.91781	0.0064
812.95345	0.01987	812.95345	0.00883	812.95345	0.00616
811.98909	0.01978	811.98909	0.00859	811.98909	0.00607
811.02474	0.01957	811.02474	0.00831	811.02474	0.0061
810.06038	0.01909	810.06038	0.00804	810.06038	0.0061
809.09602	0.01838	809.09602	0.00783	809.09602	0.00595
808.13166	0.01754	808.13166	0.00761	808.13166	0.00568
807.16731	0.01667	807.16731	0.00728	807.16731	0.00535
806.20295	0.01578	806.20295	0.00675	806.20295	0.00498
805.23859	0.0149	805.23859	0.00603	805.23859	0.00461
804.27423	0.01407	804.27423	0.0053	804.27423	0.00427
803.30988	0.01332	803.30988	0.00474	803.30988	0.00401
802.34552	0.01267	802.34552	0.00441	802.34552	0.00383
801.38116	0.01221	801.38116	0.00433	801.38116	0.00374
800.4168	0.01208	800.4168	0.00454	800.4168	0.00379
799.45245	0.01239	799.45245	0.00505	799.45245	0.00402
798.48809	0.01309	798.48809	0.00572	798.48809	0.00436

Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
797.52373	0.01406	797.52373	0.00643	797.52373	0.00468
796.55937	0.0152	796.55937	0.00705	796.55937	0.00494
795.59501	0.01639	795.59501	0.00749	795.59501	0.0051
794.63066	0.01748	794.63066	0.00774	794.63066	0.00515
793.6663	0.0183	793.6663	0.00785	793.6663	0.00518
792.70194	0.01881	792.70194	0.00789	792.70194	0.00528
791.73758	0.01921	791.73758	0.00789	791.73758	0.00542
790.77323	0.01957	790.77323	0.00795	790.77323	0.00553
789.80887	0.01985	789.80887	0.00817	789.80887	0.00565
788.84451	0.01999	788.84451	0.00843	788.84451	0.00585
787.88015	0.02003	787.88015	0.00858	787.88015	0.00607
786.9158	0.02005	786.9158	0.00862	786.9158	0.0062
785.95144	0.02006	785.95144	0.00862	785.95144	0.00616
784.98708	0.02004	784.98708	0.00858	784.98708	0.00592
784.02272	0.02003	784.02272	0.00851	784.02272	0.00555
783.05837	0.01998	783.05837	0.00849	783.05837	0.00522
782.09401	0.01981	782.09401	0.00857	782.09401	0.00512
781.12965	0.01958	781.12965	0.00868	781.12965	0.00531
780.16529	0.01946	780.16529	0.00867	780.16529	0.00563
779.20094	0.0195	779.20094	0.00851	779.20094	0.00592
778.23658	0.01967	778.23658	0.00836	778.23658	0.00605
777.27222	0.01989	777.27222	0.00837	777.27222	0.00594
776.30786	0.02011	776.30786	0.00844	776.30786	0.00568
775.34351	0.02021	775.34351	0.0085	775.34351	0.00546
774.37915	0.02024	774.37915	0.00864	774.37915	0.00546
773.41479	0.02043	773.41479	0.00892	773.41479	0.00565
772.45043	0.02089	772.45043	0.00922	772.45043	0.00586
771.48608	0.02138	771.48608	0.00945	771.48608	0.00598
770.52172	0.02174	770.52172	0.00962	770.52172	0.00594
769.55736	0.02195	769.55736	0.00974	769.55736	0.00573
768.593	0.02201	768.593	0.00974	768.593	0.00534
767.62864	0.02194	767.62864	0.00961	767.62864	0.00499
766.66429	0.02184	766.66429	0.00946	766.66429	0.00496
765.69993	0.02182	765.69993	0.00932	765.69993	0.00528
764.73557	0.02191	764.73557	0.00919	764.73557	0.00578
763.77121	0.02208	763.77121	0.00907	763.77121	0.00629
762.80686	0.02229	762.80686	0.00894	762.80686	0.00672
761.8425	0.02255	761.8425	0.00884	761.8425	0.00697
760.87814	0.02284	760.87814	0.00883	760.87814	0.00699

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
759.91378	0.02318	759.91378	0.00891	759.91378	0.00692
758.94943	0.02354	758.94943	0.009	758.94943	0.00695
757.98507	0.02377	757.98507	0.00914	757.98507	0.00711
757.02071	0.02388	757.02071	0.00941	757.02071	0.00732
756.05635	0.02395	756.05635	0.00982	756.05635	0.00754
755.092	0.02394	755.092	0.01025	755.092	0.00776
754.12764	0.0239	754.12764	0.01058	754.12764	0.00793
753.16328	0.02401	753.16328	0.01078	753.16328	0.00805
752.19892	0.02447	752.19892	0.01087	752.19892	0.00816
751.23457	0.02527	751.23457	0.0109	751.23457	0.00815
750.27021	0.02621	750.27021	0.01099	750.27021	0.00797
749.30585	0.02714	749.30585	0.01127	749.30585	0.00777
748.34149	0.02793	748.34149	0.01171	748.34149	0.00767
747.37714	0.02842	747.37714	0.01216	747.37714	0.00754
746.41278	0.02861	746.41278	0.01248	746.41278	0.00737
745.44842	0.02884	745.44842	0.01272	745.44842	0.00728
744.48406	0.0294	744.48406	0.01299	744.48406	0.00726
743.5197	0.03036	743.5197	0.01332	743.5197	0.00724
742.55535	0.03164	742.55535	0.01374	742.55535	0.00742
741.59099	0.033	741.59099	0.01421	741.59099	0.00791
740.62663	0.03417	740.62663	0.01447	740.62663	0.00844
739.66227	0.03489	739.66227	0.01438	739.66227	0.00867
738.69792	0.03495	738.69792	0.0141	738.69792	0.00853
737.73356	0.0345	737.73356	0.01392	737.73356	0.00809
736.7692	0.03381	736.7692	0.01401	736.7692	0.00755
735.80484	0.03306	735.80484	0.01435	735.80484	0.0073
734.84049	0.03225	734.84049	0.01477	734.84049	0.00748
733.87613	0.03142	733.87613	0.01498	733.87613	0.00777
732.91177	0.03079	732.91177	0.01486	732.91177	0.00785
731.94741	0.0304	731.94741	0.01446	731.94741	0.00774
730.98306	0.03003	730.98306	0.01389	730.98306	0.00749
730.0187	0.02955	730.0187	0.01326	730.0187	0.00721
729.05434	0.02901	729.05434	0.01264	729.05434	0.00718
728.08998	0.02831	728.08998	0.01208	728.08998	0.00748
727.12563	0.02734	727.12563	0.01156	727.12563	0.00774
726.16127	0.02628	726.16127	0.01111	726.16127	0.00771
725.19691	0.02536	725.19691	0.01086	725.19691	0.00748
724.23255	0.02459	724.23255	0.01074	724.23255	0.00724
723.2682	0.02382	723.2682	0.01058	723.2682	0.00709

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
722.30384	0.02295	722.30384	0.01034	722.30384	0.00709
721.33948	0.02198	721.33948	0.01005	721.33948	0.00725
720.37512	0.0209	720.37512	0.00967	720.37512	0.00746
719.41076	0.01974	719.41076	0.00921	719.41076	0.00759
718.44641	0.0185	718.44641	0.00869	718.44641	0.00757
717.48205	0.01713	717.48205	0.00804	717.48205	0.00743
716.51769	0.01552	716.51769	0.00716	716.51769	0.00724
715.55333	0.01365	715.55333	0.00609	715.55333	0.00711
714.58898	0.01159	714.58898	0.00501	714.58898	0.00709
713.62462	0.00946	713.62462	0.00401	713.62462	0.00718
712.66026	0.00737	712.66026	0.0031	712.66026	0.00734
711.6959	0.00551	711.6959	0.00228	711.6959	0.0075
710.73155	0.00394	710.73155	0.00159	710.73155	0.00758
709.76719	0.00264	709.76719	0.00106	709.76719	0.00758
708.80283	0.00159	708.80283	6.60E-04	708.80283	0.00763
707.83847	8.10E-04	707.83847	3.60E-04	707.83847	0.00779
706.87412	3.10E-04	706.87412	1.80E-04	706.87412	0.008
705.90976	5.00E-05	705.90976	1.10E-04	705.90976	0.00821
704.9454	-7.00E-05	704.9454	1.10E-04	704.9454	0.00837
703.98104	-8.00E-05	703.98104	1.90E-04	703.98104	0.00848
703.01669	-4.00E-05	703.01669	3.30E-04	703.01669	0.00856
702.05233	5.00E-05	702.05233	5.50E-04	702.05233	0.00865
701.08797	2.00E-04	701.08797	8.30E-04	701.08797	0.00879
700.12361	4.50E-04	700.12361	0.00115	700.12361	0.00895
699.15926	8.40E-04	699.15926	0.0015	699.15926	0.00909
698.1949	0.00135	698.1949	0.00191	698.1949	0.00916
697.23054	0.00191	697.23054	0.00235	697.23054	0.00917
696.26618	0.00248	696.26618	0.00275	696.26618	0.00912
695.30183	0.003	695.30183	0.00307	695.30183	0.00901
694.33747	0.00342	694.33747	0.00331	694.33747	0.00889
693.37311	0.00366	693.37311	0.00349	693.37311	0.00883
692.40875	0.00377	692.40875	0.0036	692.40875	0.00884
691.44439	0.00379	691.44439	0.00367	691.44439	0.00887
690.48004	0.00375	690.48004	0.00373	690.48004	0.00889
689.51568	0.00367	689.51568	0.00376	689.51568	0.00888
688.55132	0.00362	688.55132	0.00373	688.55132	0.00886
687.58696	0.00359	687.58696	0.00364	687.58696	0.00887
686.62261	0.00344	686.62261	0.00342	686.62261	0.00897
685.65825	0.00308	685.65825	0.00306	685.65825	0.00917

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
684.69389	0.00252	684.69389	0.00258	684.69389	0.00942
683.72953	0.00183	683.72953	0.00201	683.72953	0.00967
682.76518	0.00108	682.76518	0.00143	682.76518	0.00985
681.80082	4.10E-04	681.80082	9.10E-04	681.80082	0.00989
680.83646	-9.00E-05	680.83646	4.80E-04	680.83646	0.00984
679.8721	-4.60E-04	679.8721	1.50E-04	679.8721	0.0098
678.90775	-7.90E-04	678.90775	-7.00E-05	678.90775	0.00983
677.94339	-0.00109	677.94339	-1.70E-04	677.94339	0.00997
676.97903	-0.00135	676.97903	-1.80E-04	676.97903	0.01022
676.01467	-0.00151	676.01467	-1.80E-04	676.01467	0.01047
675.05032	-0.00155	675.05032	-1.80E-04	675.05032	0.01058
674.08596	-0.00147	674.08596	-2.40E-04	674.08596	0.01052
673.1216	-0.00131	673.1216	-3.70E-04	673.1216	0.01036
672.15724	-0.00113	672.15724	-4.80E-04	672.15724	0.01015
671.19289	-1.00E-03	671.19289	-4.20E-04	671.19289	0.00997
670.22853	-9.00E-04	670.22853	-2.60E-04	670.22853	0.00996
669.26417	-8.20E-04	669.26417	-1.10E-04	669.26417	0.01007
668.29981	-7.50E-04	668.29981	0	668.29981	0.01021
667.33545	-6.90E-04	667.33545	3.00E-05	667.33545	0.01036
666.3711	-6.50E-04	666.3711	-5.00E-05	666.3711	0.01059
665.40674	-6.50E-04	665.40674	-2.70E-04	665.40674	0.01092
664.44238	-6.40E-04	664.44238	-4.90E-04	664.44238	0.01121
663.47802	-6.00E-04	663.47802	-5.30E-04	663.47802	0.0114
662.51367	-5.70E-04	662.51367	-4.30E-04	662.51367	0.01146
661.54931	-5.60E-04	661.54931	-2.10E-04	661.54931	0.01137
660.58495	-5.50E-04	660.58495	7.00E-05	660.58495	0.01113
659.62059	-4.70E-04	659.62059	3.10E-04	659.62059	0.01084
658.65624	-2.70E-04	658.65624	4.50E-04	658.65624	0.01064
657.69188	-7.00E-05	657.69188	4.40E-04	657.69188	0.01058
656.72752	4.00E-05	656.72752	3.00E-04	656.72752	0.01067
655.76316	2.00E-05	655.76316	1.30E-04	655.76316	0.01086
654.79881	-1.40E-04	654.79881	-1.00E-05	654.79881	0.01107
653.83445	-3.70E-04	653.83445	-1.10E-04	653.83445	0.01121
652.87009	-5.30E-04	652.87009	-1.70E-04	652.87009	0.01123
651.90573	-5.20E-04	651.90573	-1.40E-04	651.90573	0.01121
650.94138	-3.40E-04	650.94138	-7.00E-05	650.94138	0.01119
649.97702	-1.60E-04	649.97702	0	649.97702	0.01119
649.01266	-7.00E-05	649.01266	7.00E-05	649.01266	0.01121
648.0483	-1.00E-05	648.0483	1.20E-04	648.0483	0.01125



Fouled by SRNOM in absence of Ca2+		Fouled by OA in absence of Ca2+		Fouled by wastewater effluent in absence of Ca2+	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
647.08395	9.00E-05	647.08395	9.00E-05	647.08395	0.01126
646.11959	2.80E-04	646.11959	2.00E-05	646.11959	0.0112
645.15523	5.30E-04	645.15523	2.00E-05	645.15523	0.01116
644.19087	7.40E-04	644.19087	1.30E-04	644.19087	0.01126
643.22652	9.00E-04	643.22652	3.70E-04	643.22652	0.01142
642.26216	0.00105	642.26216	7.80E-04	642.26216	0.01158
641.2978	0.0012	641.2978	0.00137	641.2978	0.01169
640.33344	0.00138	640.33344	0.00205	640.33344	0.01174
639.36908	0.00168	639.36908	0.00263	639.36908	0.01175
638.40473	0.0021	638.40473	0.003	638.40473	0.01176
637.44037	0.00259	637.44037	0.0032	637.44037	0.01179
636.47601	0.00302	636.47601	0.00333	636.47601	0.01182
635.51165	0.00343	635.51165	0.00347	635.51165	0.01189
634.5473	0.00397	634.5473	0.00368	634.5473	0.01194
633.58294	0.00484	633.58294	0.00407	633.58294	0.01176
632.61858	0.00639	632.61858	0.0047	632.61858	0.01128
631.65422	0.00916	631.65422	0.00562	631.65422	0.01055
630.68987	0.01333	630.68987	0.00701	630.68987	0.00953
629.72551	0.0185	629.72551	0.00888	629.72551	0.00837
628.76115	0.0238	628.76115	0.01102	628.76115	0.00757
627.79679	0.02837	627.79679	0.01315	627.79679	0.00732
626.83244	0.03163	626.83244	0.01503	626.83244	0.0073
625.86808	0.03343	625.86808	0.01654	625.86808	0.00716
624.90372	0.03407	624.90372	0.01755	624.90372	0.00683
623.93936	0.03408	623.93936	0.01791	623.93936	0.00637
622.97501	0.03377	622.97501	0.01765	622.97501	0.00579
622.01065	0.03331	622.01065	0.01701	622.01065	0.00531
621.04629	0.03283	621.04629	0.01636	621.04629	0.00517
620.08193	0.03228	620.08193	0.01598	620.08193	0.00525
619.11758	0.03183	619.11758	0.01593	619.11758	0.00523
618.15322	0.03175	618.15322	0.01609	618.15322	0.00499
617.18886	0.03203	617.18886	0.01617	617.18886	0.00466
616.2245	0.03245	616.2245	0.01583	616.2245	0.0045
615.26014	0.03276	615.26014	0.01509	615.26014	0.00455
614.29579	0.03272	614.29579	0.0143	614.29579	0.00465
613.33143	0.03227	613.33143	0.01387	613.33143	0.00484
612.36707	0.03162	612.36707	0.0141	612.36707	0.00512
611.40271	0.0311	611.40271	0.01493	611.40271	0.00516
610.43836	0.03075	610.43836	0.01591	610.43836	0.00488

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
609.474	0.03046	609.474	0.01653	609.474	0.0046
608.50964	0.03031	608.50964	0.01667	608.50964	0.00451
607.54528	0.0302	607.54528	0.01638	607.54528	0.00452
606.58093	0.03002	606.58093	0.01566	606.58093	0.00458
605.61657	0.02994	605.61657	0.0147	605.61657	0.0048
604.65221	0.03012	604.65221	0.01411	604.65221	0.00512
603.68785	0.03032	603.68785	0.01424	603.68785	0.00517
602.7235	0.03026	602.7235	0.01498	602.7235	0.00468
601.75914	0.02986	601.75914	0.01609	601.75914	0.00388
600.79478	0.0292	600.79478	0.01724	600.79478	0.0032
599.83042	0.02851	599.83042	0.01798	599.83042	0.00293
598.86607	0.02818	598.86607	0.01803	598.86607	0.00307
597.90171	0.02848	597.90171	0.01744	597.90171	0.00346
596.93735	0.02921	596.93735	0.0165	596.93735	0.0039
595.97299	0.02983	595.97299	0.01558	595.97299	0.00414
595.00864	0.02992	595.00864	0.01495	595.00864	0.00397
594.04428	0.02928	594.04428	0.01461	594.04428	0.00373
593.07992	0.02819	593.07992	0.01432	593.07992	0.00387
592.11556	0.02732	592.11556	0.014	592.11556	0.00434
591.15121	0.02689	591.15121	0.01387	591.15121	0.00482
590.18685	0.02686	590.18685	0.01404	590.18685	0.00502
589.22249	0.02708	589.22249	0.01434	589.22249	0.00488
588.25813	0.02703	588.25813	0.0146	588.25813	0.00465
587.29377	0.02635	587.29377	0.0147	587.29377	0.00475
586.32942	0.02528	586.32942	0.01461	586.32942	0.0054
585.36506	0.02444	585.36506	0.01421	585.36506	0.00621
584.4007	0.02396	584.4007	0.01347	584.4007	0.00669
583.43634	0.02353	583.43634	0.01266	583.43634	0.00669
582.47199	0.02307	582.47199	0.0119	582.47199	0.00622
581.50763	0.0226	581.50763	0.01108	581.50763	0.00547
580.54327	0.02177	580.54327	0.01033	580.54327	0.00487
579.57891	0.02058	579.57891	0.01008	579.57891	0.00472
578.61456	0.01961	578.61456	0.01053	578.61456	0.00497
577.6502	0.01929	577.6502	0.01142	577.6502	0.00529
576.68584	0.0196	576.68584	0.01233	576.68584	0.00543
575.72148	0.02043	575.72148	0.013	575.72148	0.00536
574.75713	0.02145	574.75713	0.0131	574.75713	0.00496
573.79277	0.02206	573.79277	0.01251	573.79277	0.00448
572.82841	0.02226	572.82841	0.01151	572.82841	0.00453

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
571.86405	0.02259	571.86405	0.01057	571.86405	0.005
570.8997	0.02306	570.8997	0.01028	570.8997	0.00541
569.93534	0.02335	569.93534	0.01087	569.93534	0.00555
568.97098	0.02349	568.97098	0.01209	568.97098	0.00547
568.00662	0.02372	568.00662	0.01366	568.00662	0.00543
567.04227	0.02376	567.04227	0.01528	567.04227	0.00562
566.07791	0.02316	566.07791	0.01642	566.07791	0.006
565.11355	0.02231	565.11355	0.01661	565.11355	0.0065
564.14919	0.02191	564.14919	0.01591	564.14919	0.00675
563.18483	0.02182	563.18483	0.01499	563.18483	0.00621
562.22048	0.02146	562.22048	0.01426	562.22048	0.00467
561.25612	0.02061	561.25612	0.01351	561.25612	0.00273
560.29176	0.01971	560.29176	0.01252	560.29176	0.00169
559.3274	0.01923	559.3274	0.01138	559.3274	0.0021
558.36305	0.01913	558.36305	0.01021	558.36305	0.0033
557.39869	0.01917	557.39869	0.00923	557.39869	0.00477
556.43433	0.01934	556.43433	0.0088	556.43433	0.00636
555.46997	0.01965	555.46997	0.009	555.46997	0.00772
554.50562	0.01999	554.50562	0.00955	554.50562	0.00846
553.54126	0.02004	553.54126	0.00978	553.54126	0.00858
552.5769	0.01956	552.5769	0.00899	552.5769	0.00831
551.61254	0.01881	551.61254	0.00748	551.61254	0.00798
550.64819	0.01802	550.64819	0.00617	550.64819	0.00794
549.68383	0.01713	549.68383	0.006	549.68383	0.00829
548.71947	0.01602	548.71947	0.00734	548.71947	0.00887
547.75511	0.01474	547.75511	0.00929	547.75511	0.00939
546.79076	0.01365	546.79076	0.01047	546.79076	0.00908
545.8264	0.01297	545.8264	0.01009	545.8264	0.00716
544.86204	0.01279	544.86204	0.00841	544.86204	0.00417
543.89768	0.01332	543.89768	0.00659	543.89768	0.00188
542.93333	0.01441	542.93333	0.00561	542.93333	0.00124
541.96897	0.01562	541.96897	0.0057	541.96897	0.00187
541.00461	0.01656	541.00461	0.00662	541.00461	0.00309
540.04025	0.0168	540.04025	0.0074	540.04025	0.00419
539.07589	0.01622	539.07589	0.00717	539.07589	0.00431
538.11154	0.01524	538.11154	0.00602	538.11154	0.00345
537.14718	0.01413	537.14718	0.00474	537.14718	0.00274
536.18282	0.01304	536.18282	0.00424	536.18282	0.003
535.21846	0.01236	535.21846	0.00472	535.21846	0.00394

Fouled by SRNOM in absence of Ca <sup>2+</sup>		Fouled by OA in absence of Ca <sup>2+</sup>		Fouled by wastewater effluent in absence of Ca <sup>2+</sup>	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
534.25411	0.01216	534.25411	0.00567	534.25411	0.00502
533.28975	0.01224	533.28975	0.00647	533.28975	0.0058
532.32539	0.01223	532.32539	0.00684	532.32539	0.00578
531.36103	0.01167	531.36103	0.007	531.36103	0.00479
530.39668	0.01053	530.39668	0.00708	530.39668	0.00321
529.43232	0.00906	529.43232	0.00684	529.43232	0.0016
528.46796	0.00769	528.46796	0.0064	528.46796	5.00E-04
527.5036	0.00713	527.5036	0.00627	527.5036	4.50E-04
526.53925	0.00762	526.53925	0.00638	526.53925	0.0016
525.57489	0.00858	525.57489	0.00623	525.57489	0.00327
524.61053	0.00927	524.61053	0.00592	524.61053	0.00457
523.64617	0.0093	523.64617	0.0058	523.64617	0.00507
522.68182	0.00874	522.68182	0.00576	522.68182	0.0046
521.71746	0.00791	521.71746	0.0055	521.71746	0.00324
520.7531	0.00697	520.7531	0.00514	520.7531	0.00173
519.78874	0.00622	519.78874	0.00497	519.78874	1.00E-03
518.82439	0.00615	518.82439	0.00471	518.82439	0.00114
517.86003	0.00646	517.86003	0.00404	517.86003	0.0017
516.89567	0.00648	516.89567	0.00317	516.89567	0.0025
515.93131	0.00653	515.93131	0.00248	515.93131	0.00347
514.96696	0.00697	514.96696	0.00217	514.96696	0.00401
514.0026	0.00732	514.0026	0.00227	514.0026	0.0036
513.03824	0.00712	513.03824	0.00251	513.03824	0.00252
512.07388	0.00655	512.07388	0.00259	512.07388	0.00137
511.10952	0.00593	511.10952	0.00244	511.10952	4.50E-04
510.14517	0.00499	510.14517	0.00207	510.14517	0
509.18081	0.00365	509.18081	0.00158	509.18081	2.20E-04
508.21645	0.00263	508.21645	0.00111	508.21645	8.30E-04
507.25209	0.00219	507.25209	7.00E-04	507.25209	0.00127
506.28774	0.0018	506.28774	5.00E-04	506.28774	0.00138
505.32338	0.00126	505.32338	5.10E-04	505.32338	0.00133
504.35902	9.00E-04	504.35902	6.10E-04	504.35902	9.60E-04
503.39466	7.30E-04	503.39466	8.20E-04	503.39466	1.30E-04
502.43031	7.30E-04	502.43031	8.20E-04	502.43031	1.00E-04
501.46595	7.30E-04	501.46595	8.20E-04	501.46595	7.00E-05
500.50159	7.30E-04	500.50159	8.20E-04	500.50159	3.00E-05
499.53723	7.30E-04	499.53723	8.20E-04	499.53723	0

**Figure 5.27**

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3998.22658	3.70E-04	3998.22658	0	3998.22658	5.00E-05
3997.26223	5.00E-04	3997.26223	0	3997.26223	5.00E-05
3996.29787	4.60E-04	3996.29787	0	3996.29787	5.00E-05
3995.33351	2.40E-04	3995.33351	0	3995.33351	5.00E-05
3994.36915	4.00E-05	3994.36915	0	3994.36915	5.00E-05
3993.4048	1.60E-04	3993.4048	1.00E-05	3993.4048	6.00E-05
3992.44044	4.90E-04	3992.44044	2.00E-05	3992.44044	6.00E-05
3991.47608	6.70E-04	3991.47608	3.00E-05	3991.47608	6.00E-05
3990.51172	6.10E-04	3990.51172	4.00E-05	3990.51172	6.00E-05
3989.54737	4.50E-04	3989.54737	5.00E-05	3989.54737	6.00E-05
3988.58301	3.00E-04	3988.58301	5.00E-05	3988.58301	6.00E-05
3987.61865	1.70E-04	3987.61865	4.00E-05	3987.61865	5.00E-05
3986.65429	1.60E-04	3986.65429	3.00E-05	3986.65429	6.00E-05
3985.68994	3.10E-04	3985.68994	2.00E-05	3985.68994	7.00E-05
3984.72558	4.10E-04	3984.72558	1.00E-05	3984.72558	8.00E-05
3983.76122	3.60E-04	3983.76122	1.00E-05	3983.76122	8.00E-05
3982.79686	3.00E-04	3982.79686	3.00E-05	3982.79686	9.00E-05
3981.8325	2.90E-04	3981.8325	4.00E-05	3981.8325	8.00E-05
3980.86815	2.00E-04	3980.86815	5.00E-05	3980.86815	6.00E-05
3979.90379	1.30E-04	3979.90379	5.00E-05	3979.90379	4.00E-05
3978.93943	1.10E-04	3978.93943	5.00E-05	3978.93943	2.00E-05
3977.97507	9.00E-05	3977.97507	4.00E-05	3977.97507	2.00E-05
3977.01072	1.30E-04	3977.01072	4.00E-05	3977.01072	3.00E-05
3976.04636	2.30E-04	3976.04636	4.00E-05	3976.04636	4.00E-05
3975.082	2.80E-04	3975.082	5.00E-05	3975.082	7.00E-05
3974.11764	2.90E-04	3974.11764	6.00E-05	3974.11764	1.00E-04
3973.15329	2.40E-04	3973.15329	7.00E-05	3973.15329	1.10E-04
3972.18893	2.40E-04	3972.18893	7.00E-05	3972.18893	1.10E-04
3971.22457	3.90E-04	3971.22457	8.00E-05	3971.22457	1.10E-04
3970.26021	4.20E-04	3970.26021	9.00E-05	3970.26021	1.10E-04
3969.29586	2.30E-04	3969.29586	9.00E-05	3969.29586	9.00E-05
3968.3315	1.20E-04	3968.3315	9.00E-05	3968.3315	8.00E-05
3967.36714	1.60E-04	3967.36714	8.00E-05	3967.36714	7.00E-05
3966.40278	1.90E-04	3966.40278	8.00E-05	3966.40278	7.00E-05
3965.43843	2.00E-04	3965.43843	9.00E-05	3965.43843	6.00E-05
3964.47407	2.10E-04	3964.47407	1.00E-04	3964.47407	7.00E-05
3963.50971	1.40E-04	3963.50971	1.10E-04	3963.50971	8.00E-05
3962.54535	1.00E-05	3962.54535	1.20E-04	3962.54535	9.00E-05
3961.581	2.00E-05	3961.581	1.10E-04	3961.581	1.00E-04
3960.61664	1.50E-04	3960.61664	9.00E-05	3960.61664	1.00E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3959.65228	2.70E-04	3959.65228	7.00E-05	3959.65228	1.00E-04
3958.68792	2.60E-04	3958.68792	7.00E-05	3958.68792	9.00E-05
3957.72357	1.40E-04	3957.72357	8.00E-05	3957.72357	7.00E-05
3956.75921	7.00E-05	3956.75921	9.00E-05	3956.75921	5.00E-05
3955.79485	1.10E-04	3955.79485	1.10E-04	3955.79485	4.00E-05
3954.83049	1.60E-04	3954.83049	1.30E-04	3954.83049	4.00E-05
3953.86613	1.70E-04	3953.86613	1.30E-04	3953.86613	6.00E-05
3952.90178	2.60E-04	3952.90178	1.40E-04	3952.90178	1.00E-04
3951.93742	3.90E-04	3951.93742	1.40E-04	3951.93742	1.40E-04
3950.97306	4.10E-04	3950.97306	1.40E-04	3950.97306	1.70E-04
3950.0087	4.00E-04	3950.0087	1.40E-04	3950.0087	1.70E-04
3949.04435	4.70E-04	3949.04435	1.30E-04	3949.04435	1.60E-04
3948.07999	4.90E-04	3948.07999	1.40E-04	3948.07999	1.20E-04
3947.11563	3.80E-04	3947.11563	1.40E-04	3947.11563	9.00E-05
3946.15127	1.70E-04	3946.15127	1.50E-04	3946.15127	9.00E-05
3945.18692	0	3945.18692	1.50E-04	3945.18692	1.20E-04
3944.22256	1.00E-04	3944.22256	1.50E-04	3944.22256	1.60E-04
3943.2582	2.60E-04	3943.2582	1.40E-04	3943.2582	1.80E-04
3942.29384	2.70E-04	3942.29384	1.30E-04	3942.29384	1.90E-04
3941.32949	3.80E-04	3941.32949	1.20E-04	3941.32949	1.80E-04
3940.36513	5.80E-04	3940.36513	1.30E-04	3940.36513	1.50E-04
3939.40077	5.70E-04	3939.40077	1.30E-04	3939.40077	1.00E-04
3938.43641	4.00E-04	3938.43641	1.30E-04	3938.43641	7.00E-05
3937.47206	2.50E-04	3937.47206	1.30E-04	3937.47206	7.00E-05
3936.5077	1.80E-04	3936.5077	1.40E-04	3936.5077	8.00E-05
3935.54334	1.40E-04	3935.54334	1.50E-04	3935.54334	1.20E-04
3934.57898	2.40E-04	3934.57898	1.50E-04	3934.57898	1.80E-04
3933.61463	4.30E-04	3933.61463	1.60E-04	3933.61463	2.20E-04
3932.65027	5.40E-04	3932.65027	1.50E-04	3932.65027	2.40E-04
3931.68591	6.30E-04	3931.68591	1.60E-04	3931.68591	2.20E-04
3930.72155	6.50E-04	3930.72155	1.70E-04	3930.72155	1.80E-04
3929.75719	4.40E-04	3929.75719	1.90E-04	3929.75719	1.20E-04
3928.79284	1.80E-04	3928.79284	2.00E-04	3928.79284	8.00E-05
3927.82848	1.50E-04	3927.82848	2.00E-04	3927.82848	9.00E-05
3926.86412	2.90E-04	3926.86412	1.80E-04	3926.86412	1.30E-04
3925.89976	3.50E-04	3925.89976	1.70E-04	3925.89976	1.60E-04
3924.93541	2.10E-04	3924.93541	1.60E-04	3924.93541	1.60E-04
3923.97105	1.10E-04	3923.97105	1.60E-04	3923.97105	1.60E-04
3923.00669	2.40E-04	3923.00669	1.60E-04	3923.00669	1.50E-04
3922.04233	3.60E-04	3922.04233	1.60E-04	3922.04233	1.20E-04
3921.07798	2.80E-04	3921.07798	1.60E-04	3921.07798	1.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3920.11362	1.80E-04	3920.11362	1.40E-04	3920.11362	1.30E-04
3919.14926	4.00E-04	3919.14926	1.30E-04	3919.14926	1.70E-04
3918.1849	6.60E-04	3918.1849	1.30E-04	3918.1849	1.90E-04
3917.22055	4.50E-04	3917.22055	1.40E-04	3917.22055	1.60E-04
3916.25619	1.40E-04	3916.25619	1.50E-04	3916.25619	1.30E-04
3915.29183	1.70E-04	3915.29183	1.60E-04	3915.29183	1.10E-04
3914.32747	3.30E-04	3914.32747	1.80E-04	3914.32747	6.00E-05
3913.36312	4.40E-04	3913.36312	2.10E-04	3913.36312	3.00E-05
3912.39876	5.30E-04	3912.39876	2.20E-04	3912.39876	2.00E-05
3911.4344	6.00E-04	3911.4344	2.30E-04	3911.4344	4.00E-05
3910.47004	5.70E-04	3910.47004	2.40E-04	3910.47004	6.00E-05
3909.50569	3.80E-04	3909.50569	2.40E-04	3909.50569	8.00E-05
3908.54133	2.00E-04	3908.54133	2.20E-04	3908.54133	1.20E-04
3907.57697	2.90E-04	3907.57697	1.90E-04	3907.57697	1.80E-04
3906.61261	5.30E-04	3906.61261	1.80E-04	3906.61261	2.50E-04
3905.64825	7.10E-04	3905.64825	1.70E-04	3905.64825	3.20E-04
3904.6839	6.50E-04	3904.6839	1.80E-04	3904.6839	3.70E-04
3903.71954	6.00E-04	3903.71954	2.00E-04	3903.71954	3.90E-04
3902.75518	6.70E-04	3902.75518	2.10E-04	3902.75518	3.80E-04
3901.79082	5.80E-04	3901.79082	2.20E-04	3901.79082	3.60E-04
3900.82647	5.80E-04	3900.82647	2.10E-04	3900.82647	3.40E-04
3899.86211	6.60E-04	3899.86211	2.10E-04	3899.86211	3.00E-04
3898.89775	4.30E-04	3898.89775	2.00E-04	3898.89775	2.50E-04
3897.93339	2.10E-04	3897.93339	2.00E-04	3897.93339	2.00E-04
3896.96904	1.50E-04	3896.96904	1.90E-04	3896.96904	1.60E-04
3896.00468	1.70E-04	3896.00468	1.90E-04	3896.00468	1.20E-04
3895.04032	2.50E-04	3895.04032	1.90E-04	3895.04032	1.30E-04
3894.07596	3.80E-04	3894.07596	1.70E-04	3894.07596	2.10E-04
3893.11161	6.40E-04	3893.11161	1.60E-04	3893.11161	2.70E-04
3892.14725	8.10E-04	3892.14725	1.70E-04	3892.14725	2.70E-04
3891.18289	6.30E-04	3891.18289	2.10E-04	3891.18289	2.30E-04
3890.21853	4.40E-04	3890.21853	2.40E-04	3890.21853	1.60E-04
3889.25418	4.20E-04	3889.25418	2.60E-04	3889.25418	1.30E-04
3888.28982	4.70E-04	3888.28982	2.60E-04	3888.28982	1.40E-04
3887.32546	6.10E-04	3887.32546	2.50E-04	3887.32546	1.90E-04
3886.3611	6.60E-04	3886.3611	2.40E-04	3886.3611	2.50E-04
3885.39675	6.90E-04	3885.39675	2.40E-04	3885.39675	2.80E-04
3884.43239	9.90E-04	3884.43239	2.50E-04	3884.43239	2.80E-04
3883.46803	0.0012	3883.46803	2.60E-04	3883.46803	2.90E-04
3882.50367	0.00122	3882.50367	2.50E-04	3882.50367	3.00E-04
3881.53932	0.00108	3881.53932	2.20E-04	3881.53932	3.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3880.57496	5.60E-04	3880.57496	1.90E-04	3880.57496	3.20E-04
3879.6106	1.90E-04	3879.6106	1.80E-04	3879.6106	2.70E-04
3878.64624	3.70E-04	3878.64624	2.10E-04	3878.64624	2.10E-04
3877.68188	5.60E-04	3877.68188	2.40E-04	3877.68188	1.70E-04
3876.71753	5.80E-04	3876.71753	2.50E-04	3876.71753	1.90E-04
3875.75317	5.70E-04	3875.75317	2.50E-04	3875.75317	2.40E-04
3874.78881	3.40E-04	3874.78881	2.60E-04	3874.78881	2.70E-04
3873.82445	7.00E-05	3873.82445	2.70E-04	3873.82445	2.80E-04
3872.8601	2.80E-04	3872.8601	2.70E-04	3872.8601	3.30E-04
3871.89574	6.80E-04	3871.89574	2.50E-04	3871.89574	3.90E-04
3870.93138	7.50E-04	3870.93138	2.60E-04	3870.93138	4.10E-04
3869.96702	3.50E-04	3869.96702	2.80E-04	3869.96702	3.90E-04
3869.00267	1.80E-04	3869.00267	3.00E-04	3869.00267	3.60E-04
3868.03831	5.10E-04	3868.03831	3.00E-04	3868.03831	3.30E-04
3867.07395	8.60E-04	3867.07395	3.00E-04	3867.07395	2.70E-04
3866.10959	8.40E-04	3866.10959	3.10E-04	3866.10959	2.40E-04
3865.14524	3.70E-04	3865.14524	2.80E-04	3865.14524	2.70E-04
3864.18088	1.90E-04	3864.18088	2.50E-04	3864.18088	3.20E-04
3863.21652	4.40E-04	3863.21652	2.50E-04	3863.21652	2.90E-04
3862.25216	4.10E-04	3862.25216	2.90E-04	3862.25216	2.10E-04
3861.28781	2.20E-04	3861.28781	3.20E-04	3861.28781	1.40E-04
3860.32345	3.30E-04	3860.32345	3.10E-04	3860.32345	1.20E-04
3859.35909	4.70E-04	3859.35909	3.10E-04	3859.35909	1.20E-04
3858.39473	4.50E-04	3858.39473	3.40E-04	3858.39473	1.20E-04
3857.43038	4.00E-04	3857.43038	3.20E-04	3857.43038	2.10E-04
3856.46602	5.50E-04	3856.46602	2.50E-04	3856.46602	3.70E-04
3855.50166	7.70E-04	3855.50166	2.00E-04	3855.50166	5.20E-04
3854.5373	5.20E-04	3854.5373	1.80E-04	3854.5373	6.00E-04
3853.57294	2.50E-04	3853.57294	2.00E-04	3853.57294	6.10E-04
3852.60859	6.00E-04	3852.60859	2.40E-04	3852.60859	5.50E-04
3851.64423	8.30E-04	3851.64423	2.90E-04	3851.64423	4.20E-04
3850.67987	9.20E-04	3850.67987	3.60E-04	3850.67987	2.40E-04
3849.71551	7.20E-04	3849.71551	3.70E-04	3849.71551	1.20E-04
3848.75116	3.00E-04	3848.75116	3.30E-04	3848.75116	6.00E-05
3847.7868	1.50E-04	3847.7868	3.00E-04	3847.7868	2.00E-05
3846.82244	2.50E-04	3846.82244	2.80E-04	3846.82244	5.00E-05
3845.85808	3.00E-04	3845.85808	2.60E-04	3845.85808	1.00E-04
3844.89373	2.70E-04	3844.89373	2.50E-04	3844.89373	1.60E-04
3843.92937	2.40E-04	3843.92937	2.40E-04	3843.92937	2.30E-04
3842.96501	4.30E-04	3842.96501	2.40E-04	3842.96501	3.00E-04
3842.00065	7.80E-04	3842.00065	2.60E-04	3842.00065	3.40E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3841.0363	9.00E-04	3841.0363	2.70E-04	3841.0363	3.70E-04
3840.07194	8.10E-04	3840.07194	2.60E-04	3840.07194	4.00E-04
3839.10758	7.80E-04	3839.10758	2.60E-04	3839.10758	4.00E-04
3838.14322	5.40E-04	3838.14322	2.60E-04	3838.14322	3.90E-04
3837.17887	4.60E-04	3837.17887	2.70E-04	3837.17887	3.50E-04
3836.21451	7.60E-04	3836.21451	2.80E-04	3836.21451	3.00E-04
3835.25015	6.80E-04	3835.25015	3.00E-04	3835.25015	2.50E-04
3834.28579	4.00E-04	3834.28579	3.10E-04	3834.28579	2.40E-04
3833.32144	5.40E-04	3833.32144	2.90E-04	3833.32144	2.60E-04
3832.35708	7.50E-04	3832.35708	2.70E-04	3832.35708	2.50E-04
3831.39272	7.10E-04	3831.39272	2.80E-04	3831.39272	2.00E-04
3830.42836	7.10E-04	3830.42836	2.80E-04	3830.42836	1.80E-04
3829.46401	7.60E-04	3829.46401	2.90E-04	3829.46401	1.90E-04
3828.49965	7.00E-04	3828.49965	3.10E-04	3828.49965	1.80E-04
3827.53529	6.30E-04	3827.53529	3.30E-04	3827.53529	1.90E-04
3826.57093	6.20E-04	3826.57093	3.40E-04	3826.57093	1.90E-04
3825.60657	5.90E-04	3825.60657	3.50E-04	3825.60657	1.90E-04
3824.64222	4.50E-04	3824.64222	3.40E-04	3824.64222	2.10E-04
3823.67786	3.80E-04	3823.67786	3.00E-04	3823.67786	2.80E-04
3822.7135	5.50E-04	3822.7135	2.50E-04	3822.7135	3.60E-04
3821.74914	6.80E-04	3821.74914	2.30E-04	3821.74914	4.10E-04
3820.78479	5.50E-04	3820.78479	2.50E-04	3820.78479	4.10E-04
3819.82043	5.70E-04	3819.82043	2.90E-04	3819.82043	3.70E-04
3818.85607	7.20E-04	3818.85607	3.10E-04	3818.85607	3.40E-04
3817.89171	8.40E-04	3817.89171	3.20E-04	3817.89171	3.00E-04
3816.92736	7.80E-04	3816.92736	3.10E-04	3816.92736	2.90E-04
3815.963	5.10E-04	3815.963	3.00E-04	3815.963	2.90E-04
3814.99864	4.90E-04	3814.99864	2.90E-04	3814.99864	2.70E-04
3814.03428	6.20E-04	3814.03428	3.10E-04	3814.03428	2.00E-04
3813.06993	6.60E-04	3813.06993	3.50E-04	3813.06993	1.20E-04
3812.10557	7.40E-04	3812.10557	3.80E-04	3812.10557	6.00E-05
3811.14121	7.30E-04	3811.14121	3.60E-04	3811.14121	7.00E-05
3810.17685	6.40E-04	3810.17685	3.10E-04	3810.17685	1.30E-04
3809.2125	7.10E-04	3809.2125	2.70E-04	3809.2125	2.00E-04
3808.24814	8.70E-04	3808.24814	2.50E-04	3808.24814	2.50E-04
3807.28378	7.70E-04	3807.28378	2.60E-04	3807.28378	2.50E-04
3806.31942	6.30E-04	3806.31942	2.90E-04	3806.31942	2.30E-04
3805.35507	7.90E-04	3805.35507	3.20E-04	3805.35507	2.10E-04
3804.39071	9.30E-04	3804.39071	3.20E-04	3804.39071	2.30E-04
3803.42635	9.50E-04	3803.42635	3.00E-04	3803.42635	2.60E-04
3802.46199	9.50E-04	3802.46199	2.70E-04	3802.46199	3.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3801.49763	7.50E-04	3801.49763	2.50E-04	3801.49763	3.30E-04
3800.53328	6.20E-04	3800.53328	2.60E-04	3800.53328	2.90E-04
3799.56892	7.00E-04	3799.56892	2.90E-04	3799.56892	2.30E-04
3798.60456	7.10E-04	3798.60456	3.20E-04	3798.60456	1.90E-04
3797.6402	6.50E-04	3797.6402	3.40E-04	3797.6402	1.70E-04
3796.67585	6.40E-04	3796.67585	3.10E-04	3796.67585	1.80E-04
3795.71149	6.60E-04	3795.71149	2.80E-04	3795.71149	1.80E-04
3794.74713	7.10E-04	3794.74713	2.70E-04	3794.74713	1.40E-04
3793.78277	7.20E-04	3793.78277	2.70E-04	3793.78277	9.00E-05
3792.81842	7.10E-04	3792.81842	2.80E-04	3792.81842	6.00E-05
3791.85406	5.70E-04	3791.85406	3.00E-04	3791.85406	6.00E-05
3790.8897	3.20E-04	3790.8897	3.10E-04	3790.8897	8.00E-05
3789.92534	2.10E-04	3789.92534	3.40E-04	3789.92534	8.00E-05
3788.96099	2.60E-04	3788.96099	3.50E-04	3788.96099	8.00E-05
3787.99663	3.50E-04	3787.99663	3.50E-04	3787.99663	1.00E-04
3787.03227	4.60E-04	3787.03227	3.40E-04	3787.03227	1.20E-04
3786.06791	4.80E-04	3786.06791	3.30E-04	3786.06791	1.40E-04
3785.10356	4.20E-04	3785.10356	3.10E-04	3785.10356	1.40E-04
3784.1392	4.60E-04	3784.1392	3.10E-04	3784.1392	1.40E-04
3783.17484	5.40E-04	3783.17484	3.00E-04	3783.17484	1.40E-04
3782.21048	5.30E-04	3782.21048	2.90E-04	3782.21048	1.60E-04
3781.24613	4.80E-04	3781.24613	2.70E-04	3781.24613	1.80E-04
3780.28177	4.10E-04	3780.28177	2.70E-04	3780.28177	2.00E-04
3779.31741	3.00E-04	3779.31741	2.80E-04	3779.31741	2.10E-04
3778.35305	3.20E-04	3778.35305	2.90E-04	3778.35305	1.80E-04
3777.38869	3.80E-04	3777.38869	3.10E-04	3777.38869	1.40E-04
3776.42434	4.30E-04	3776.42434	3.30E-04	3776.42434	8.00E-05
3775.45998	5.00E-04	3775.45998	3.40E-04	3775.45998	4.00E-05
3774.49562	4.80E-04	3774.49562	3.40E-04	3774.49562	3.00E-05
3773.53126	4.10E-04	3773.53126	3.30E-04	3773.53126	6.00E-05
3772.56691	4.50E-04	3772.56691	3.20E-04	3772.56691	1.20E-04
3771.60255	5.40E-04	3771.60255	3.20E-04	3771.60255	1.70E-04
3770.63819	4.90E-04	3770.63819	3.30E-04	3770.63819	2.00E-04
3769.67383	3.80E-04	3769.67383	3.50E-04	3769.67383	1.90E-04
3768.70948	5.20E-04	3768.70948	3.60E-04	3768.70948	1.90E-04
3767.74512	7.50E-04	3767.74512	3.70E-04	3767.74512	1.80E-04
3766.78076	8.10E-04	3766.78076	3.80E-04	3766.78076	1.50E-04
3765.8164	6.60E-04	3765.8164	3.80E-04	3765.8164	1.40E-04
3764.85205	6.70E-04	3764.85205	3.70E-04	3764.85205	1.30E-04
3763.88769	8.20E-04	3763.88769	3.70E-04	3763.88769	1.20E-04
3762.92333	7.60E-04	3762.92333	3.70E-04	3762.92333	1.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3761.95897	6.80E-04	3761.95897	3.60E-04	3761.95897	1.80E-04
3760.99462	7.30E-04	3760.99462	3.40E-04	3760.99462	2.40E-04
3760.03026	7.20E-04	3760.03026	3.20E-04	3760.03026	2.90E-04
3759.0659	7.60E-04	3759.0659	3.00E-04	3759.0659	3.10E-04
3758.10154	8.50E-04	3758.10154	2.90E-04	3758.10154	2.90E-04
3757.13719	7.60E-04	3757.13719	3.00E-04	3757.13719	2.20E-04
3756.17283	6.60E-04	3756.17283	3.30E-04	3756.17283	1.70E-04
3755.20847	6.80E-04	3755.20847	3.20E-04	3755.20847	2.10E-04
3754.24411	6.70E-04	3754.24411	3.00E-04	3754.24411	3.00E-04
3753.27976	6.20E-04	3753.27976	3.00E-04	3753.27976	3.70E-04
3752.3154	5.70E-04	3752.3154	2.80E-04	3752.3154	4.70E-04
3751.35104	8.20E-04	3751.35104	2.50E-04	3751.35104	5.40E-04
3750.38668	9.70E-04	3750.38668	2.50E-04	3750.38668	5.20E-04
3749.42232	4.60E-04	3749.42232	3.00E-04	3749.42232	4.20E-04
3748.45797	2.90E-04	3748.45797	3.60E-04	3748.45797	3.40E-04
3747.49361	7.70E-04	3747.49361	3.30E-04	3747.49361	4.10E-04
3746.52925	0.00113	3746.52925	2.80E-04	3746.52925	5.00E-04
3745.56489	9.10E-04	3745.56489	2.80E-04	3745.56489	5.20E-04
3744.60054	0	3744.60054	2.80E-04	3744.60054	5.20E-04
3743.63618	5.00E-05	3743.63618	2.90E-04	3743.63618	4.60E-04
3742.67182	7.60E-04	3742.67182	3.20E-04	3742.67182	3.40E-04
3741.70746	9.80E-04	3741.70746	3.80E-04	3741.70746	2.00E-04
3740.74311	8.80E-04	3740.74311	4.10E-04	3740.74311	1.40E-04
3739.77875	8.50E-04	3739.77875	3.70E-04	3739.77875	2.20E-04
3738.81439	9.00E-04	3738.81439	3.10E-04	3738.81439	3.50E-04
3737.85003	9.80E-04	3737.85003	2.80E-04	3737.85003	4.70E-04
3736.88568	9.90E-04	3736.88568	2.70E-04	3736.88568	5.70E-04
3735.92132	8.10E-04	3735.92132	2.90E-04	3735.92132	6.40E-04
3734.95696	6.00E-04	3734.95696	3.10E-04	3734.95696	6.80E-04
3733.9926	8.40E-04	3733.9926	3.30E-04	3733.9926	6.50E-04
3733.02825	0.00106	3733.02825	3.60E-04	3733.02825	5.70E-04
3732.06389	7.50E-04	3732.06389	3.80E-04	3732.06389	4.50E-04
3731.09953	6.10E-04	3731.09953	3.90E-04	3731.09953	3.50E-04
3730.13517	7.90E-04	3730.13517	3.70E-04	3730.13517	3.00E-04
3729.17082	8.80E-04	3729.17082	3.50E-04	3729.17082	2.70E-04
3728.20646	8.90E-04	3728.20646	3.40E-04	3728.20646	2.70E-04
3727.2421	8.20E-04	3727.2421	3.30E-04	3727.2421	3.00E-04
3726.27774	6.70E-04	3726.27774	3.30E-04	3726.27774	3.30E-04
3725.31338	7.20E-04	3725.31338	3.30E-04	3725.31338	3.70E-04
3724.34903	9.20E-04	3724.34903	3.20E-04	3724.34903	3.80E-04
3723.38467	9.50E-04	3723.38467	3.20E-04	3723.38467	3.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3722.42031	7.40E-04	3722.42031	3.20E-04	3722.42031	3.20E-04
3721.45595	6.40E-04	3721.45595	3.10E-04	3721.45595	2.90E-04
3720.4916	7.30E-04	3720.4916	3.10E-04	3720.4916	2.50E-04
3719.52724	6.80E-04	3719.52724	3.20E-04	3719.52724	1.90E-04
3718.56288	4.80E-04	3718.56288	3.40E-04	3718.56288	1.50E-04
3717.59852	3.40E-04	3717.59852	3.50E-04	3717.59852	1.50E-04
3716.63417	2.80E-04	3716.63417	3.60E-04	3716.63417	1.60E-04
3715.66981	2.80E-04	3715.66981	3.60E-04	3715.66981	1.80E-04
3714.70545	4.10E-04	3714.70545	3.20E-04	3714.70545	2.70E-04
3713.74109	6.10E-04	3713.74109	2.90E-04	3713.74109	3.70E-04
3712.77674	6.00E-04	3712.77674	2.80E-04	3712.77674	4.50E-04
3711.81238	4.40E-04	3711.81238	2.80E-04	3711.81238	5.10E-04
3710.84802	5.80E-04	3710.84802	2.90E-04	3710.84802	5.00E-04
3709.88366	6.10E-04	3709.88366	3.20E-04	3709.88366	4.30E-04
3708.91931	4.40E-04	3708.91931	3.60E-04	3708.91931	3.20E-04
3707.95495	5.60E-04	3707.95495	3.70E-04	3707.95495	2.40E-04
3706.99059	8.10E-04	3706.99059	3.60E-04	3706.99059	1.80E-04
3706.02623	8.90E-04	3706.02623	3.60E-04	3706.02623	1.40E-04
3705.06188	8.60E-04	3705.06188	3.50E-04	3705.06188	1.70E-04
3704.09752	8.80E-04	3704.09752	3.20E-04	3704.09752	2.30E-04
3703.13316	9.50E-04	3703.13316	3.10E-04	3703.13316	2.80E-04
3702.1688	8.40E-04	3702.1688	3.20E-04	3702.1688	2.90E-04
3701.20445	6.40E-04	3701.20445	3.30E-04	3701.20445	2.90E-04
3700.24009	6.60E-04	3700.24009	3.40E-04	3700.24009	2.80E-04
3699.27573	6.70E-04	3699.27573	3.40E-04	3699.27573	2.50E-04
3698.31137	5.50E-04	3698.31137	3.50E-04	3698.31137	2.30E-04
3697.34701	5.30E-04	3697.34701	3.50E-04	3697.34701	2.30E-04
3696.38266	6.60E-04	3696.38266	3.50E-04	3696.38266	2.40E-04
3695.4183	6.90E-04	3695.4183	3.50E-04	3695.4183	2.40E-04
3694.45394	6.10E-04	3694.45394	3.50E-04	3694.45394	2.60E-04
3693.48958	5.60E-04	3693.48958	3.50E-04	3693.48958	3.10E-04
3692.52523	6.20E-04	3692.52523	3.50E-04	3692.52523	3.70E-04
3691.56087	7.10E-04	3691.56087	3.50E-04	3691.56087	4.70E-04
3690.59651	8.10E-04	3690.59651	3.30E-04	3690.59651	5.60E-04
3689.63215	8.40E-04	3689.63215	3.40E-04	3689.63215	5.90E-04
3688.6678	5.00E-04	3688.6678	3.70E-04	3688.6678	5.50E-04
3687.70344	2.50E-04	3687.70344	4.00E-04	3687.70344	4.50E-04
3686.73908	4.60E-04	3686.73908	4.10E-04	3686.73908	3.60E-04
3685.77472	6.20E-04	3685.77472	4.20E-04	3685.77472	2.70E-04
3684.81037	7.30E-04	3684.81037	4.40E-04	3684.81037	1.90E-04
3683.84601	9.40E-04	3683.84601	4.30E-04	3683.84601	1.80E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3682.88165	0.00104	3682.88165	4.10E-04	3682.88165	2.20E-04
3681.91729	9.90E-04	3681.91729	4.10E-04	3681.91729	2.50E-04
3680.95294	9.90E-04	3680.95294	4.40E-04	3680.95294	2.80E-04
3679.98858	0.00102	3679.98858	4.60E-04	3679.98858	3.00E-04
3679.02422	9.70E-04	3679.02422	4.60E-04	3679.02422	4.00E-04
3678.05986	9.60E-04	3678.05986	4.30E-04	3678.05986	5.60E-04
3677.09551	8.90E-04	3677.09551	4.00E-04	3677.09551	6.90E-04
3676.13115	6.20E-04	3676.13115	3.90E-04	3676.13115	7.30E-04
3675.16679	5.00E-04	3675.16679	4.20E-04	3675.16679	7.10E-04
3674.20243	7.20E-04	3674.20243	4.40E-04	3674.20243	6.60E-04
3673.23807	9.50E-04	3673.23807	4.50E-04	3673.23807	6.00E-04
3672.27372	0.00106	3672.27372	4.60E-04	3672.27372	5.50E-04
3671.30936	9.00E-04	3671.30936	4.50E-04	3671.30936	5.70E-04
3670.345	8.40E-04	3670.345	4.40E-04	3670.345	6.30E-04
3669.38064	0.00114	3669.38064	4.50E-04	3669.38064	6.30E-04
3668.41629	0.00114	3668.41629	5.00E-04	3668.41629	5.60E-04
3667.45193	8.80E-04	3667.45193	5.60E-04	3667.45193	4.50E-04
3666.48757	8.10E-04	3666.48757	6.00E-04	3666.48757	3.70E-04
3665.52321	9.40E-04	3665.52321	6.10E-04	3665.52321	3.40E-04
3664.55886	0.00107	3664.55886	6.10E-04	3664.55886	3.40E-04
3663.5945	0.00102	3663.5945	6.00E-04	3663.5945	3.70E-04
3662.63014	8.80E-04	3662.63014	6.00E-04	3662.63014	4.00E-04
3661.66578	8.60E-04	3661.66578	6.00E-04	3661.66578	4.10E-04
3660.70143	9.60E-04	3660.70143	6.10E-04	3660.70143	4.10E-04
3659.73707	0.00108	3659.73707	6.20E-04	3659.73707	4.50E-04
3658.77271	0.00115	3658.77271	6.10E-04	3658.77271	5.20E-04
3657.80835	0.00124	3657.80835	6.00E-04	3657.80835	5.80E-04
3656.844	0.00113	3656.844	6.00E-04	3656.844	6.10E-04
3655.87964	9.20E-04	3655.87964	6.10E-04	3655.87964	6.30E-04
3654.91528	0.00101	3654.91528	6.20E-04	3654.91528	6.30E-04
3653.95092	0.00119	3653.95092	6.40E-04	3653.95092	6.50E-04
3652.98657	0.00129	3652.98657	6.40E-04	3652.98657	7.40E-04
3652.02221	0.00145	3652.02221	6.20E-04	3652.02221	8.80E-04
3651.05785	0.00174	3651.05785	5.90E-04	3651.05785	0.00103
3650.09349	0.00198	3650.09349	5.80E-04	3650.09349	0.00115
3649.12913	0.00201	3649.12913	6.10E-04	3649.12913	0.00119
3648.16478	0.00194	3648.16478	6.50E-04	3648.16478	0.00112
3647.20042	0.00168	3647.20042	7.10E-04	3647.20042	1.00E-03
3646.23606	0.00143	3646.23606	7.60E-04	3646.23606	8.70E-04
3645.2717	0.00144	3645.2717	7.80E-04	3645.2717	8.00E-04
3644.30735	0.0015	3644.30735	7.90E-04	3644.30735	7.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3643.34299	0.00148	3643.34299	8.00E-04	3643.34299	7.40E-04
3642.37863	0.00144	3642.37863	8.00E-04	3642.37863	7.70E-04
3641.41427	0.00142	3641.41427	7.90E-04	3641.41427	8.20E-04
3640.44992	0.00139	3640.44992	8.00E-04	3640.44992	8.50E-04
3639.48556	0.00138	3639.48556	8.10E-04	3639.48556	8.70E-04
3638.5212	0.0014	3638.5212	8.30E-04	3638.5212	8.80E-04
3637.55684	0.00141	3637.55684	8.60E-04	3637.55684	9.00E-04
3636.59249	0.00146	3636.59249	8.70E-04	3636.59249	9.50E-04
3635.62813	0.00157	3635.62813	8.90E-04	3635.62813	1.00E-03
3634.66377	0.00162	3634.66377	9.10E-04	3634.66377	0.00103
3633.69941	0.00151	3633.69941	9.40E-04	3633.69941	0.00106
3632.73506	0.00147	3632.73506	9.60E-04	3632.73506	0.00114
3631.7707	0.00163	3631.7707	9.30E-04	3631.7707	0.0013
3630.80634	0.00175	3630.80634	9.00E-04	3630.80634	0.00144
3629.84198	0.00154	3629.84198	8.80E-04	3629.84198	0.00153
3628.87763	0.00122	3628.87763	8.90E-04	3628.87763	0.00156
3627.91327	0.00136	3627.91327	9.10E-04	3627.91327	0.00153
3626.94891	0.00154	3626.94891	9.50E-04	3626.94891	0.00143
3625.98455	0.00146	3625.98455	1.00E-03	3625.98455	0.00131
3625.0202	0.00144	3625.0202	0.00104	3625.0202	0.00127
3624.05584	0.00165	3624.05584	0.00103	3624.05584	0.00131
3623.09148	0.00187	3623.09148	0.00102	3623.09148	0.00139
3622.12712	0.00199	3622.12712	0.00102	3622.12712	0.00147
3621.16276	0.002	3621.16276	0.00103	3621.16276	0.00155
3620.19841	0.00185	3620.19841	0.00105	3620.19841	0.00162
3619.23405	0.00165	3619.23405	0.00108	3619.23405	0.00166
3618.26969	0.00155	3618.26969	0.00112	3618.26969	0.00166
3617.30533	0.00153	3617.30533	0.00116	3617.30533	0.00166
3616.34098	0.0016	3616.34098	0.00119	3616.34098	0.00167
3615.37662	0.00174	3615.37662	0.00119	3615.37662	0.0017
3614.41226	0.00198	3614.41226	0.00119	3614.41226	0.00173
3613.4479	0.00214	3613.4479	0.00121	3613.4479	0.00175
3612.48355	0.00193	3612.48355	0.00123	3612.48355	0.00176
3611.51919	0.00186	3611.51919	0.00124	3611.51919	0.00178
3610.55483	0.00211	3610.55483	0.00126	3610.55483	0.0018
3609.59047	0.00208	3609.59047	0.00127	3609.59047	0.00184
3608.62612	0.00188	3608.62612	0.00129	3608.62612	0.00188
3607.66176	0.00196	3607.66176	0.0013	3607.66176	0.00192
3606.6974	0.00207	3606.6974	0.00132	3606.6974	0.00191
3605.73304	0.00203	3605.73304	0.00136	3605.73304	0.00188
3604.76869	0.00198	3604.76869	0.00138	3604.76869	0.00188

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3603.80433	0.00201	3603.80433	0.00138	3603.80433	0.0019
3602.83997	0.00218	3602.83997	0.0014	3602.83997	0.00195
3601.87561	0.0024	3601.87561	0.00141	3601.87561	0.00202
3600.91126	0.00243	3600.91126	0.00143	3600.91126	0.00207
3599.9469	0.00231	3599.9469	0.00145	3599.9469	0.0021
3598.98254	0.00224	3598.98254	0.00147	3598.98254	0.00214
3598.01818	0.00233	3598.01818	0.00149	3598.01818	0.00218
3597.05382	0.00256	3597.05382	0.0015	3597.05382	0.00224
3596.08947	0.00261	3596.08947	0.00151	3596.08947	0.00229
3595.12511	0.00243	3595.12511	0.00152	3595.12511	0.00234
3594.16075	0.0023	3594.16075	0.00154	3594.16075	0.00236
3593.19639	0.00226	3593.19639	0.00156	3593.19639	0.00236
3592.23204	0.00233	3592.23204	0.0016	3592.23204	0.00236
3591.26768	0.00247	3591.26768	0.00162	3591.26768	0.0024
3590.30332	0.00252	3590.30332	0.00164	3590.30332	0.00249
3589.33896	0.00245	3589.33896	0.00164	3589.33896	0.0026
3588.37461	0.00244	3588.37461	0.00165	3588.37461	0.00269
3587.41025	0.00246	3587.41025	0.00167	3587.41025	0.00272
3586.44589	0.00218	3586.44589	0.0017	3586.44589	0.0027
3585.48153	0.00193	3585.48153	0.00174	3585.48153	0.00265
3584.51718	0.00203	3584.51718	0.00178	3584.51718	0.0026
3583.55282	0.00216	3583.55282	0.00181	3583.55282	0.00259
3582.58846	0.00204	3582.58846	0.00183	3582.58846	0.00262
3581.6241	0.00188	3581.6241	0.00186	3581.6241	0.00266
3580.65975	0.002	3580.65975	0.00188	3580.65975	0.0027
3579.69539	0.00231	3579.69539	0.0019	3579.69539	0.00273
3578.73103	0.00257	3578.73103	0.00192	3578.73103	0.00277
3577.76667	0.00263	3577.76667	0.00193	3577.76667	0.00281
3576.80232	0.00252	3576.80232	0.00195	3576.80232	0.00286
3575.83796	0.00241	3575.83796	0.00196	3575.83796	0.0029
3574.8736	0.00238	3574.8736	0.00198	3574.8736	0.00294
3573.90924	0.00234	3573.90924	0.002	3573.90924	0.00297
3572.94489	0.00228	3572.94489	0.00202	3572.94489	0.003
3571.98053	0.00225	3571.98053	0.00204	3571.98053	0.00304
3571.01617	0.00231	3571.01617	0.00204	3571.01617	0.00311
3570.05181	0.00248	3570.05181	0.00204	3570.05181	0.00322
3569.08745	0.00272	3569.08745	0.00205	3569.08745	0.00334
3568.1231	0.00292	3568.1231	0.00207	3568.1231	0.00344
3567.15874	0.00303	3567.15874	0.0021	3567.15874	0.0035
3566.19438	0.00299	3566.19438	0.00213	3566.19438	0.00352
3565.23002	0.00292	3565.23002	0.00217	3565.23002	0.0035

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3564.26567	0.00288	3564.26567	0.00221	3564.26567	0.00347
3563.30131	0.00274	3563.30131	0.00225	3563.30131	0.00345
3562.33695	0.00256	3562.33695	0.00229	3562.33695	0.00346
3561.37259	0.00255	3561.37259	0.00231	3561.37259	0.00348
3560.40824	0.00265	3560.40824	0.00232	3560.40824	0.0035
3559.44388	0.00269	3559.44388	0.00232	3559.44388	0.00352
3558.47952	0.00259	3558.47952	0.00232	3558.47952	0.00355
3557.51516	0.00242	3557.51516	0.00233	3557.51516	0.00357
3556.55081	0.00235	3556.55081	0.00236	3556.55081	0.00361
3555.58645	0.00243	3555.58645	0.0024	3555.58645	0.00367
3554.62209	0.0026	3554.62209	0.00243	3554.62209	0.00374
3553.65773	0.00283	3553.65773	0.00247	3553.65773	0.00381
3552.69338	0.00301	3552.69338	0.00251	3552.69338	0.00385
3551.72902	0.00303	3551.72902	0.00254	3551.72902	0.00389
3550.76466	0.00303	3550.76466	0.00256	3550.76466	0.00393
3549.8003	0.00308	3549.8003	0.00257	3549.8003	0.00396
3548.83595	0.00313	3548.83595	0.00257	3548.83595	0.00401
3547.87159	0.00327	3547.87159	0.00258	3547.87159	0.00408
3546.90723	0.0035	3546.90723	0.00258	3546.90723	0.00415
3545.94287	0.00359	3545.94287	0.0026	3545.94287	0.00421
3544.97851	0.00341	3544.97851	0.00263	3544.97851	0.00424
3544.01416	0.00311	3544.01416	0.00268	3544.01416	0.00425
3543.0498	0.00293	3543.0498	0.00272	3543.0498	0.00425
3542.08544	0.00296	3542.08544	0.00276	3542.08544	0.00424
3541.12108	0.00308	3541.12108	0.00279	3541.12108	0.00425
3540.15673	0.00309	3540.15673	0.00281	3540.15673	0.00428
3539.19237	0.00305	3539.19237	0.00283	3539.19237	0.00433
3538.22801	0.00317	3538.22801	0.00283	3538.22801	0.00441
3537.26365	0.00345	3537.26365	0.00284	3537.26365	0.00449
3536.2993	0.00368	3536.2993	0.00285	3536.2993	0.00455
3535.33494	0.00366	3535.33494	0.00285	3535.33494	0.0046
3534.37058	0.00349	3534.37058	0.00286	3534.37058	0.00463
3533.40622	0.00344	3533.40622	0.00289	3533.40622	0.00465
3532.44187	0.00352	3532.44187	0.00293	3532.44187	0.00467
3531.47751	0.00354	3531.47751	0.00297	3531.47751	0.00469
3530.51315	0.00355	3530.51315	0.003	3530.51315	0.00473
3529.54879	0.00357	3529.54879	0.00303	3529.54879	0.00477
3528.58444	0.0035	3528.58444	0.00303	3528.58444	0.00482
3527.62008	0.00339	3527.62008	0.00304	3527.62008	0.00486
3526.65572	0.0034	3526.65572	0.00304	3526.65572	0.00492
3525.69136	0.00358	3525.69136	0.00304	3525.69136	0.00497



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3524.72701	0.00377	3524.72701	0.00306	3524.72701	0.00502
3523.76265	0.00382	3523.76265	0.00309	3523.76265	0.00506
3522.79829	0.00386	3522.79829	0.00313	3522.79829	0.00508
3521.83393	0.004	3521.83393	0.00317	3521.83393	0.00509
3520.86958	0.00404	3520.86958	0.0032	3520.86958	0.00511
3519.90522	0.00383	3519.90522	0.00322	3519.90522	0.00512
3518.94086	0.00366	3518.94086	0.00325	3518.94086	0.00515
3517.9765	0.00373	3517.9765	0.00327	3517.9765	0.00517
3517.01214	0.00391	3517.01214	0.00329	3517.01214	0.0052
3516.04779	0.00406	3516.04779	0.00332	3516.04779	0.00523
3515.08343	0.00414	3515.08343	0.00334	3515.08343	0.00526
3514.11907	0.00412	3514.11907	0.00336	3514.11907	0.00531
3513.15471	0.00399	3513.15471	0.00338	3513.15471	0.00537
3512.19036	0.00393	3512.19036	0.00339	3512.19036	0.00544
3511.226	0.00415	3511.226	0.00343	3511.226	0.0055
3510.26164	0.00442	3510.26164	0.00347	3510.26164	0.00554
3509.29728	0.00439	3509.29728	0.0035	3509.29728	0.00557
3508.33293	0.00425	3508.33293	0.00352	3508.33293	0.00559
3507.36857	0.00423	3507.36857	0.00352	3507.36857	0.00561
3506.40421	0.00424	3506.40421	0.00352	3506.40421	0.00563
3505.43985	0.00427	3505.43985	0.00352	3505.43985	0.00567
3504.4755	0.00427	3504.4755	0.00352	3504.4755	0.00572
3503.51114	0.00415	3503.51114	0.00353	3503.51114	0.00578
3502.54678	0.00416	3502.54678	0.00355	3502.54678	0.00584
3501.58242	0.00435	3501.58242	0.00358	3501.58242	0.00588
3500.61807	0.00446	3500.61807	0.0036	3500.61807	0.0059
3499.65371	0.00436	3499.65371	0.00362	3499.65371	0.00591
3498.68935	0.00416	3498.68935	0.00364	3498.68935	0.00592
3497.72499	0.00409	3497.72499	0.00366	3497.72499	0.00594
3496.76064	0.00418	3496.76064	0.00368	3496.76064	0.00596
3495.79628	0.00429	3495.79628	0.0037	3495.79628	0.006
3494.83192	0.00435	3494.83192	0.00372	3494.83192	0.00606
3493.86756	0.00439	3493.86756	0.00374	3493.86756	0.00612
3492.9032	0.00434	3492.9032	0.00376	3492.9032	0.00618
3491.93885	0.00424	3491.93885	0.00378	3491.93885	0.00624
3490.97449	0.00431	3490.97449	0.00379	3490.97449	0.00627
3490.01013	0.00451	3490.01013	0.00381	3490.01013	0.00629
3489.04577	0.00458	3489.04577	0.00382	3489.04577	0.0063
3488.08142	0.00452	3488.08142	0.00383	3488.08142	0.00631
3487.11706	0.00445	3487.11706	0.00385	3487.11706	0.00633
3486.1527	0.00439	3486.1527	0.00386	3486.1527	0.00636

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3485.18834	0.00444	3485.18834	0.00387	3485.18834	0.00641
3484.22399	0.00462	3484.22399	0.00389	3484.22399	0.00646
3483.25963	0.00468	3483.25963	0.00392	3483.25963	0.0065
3482.29527	0.00466	3482.29527	0.00395	3482.29527	0.00653
3481.33091	0.00478	3481.33091	0.00398	3481.33091	0.00654
3480.36656	0.0049	3480.36656	0.004	3480.36656	0.00655
3479.4022	0.0048	3479.4022	0.00401	3479.4022	0.00654
3478.43784	0.0047	3478.43784	0.00402	3478.43784	0.00655
3477.47348	0.00477	3477.47348	0.00403	3477.47348	0.00659
3476.50913	0.00481	3476.50913	0.00405	3476.50913	0.00663
3475.54477	0.00474	3475.54477	0.00408	3475.54477	0.00668
3474.58041	0.00476	3474.58041	0.0041	3474.58041	0.00673
3473.61605	0.00494	3473.61605	0.00412	3473.61605	0.00677
3472.6517	0.00511	3472.6517	0.00413	3472.6517	0.00679
3471.68734	0.00519	3471.68734	0.00414	3471.68734	0.0068
3470.72298	0.00522	3470.72298	0.00415	3470.72298	0.00682
3469.75862	0.00522	3469.75862	0.00416	3469.75862	0.00685
3468.79426	0.0052	3468.79426	0.00417	3468.79426	0.00688
3467.82991	0.0051	3467.82991	0.00419	3467.82991	0.00692
3466.86555	0.00506	3466.86555	0.0042	3466.86555	0.00694
3465.90119	0.00515	3465.90119	0.00422	3465.90119	0.00696
3464.93683	0.00517	3464.93683	0.00423	3464.93683	0.00698
3463.97248	0.00514	3463.97248	0.00425	3463.97248	0.00701
3463.00812	0.00524	3463.00812	0.00427	3463.00812	0.00704
3462.04376	0.0054	3462.04376	0.00429	3462.04376	0.00707
3461.0794	0.00542	3461.0794	0.00431	3461.0794	0.00711
3460.11505	0.00531	3460.11505	0.00432	3460.11505	0.00714
3459.15069	0.0052	3459.15069	0.00433	3459.15069	0.00717
3458.18633	0.0051	3458.18633	0.00435	3458.18633	0.0072
3457.22197	0.00509	3457.22197	0.00437	3457.22197	0.00724
3456.25762	0.00521	3456.25762	0.0044	3456.25762	0.00727
3455.29326	0.0054	3455.29326	0.00442	3455.29326	0.00731
3454.3289	0.0056	3454.3289	0.00445	3454.3289	0.00734
3453.36454	0.00572	3453.36454	0.00447	3453.36454	0.00736
3452.40019	0.00564	3452.40019	0.00448	3452.40019	0.00737
3451.43583	0.00543	3451.43583	0.00448	3451.43583	0.0074
3450.47147	0.00537	3450.47147	0.00448	3450.47147	0.00743
3449.50711	0.00557	3449.50711	0.00449	3449.50711	0.00747
3448.54276	0.00584	3448.54276	0.0045	3448.54276	0.00751
3447.5784	0.00594	3447.5784	0.00453	3447.5784	0.00754
3446.61404	0.00592	3446.61404	0.00456	3446.61404	0.00757

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3445.64968	0.00587	3445.64968	0.00459	3445.64968	0.00758
3444.68533	0.00578	3444.68533	0.0046	3444.68533	0.00758
3443.72097	0.00571	3443.72097	0.00462	3443.72097	0.0076
3442.75661	0.00569	3442.75661	0.00462	3442.75661	0.00765
3441.79225	0.00564	3441.79225	0.00463	3441.79225	0.0077
3440.82789	0.00572	3440.82789	0.00464	3440.82789	0.00774
3439.86354	0.00605	3439.86354	0.00466	3439.86354	0.00778
3438.89918	0.00627	3438.89918	0.00468	3438.89918	0.0078
3437.93482	0.00632	3437.93482	0.0047	3437.93482	0.00781
3436.97046	0.00636	3436.97046	0.00471	3436.97046	0.00781
3436.00611	0.00625	3436.00611	0.00472	3436.00611	0.00781
3435.04175	0.00605	3435.04175	0.00473	3435.04175	0.00783
3434.07739	0.00598	3434.07739	0.00474	3434.07739	0.00786
3433.11303	0.00599	3433.11303	0.00477	3433.11303	0.00789
3432.14868	0.00608	3432.14868	0.0048	3432.14868	0.00792
3431.18432	0.00626	3431.18432	0.00483	3431.18432	0.00795
3430.21996	0.00631	3430.21996	0.00486	3430.21996	0.00797
3429.2556	0.00617	3429.2556	0.00487	3429.2556	0.00799
3428.29125	0.0061	3428.29125	0.00488	3428.29125	0.008
3427.32689	0.00617	3427.32689	0.00489	3427.32689	0.00801
3426.36253	0.00632	3426.36253	0.00489	3426.36253	0.00803
3425.39817	0.00648	3425.39817	0.00489	3425.39817	0.00806
3424.43382	0.00657	3424.43382	0.0049	3424.43382	0.00809
3423.46946	0.00653	3423.46946	0.00492	3423.46946	0.00811
3422.5051	0.00647	3422.5051	0.00494	3422.5051	0.00814
3421.54074	0.00643	3421.54074	0.00495	3421.54074	0.00816
3420.57639	0.00638	3420.57639	0.00497	3420.57639	0.00818
3419.61203	0.00638	3419.61203	0.00498	3419.61203	0.00821
3418.64767	0.00641	3418.64767	0.005	3418.64767	0.00823
3417.68331	0.0065	3417.68331	0.005	3417.68331	0.00826
3416.71895	0.0067	3416.71895	0.00502	3416.71895	0.00827
3415.7546	0.00682	3415.7546	0.00503	3415.7546	0.00829
3414.79024	0.00673	3414.79024	0.00505	3414.79024	0.0083
3413.82588	0.00662	3413.82588	0.00506	3413.82588	0.00831
3412.86152	0.00665	3412.86152	0.00509	3412.86152	0.00832
3411.89717	0.00674	3411.89717	0.00511	3411.89717	0.00836
3410.93281	0.00676	3410.93281	0.00513	3410.93281	0.00839
3409.96845	0.00677	3409.96845	0.00515	3409.96845	0.00843
3409.00409	0.00691	3409.00409	0.00516	3409.00409	0.00846
3408.03974	0.00708	3408.03974	0.00518	3408.03974	0.00847
3407.07538	0.00708	3407.07538	0.00518	3407.07538	0.00848

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3406.11102	0.00686	3406.11102	0.00519	3406.11102	0.00848
3405.14666	0.00673	3405.14666	0.0052	3405.14666	0.00849
3404.18231	0.00685	3404.18231	0.00522	3404.18231	0.00851
3403.21795	0.007	3403.21795	0.00524	3403.21795	0.00853
3402.25359	0.00704	3402.25359	0.00527	3402.25359	0.00855
3401.28923	0.00711	3401.28923	0.00529	3401.28923	0.00857
3400.32488	0.00722	3400.32488	0.00531	3400.32488	0.0086
3399.36052	0.00719	3399.36052	0.00531	3399.36052	0.00863
3398.39616	0.00709	3398.39616	0.0053	3398.39616	0.00866
3397.4318	0.00709	3397.4318	0.0053	3397.4318	0.00868
3396.46745	0.00714	3396.46745	0.0053	3396.46745	0.00869
3395.50309	0.00715	3395.50309	0.00532	3395.50309	0.0087
3394.53873	0.00716	3394.53873	0.00534	3394.53873	0.00871
3393.57437	0.00719	3393.57437	0.00537	3393.57437	0.00873
3392.61002	0.00718	3392.61002	0.00541	3392.61002	0.00875
3391.64566	0.00715	3391.64566	0.00543	3391.64566	0.00877
3390.6813	0.00723	3390.6813	0.00545	3390.6813	0.00877
3389.71694	0.00733	3389.71694	0.00545	3389.71694	0.00877
3388.75258	0.00737	3388.75258	0.00545	3388.75258	0.00876
3387.78823	0.00745	3387.78823	0.00546	3387.78823	0.00877
3386.82387	0.00752	3386.82387	0.00546	3386.82387	0.00877
3385.85951	0.00749	3385.85951	0.00547	3385.85951	0.00878
3384.89515	0.00743	3384.89515	0.00547	3384.89515	0.0088
3383.9308	0.00744	3383.9308	0.00549	3383.9308	0.00882
3382.96644	0.00756	3382.96644	0.00551	3382.96644	0.00884
3382.00208	0.00773	3382.00208	0.00553	3382.00208	0.00885
3381.03772	0.00783	3381.03772	0.00556	3381.03772	0.00886
3380.07337	0.00779	3380.07337	0.00558	3380.07337	0.00887
3379.10901	0.00767	3379.10901	0.0056	3379.10901	0.00888
3378.14465	0.00758	3378.14465	0.00561	3378.14465	0.00889
3377.18029	0.00749	3377.18029	0.00563	3377.18029	0.0089
3376.21594	0.00734	3376.21594	0.00564	3376.21594	0.00892
3375.25158	0.0073	3375.25158	0.00566	3375.25158	0.00894
3374.28722	0.00755	3374.28722	0.00569	3374.28722	0.00896
3373.32286	0.00779	3373.32286	0.00572	3373.32286	0.00898
3372.35851	0.00781	3372.35851	0.00574	3372.35851	0.00899
3371.39415	0.00775	3371.39415	0.00576	3371.39415	0.009
3370.42979	0.00768	3370.42979	0.00578	3370.42979	0.00901
3369.46543	0.0076	3369.46543	0.0058	3369.46543	0.00903
3368.50108	0.00753	3368.50108	0.00581	3368.50108	0.00905
3367.53672	0.00757	3367.53672	0.0058	3367.53672	0.00906

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3366.57236	0.0077	3366.57236	0.0058	3366.57236	0.00905
3365.608	0.0078	3365.608	0.0058	3365.608	0.00904
3364.64364	0.00784	3364.64364	0.00581	3364.64364	0.00903
3363.67929	0.00789	3363.67929	0.00582	3363.67929	0.00901
3362.71493	0.00786	3362.71493	0.00585	3362.71493	0.009
3361.75057	0.00777	3361.75057	0.00588	3361.75057	0.00901
3360.78621	0.00774	3360.78621	0.00591	3360.78621	0.00901
3359.82186	0.0078	3359.82186	0.00593	3359.82186	0.009
3358.8575	0.0079	3358.8575	0.00594	3358.8575	0.00899
3357.89314	0.00804	3357.89314	0.00595	3357.89314	0.00899
3356.92878	0.00811	3356.92878	0.00596	3356.92878	0.00899
3355.96443	0.00803	3355.96443	0.00597	3355.96443	0.009
3355.00007	0.00796	3355.00007	0.00598	3355.00007	0.00899
3354.03571	0.00798	3354.03571	0.00599	3354.03571	0.00899
3353.07135	0.008	3353.07135	0.006	3353.07135	0.00899
3352.107	0.00788	3352.107	0.00601	3352.107	0.009
3351.14264	0.00778	3351.14264	0.00602	3351.14264	0.009
3350.17828	0.00789	3350.17828	0.00603	3350.17828	0.009
3349.21392	0.00806	3349.21392	0.00603	3349.21392	0.009
3348.24957	0.00813	3348.24957	0.00603	3348.24957	0.009
3347.28521	0.00814	3347.28521	0.00604	3347.28521	0.009
3346.32085	0.00814	3346.32085	0.00605	3346.32085	0.00901
3345.35649	0.00815	3345.35649	0.00607	3345.35649	0.00901
3344.39214	0.00817	3344.39214	0.00608	3344.39214	0.00902
3343.42778	0.00814	3343.42778	0.00609	3343.42778	0.00903
3342.46342	0.00811	3342.46342	0.00609	3342.46342	0.00904
3341.49906	0.00815	3341.49906	0.0061	3341.49906	0.00904
3340.5347	0.00823	3340.5347	0.00611	3340.5347	0.00905
3339.57035	0.0082	3339.57035	0.00613	3339.57035	0.00906
3338.60599	0.00817	3338.60599	0.00615	3338.60599	0.00906
3337.64163	0.0082	3337.64163	0.00617	3337.64163	0.00905
3336.67727	0.0082	3336.67727	0.00618	3336.67727	0.00904
3335.71292	0.00813	3335.71292	0.00619	3335.71292	0.00904
3334.74856	0.00805	3334.74856	0.00619	3334.74856	0.00904
3333.7842	0.008	3333.7842	0.0062	3333.7842	0.00903
3332.81984	0.00807	3332.81984	0.0062	3332.81984	0.00903
3331.85549	0.00816	3331.85549	0.00621	3331.85549	0.00902
3330.89113	0.00819	3330.89113	0.00621	3330.89113	0.00901
3329.92677	0.00822	3329.92677	0.00623	3329.92677	0.009
3328.96241	0.00829	3328.96241	0.00626	3328.96241	0.009
3327.99806	0.00828	3327.99806	0.00629	3327.99806	0.00901

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3327.0337	0.00823	3327.0337	0.00631	3327.0337	0.00902
3326.06934	0.00819	3326.06934	0.00632	3326.06934	0.00903
3325.10498	0.00809	3325.10498	0.00632	3325.10498	0.00904
3324.14063	0.00799	3324.14063	0.00632	3324.14063	0.00904
3323.17627	0.008	3323.17627	0.00631	3323.17627	0.00903
3322.21191	0.00803	3322.21191	0.00631	3322.21191	0.00901
3321.24755	0.008	3321.24755	0.00632	3321.24755	0.00899
3320.2832	0.00804	3320.2832	0.00634	3320.2832	0.00898
3319.31884	0.0082	3319.31884	0.00634	3319.31884	0.00897
3318.35448	0.00827	3318.35448	0.00635	3318.35448	0.00896
3317.39012	0.0082	3317.39012	0.00636	3317.39012	0.00897
3316.42577	0.00814	3316.42577	0.00639	3316.42577	0.00897
3315.46141	0.00819	3315.46141	0.0064	3315.46141	0.00898
3314.49705	0.00832	3314.49705	0.00642	3314.49705	0.00898
3313.53269	0.00836	3313.53269	0.00643	3313.53269	0.00899
3312.56833	0.00827	3312.56833	0.00643	3312.56833	0.00901
3311.60398	0.00814	3311.60398	0.00643	3311.60398	0.00903
3310.63962	0.00814	3310.63962	0.00642	3310.63962	0.00905
3309.67526	0.00826	3309.67526	0.00643	3309.67526	0.00907
3308.7109	0.00831	3308.7109	0.00646	3308.7109	0.00908
3307.74655	0.0083	3307.74655	0.00649	3307.74655	0.00908
3306.78219	0.0083	3306.78219	0.00652	3306.78219	0.00908
3305.81783	0.00831	3305.81783	0.00654	3305.81783	0.00906
3304.85347	0.00823	3304.85347	0.00654	3304.85347	0.00904
3303.88912	0.0081	3303.88912	0.00653	3303.88912	0.00903
3302.92476	0.00806	3302.92476	0.00651	3302.92476	0.00901
3301.9604	0.0081	3301.9604	0.00649	3301.9604	0.00898
3300.99604	0.00806	3300.99604	0.00648	3300.99604	0.00897
3300.03169	0.00794	3300.03169	0.00647	3300.03169	0.00897
3299.06733	0.00789	3299.06733	0.00647	3299.06733	0.00897
3298.10297	0.00789	3298.10297	0.00647	3298.10297	0.00898
3297.13861	0.00773	3297.13861	0.00648	3297.13861	0.00899
3296.17426	0.00755	3296.17426	0.0065	3296.17426	0.00899
3295.2099	0.00761	3295.2099	0.00651	3295.2099	0.009
3294.24554	0.00783	3294.24554	0.00653	3294.24554	0.009
3293.28118	0.008	3293.28118	0.00653	3293.28118	0.009
3292.31683	0.00802	3292.31683	0.00653	3292.31683	0.00899
3291.35247	0.00791	3291.35247	0.00653	3291.35247	0.00899
3290.38811	0.00783	3290.38811	0.00652	3290.38811	0.00897
3289.42375	0.00785	3289.42375	0.00651	3289.42375	0.00896
3288.45939	0.00794	3288.45939	0.0065	3288.45939	0.00894

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3287.49504	0.00803	3287.49504	0.00649	3287.49504	0.00894
3286.53068	0.00799	3286.53068	0.00648	3286.53068	0.00894
3285.56632	0.00778	3285.56632	0.00646	3285.56632	0.00894
3284.60196	0.00751	3284.60196	0.00645	3284.60196	0.00894
3283.63761	0.00745	3283.63761	0.00643	3283.63761	0.00895
3282.67325	0.00759	3282.67325	0.00643	3282.67325	0.00896
3281.70889	0.0077	3281.70889	0.00643	3281.70889	0.00897
3280.74453	0.00774	3280.74453	0.00643	3280.74453	0.00898
3279.78018	0.00777	3279.78018	0.00643	3279.78018	0.00898
3278.81582	0.00775	3278.81582	0.00642	3278.81582	0.00897
3277.85146	0.00765	3277.85146	0.0064	3277.85146	0.00896
3276.8871	0.00754	3276.8871	0.00638	3276.8871	0.00895
3275.92275	0.00757	3275.92275	0.00637	3275.92275	0.00894
3274.95839	0.00766	3274.95839	0.00635	3274.95839	0.00893
3273.99403	0.00767	3273.99403	0.00635	3273.99403	0.00893
3273.02967	0.00768	3273.02967	0.00635	3273.02967	0.00893
3272.06532	0.00773	3272.06532	0.00634	3272.06532	0.00892
3271.10096	0.00764	3271.10096	0.00632	3271.10096	0.00891
3270.1366	0.00741	3270.1366	0.0063	3270.1366	0.0089
3269.17224	0.00727	3269.17224	0.00626	3269.17224	0.00889
3268.20789	0.00726	3268.20789	0.00622	3268.20789	0.00887
3267.24353	0.00729	3267.24353	0.00619	3267.24353	0.00884
3266.27917	0.00735	3266.27917	0.00618	3266.27917	0.00882
3265.31481	0.00734	3265.31481	0.00617	3265.31481	0.0088
3264.35046	0.00721	3264.35046	0.00616	3264.35046	0.00879
3263.3861	0.0071	3263.3861	0.00615	3263.3861	0.00879
3262.42174	0.0071	3262.42174	0.00613	3262.42174	0.0088
3261.45738	0.00713	3261.45738	0.00611	3261.45738	0.0088
3260.49302	0.00716	3260.49302	0.00607	3260.49302	0.00881
3259.52867	0.00716	3259.52867	0.00604	3259.52867	0.0088
3258.56431	0.00714	3258.56431	0.00602	3258.56431	0.00879
3257.59995	0.00713	3257.59995	0.006	3257.59995	0.00878
3256.63559	0.0071	3256.63559	0.00599	3256.63559	0.00877
3255.67124	0.00707	3255.67124	0.00599	3255.67124	0.00876
3254.70688	0.00705	3254.70688	0.00599	3254.70688	0.00875
3253.74252	0.00703	3253.74252	0.00598	3253.74252	0.00874
3252.77816	0.00697	3252.77816	0.00596	3252.77816	0.00874
3251.81381	0.00686	3251.81381	0.00594	3251.81381	0.00873
3250.84945	0.00678	3250.84945	0.00591	3250.84945	0.00872
3249.88509	0.00684	3249.88509	0.00589	3249.88509	0.00872
3248.92073	0.0069	3248.92073	0.00587	3248.92073	0.00872

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3247.95638	0.00685	3247.95638	0.00585	3247.95638	0.00871
3246.99202	0.00677	3246.99202	0.00583	3246.99202	0.0087
3246.02766	0.00669	3246.02766	0.00581	3246.02766	0.00869
3245.0633	0.0066	3245.0633	0.00579	3245.0633	0.00867
3244.09895	0.00659	3244.09895	0.00577	3244.09895	0.00865
3243.13459	0.00661	3243.13459	0.00576	3243.13459	0.00863
3242.17023	0.00652	3242.17023	0.00575	3242.17023	0.00863
3241.20587	0.00634	3241.20587	0.00574	3241.20587	0.00862
3240.24152	0.00623	3240.24152	0.00573	3240.24152	0.00861
3239.27716	0.00633	3239.27716	0.00572	3239.27716	0.00859
3238.3128	0.00652	3238.3128	0.00571	3238.3128	0.00856
3237.34844	0.00652	3237.34844	0.00569	3237.34844	0.00854
3236.38408	0.00645	3236.38408	0.00569	3236.38408	0.00853
3235.41973	0.00645	3235.41973	0.00568	3235.41973	0.00854
3234.45537	0.00633	3234.45537	0.00566	3234.45537	0.00855
3233.49101	0.0061	3233.49101	0.00564	3233.49101	0.00855
3232.52665	0.00601	3232.52665	0.00562	3232.52665	0.00854
3231.5623	0.00611	3231.5623	0.0056	3231.5623	0.00851
3230.59794	0.00621	3230.59794	0.00558	3230.59794	0.00848
3229.63358	0.00622	3229.63358	0.00556	3229.63358	0.00845
3228.66922	0.00614	3228.66922	0.00555	3228.66922	0.00841
3227.70487	0.00603	3227.70487	0.00554	3227.70487	0.00839
3226.74051	0.00594	3226.74051	0.00554	3226.74051	0.00838
3225.77615	0.00589	3225.77615	0.00553	3225.77615	0.00837
3224.81179	0.00585	3224.81179	0.00552	3224.81179	0.00836
3223.84744	0.00585	3223.84744	0.0055	3223.84744	0.00836
3222.88308	0.00587	3222.88308	0.0055	3222.88308	0.00835
3221.91872	0.00589	3221.91872	0.00549	3221.91872	0.00833
3220.95436	0.00586	3220.95436	0.00548	3220.95436	0.00831
3219.99001	0.0058	3219.99001	0.00546	3219.99001	0.0083
3219.02565	0.00579	3219.02565	0.00544	3219.02565	0.00829
3218.06129	0.00585	3218.06129	0.00542	3218.06129	0.00828
3217.09693	0.00584	3217.09693	0.00541	3217.09693	0.00826
3216.13258	0.00578	3216.13258	0.0054	3216.13258	0.00824
3215.16822	0.00575	3215.16822	0.00539	3215.16822	0.00821
3214.20386	0.00571	3214.20386	0.00538	3214.20386	0.00818
3213.2395	0.00566	3213.2395	0.00537	3213.2395	0.00816
3212.27514	0.00563	3212.27514	0.00534	3212.27514	0.00814
3211.31079	0.0056	3211.31079	0.00533	3211.31079	0.00812
3210.34643	0.00558	3210.34643	0.00532	3210.34643	0.0081
3209.38207	0.00556	3209.38207	0.00533	3209.38207	0.00807



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3208.41771	0.00551	3208.41771	0.00532	3208.41771	0.00805
3207.45336	0.00543	3207.45336	0.00531	3207.45336	0.00803
3206.489	0.00537	3206.489	0.0053	3206.489	0.00801
3205.52464	0.00533	3205.52464	0.00528	3205.52464	0.00799
3204.56028	0.00532	3204.56028	0.00527	3204.56028	0.00798
3203.59593	0.00536	3203.59593	0.00525	3203.59593	0.00796
3202.63157	0.00537	3202.63157	0.00524	3202.63157	0.00794
3201.66721	0.0053	3201.66721	0.00523	3201.66721	0.00792
3200.70285	0.00521	3200.70285	0.00522	3200.70285	0.0079
3199.7385	0.00519	3199.7385	0.0052	3199.7385	0.00788
3198.77414	0.00522	3198.77414	0.00517	3198.77414	0.00785
3197.80978	0.00521	3197.80978	0.00516	3197.80978	0.00781
3196.84542	0.00521	3196.84542	0.00514	3196.84542	0.00778
3195.88107	0.00522	3195.88107	0.00513	3195.88107	0.00776
3194.91671	0.00517	3194.91671	0.00512	3194.91671	0.00775
3193.95235	0.00515	3193.95235	0.00512	3193.95235	0.00775
3192.98799	0.00517	3192.98799	0.00512	3192.98799	0.00775
3192.02364	0.00515	3192.02364	0.00511	3192.02364	0.00775
3191.05928	0.0051	3191.05928	0.00511	3191.05928	0.00772
3190.09492	0.00505	3190.09492	0.0051	3190.09492	0.00769
3189.13056	0.00497	3189.13056	0.00508	3189.13056	0.00766
3188.16621	0.00485	3188.16621	0.00506	3188.16621	0.00763
3187.20185	0.00479	3187.20185	0.00504	3187.20185	0.00761
3186.23749	0.00485	3186.23749	0.00502	3186.23749	0.0076
3185.27313	0.00483	3185.27313	0.005	3185.27313	0.00758
3184.30877	0.00466	3184.30877	0.00498	3184.30877	0.00757
3183.34442	0.00454	3183.34442	0.00496	3183.34442	0.00754
3182.38006	0.00451	3182.38006	0.00493	3182.38006	0.00752
3181.4157	0.00451	3181.4157	0.00492	3181.4157	0.0075
3180.45134	0.0045	3180.45134	0.00491	3180.45134	0.00747
3179.48699	0.00446	3179.48699	0.0049	3179.48699	0.00745
3178.52263	0.00437	3178.52263	0.00489	3178.52263	0.00742
3177.55827	0.00427	3177.55827	0.00488	3177.55827	0.0074
3176.59391	0.00423	3176.59391	0.00487	3176.59391	0.00737
3175.62956	0.00424	3175.62956	0.00484	3175.62956	0.00734
3174.6652	0.00424	3174.6652	0.00482	3174.6652	0.00732
3173.70084	0.00426	3173.70084	0.0048	3173.70084	0.00729
3172.73648	0.00427	3172.73648	0.00478	3172.73648	0.00727
3171.77213	0.0042	3171.77213	0.00477	3171.77213	0.00725
3170.80777	0.00411	3170.80777	0.00475	3170.80777	0.00723
3169.84341	0.00406	3169.84341	0.00474	3169.84341	0.0072

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3168.87905	0.00402	3168.87905	0.00472	3168.87905	0.00718
3167.9147	0.00399	3167.9147	0.00471	3167.9147	0.00715
3166.95034	0.00404	3166.95034	0.0047	3166.95034	0.00713
3165.98598	0.00409	3165.98598	0.00468	3165.98598	0.00711
3165.02162	0.00408	3165.02162	0.00467	3165.02162	0.0071
3164.05727	0.00404	3164.05727	0.00466	3164.05727	0.00709
3163.09291	0.00395	3163.09291	0.00465	3163.09291	0.00708
3162.12855	0.00388	3162.12855	0.00465	3162.12855	0.00707
3161.16419	0.00389	3161.16419	0.00465	3161.16419	0.00705
3160.19983	0.00399	3160.19983	0.00465	3160.19983	0.00702
3159.23548	0.00418	3159.23548	0.00464	3159.23548	0.00699
3158.27112	0.00438	3158.27112	0.00462	3158.27112	0.00695
3157.30676	0.00445	3157.30676	0.00459	3157.30676	0.00692
3156.3424	0.00432	3156.3424	0.00456	3156.3424	0.0069
3155.37805	0.00414	3155.37805	0.00454	3155.37805	0.00688
3154.41369	0.00411	3154.41369	0.00451	3154.41369	0.00687
3153.44933	0.00422	3153.44933	0.0045	3153.44933	0.00686
3152.48497	0.00425	3152.48497	0.00449	3152.48497	0.00684
3151.52062	0.00412	3151.52062	0.00449	3151.52062	0.00681
3150.55626	0.00398	3150.55626	0.00448	3150.55626	0.00678
3149.5919	0.00386	3149.5919	0.00447	3149.5919	0.00675
3148.62754	0.00378	3148.62754	0.00445	3148.62754	0.00672
3147.66319	0.00381	3147.66319	0.00442	3147.66319	0.0067
3146.69883	0.00385	3146.69883	0.0044	3146.69883	0.00668
3145.73447	0.00381	3145.73447	0.00438	3145.73447	0.00667
3144.77011	0.00381	3144.77011	0.00436	3144.77011	0.00664
3143.80576	0.00387	3143.80576	0.00435	3143.80576	0.00662
3142.8414	0.00386	3142.8414	0.00433	3142.8414	0.00659
3141.87704	0.00379	3141.87704	0.00432	3141.87704	0.00657
3140.91268	0.00371	3140.91268	0.0043	3140.91268	0.00655
3139.94833	0.00368	3139.94833	0.00429	3139.94833	0.00652
3138.98397	0.00372	3138.98397	0.00428	3138.98397	0.0065
3138.01961	0.00377	3138.01961	0.00427	3138.01961	0.00648
3137.05525	0.00381	3137.05525	0.00425	3137.05525	0.00645
3136.0909	0.00377	3136.0909	0.00423	3136.0909	0.00643
3135.12654	0.00362	3135.12654	0.00421	3135.12654	0.0064
3134.16218	0.00352	3134.16218	0.00419	3134.16218	0.00637
3133.19782	0.00352	3133.19782	0.00419	3133.19782	0.00635
3132.23346	0.00356	3132.23346	0.00418	3132.23346	0.00632
3131.26911	0.00361	3131.26911	0.00418	3131.26911	0.00629
3130.30475	0.00359	3130.30475	0.00417	3130.30475	0.00626

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3129.34039	0.00349	3129.34039	0.00416	3129.34039	0.00624
3128.37603	0.00343	3128.37603	0.00415	3128.37603	0.00621
3127.41168	0.00345	3127.41168	0.00412	3127.41168	0.00619
3126.44732	0.00342	3126.44732	0.00409	3126.44732	0.00616
3125.48296	0.00326	3125.48296	0.00406	3125.48296	0.00615
3124.5186	0.00311	3124.5186	0.00403	3124.5186	0.00613
3123.55425	0.00312	3123.55425	0.00402	3123.55425	0.00612
3122.58989	0.00325	3122.58989	0.00402	3122.58989	0.00612
3121.62553	0.00337	3121.62553	0.00403	3121.62553	0.00612
3120.66117	0.00347	3120.66117	0.00404	3120.66117	0.00612
3119.69682	0.00354	3119.69682	0.00404	3119.69682	0.00611
3118.73246	0.0035	3118.73246	0.00403	3118.73246	0.00609
3117.7681	0.00345	3117.7681	0.004	3117.7681	0.00606
3116.80374	0.00346	3116.80374	0.00398	3116.80374	0.00604
3115.83939	0.00343	3115.83939	0.00396	3115.83939	0.00601
3114.87503	0.00338	3114.87503	0.00395	3114.87503	0.00597
3113.91067	0.00342	3113.91067	0.00394	3113.91067	0.00593
3112.94631	0.00349	3112.94631	0.00393	3112.94631	0.00589
3111.98196	0.00346	3111.98196	0.00392	3111.98196	0.00585
3111.0176	0.00336	3111.0176	0.00391	3111.0176	0.00583
3110.05324	0.00329	3110.05324	0.0039	3110.05324	0.00581
3109.08888	0.00323	3109.08888	0.0039	3109.08888	0.0058
3108.12452	0.00314	3108.12452	0.0039	3108.12452	0.00577
3107.16017	0.00301	3107.16017	0.00389	3107.16017	0.00574
3106.19581	0.00297	3106.19581	0.00387	3106.19581	0.00571
3105.23145	0.00309	3105.23145	0.00385	3105.23145	0.00569
3104.26709	0.00323	3104.26709	0.00383	3104.26709	0.00568
3103.30274	0.00322	3103.30274	0.00382	3103.30274	0.00567
3102.33838	0.00316	3102.33838	0.00382	3102.33838	0.00565
3101.37402	0.00317	3101.37402	0.00381	3101.37402	0.00563
3100.40966	0.00322	3100.40966	0.00381	3100.40966	0.00561
3099.44531	0.00328	3099.44531	0.0038	3099.44531	0.00558
3098.48095	0.00333	3098.48095	0.00379	3098.48095	0.00556
3097.51659	0.00334	3097.51659	0.00378	3097.51659	0.00554
3096.55223	0.00335	3096.55223	0.00377	3096.55223	0.00552
3095.58788	0.00339	3095.58788	0.00376	3095.58788	0.0055
3094.62352	0.00334	3094.62352	0.00375	3094.62352	0.00548
3093.65916	0.00324	3093.65916	0.00374	3093.65916	0.00546
3092.6948	0.0032	3092.6948	0.00372	3092.6948	0.00544
3091.73045	0.0032	3091.73045	0.00371	3091.73045	0.00543
3090.76609	0.0032	3090.76609	0.0037	3090.76609	0.00541

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3089.80173	0.00325	3089.80173	0.0037	3089.80173	0.0054
3088.83737	0.00332	3088.83737	0.00371	3088.83737	0.00538
3087.87302	0.00327	3087.87302	0.00371	3087.87302	0.00536
3086.90866	0.00319	3086.90866	0.00371	3086.90866	0.00534
3085.9443	0.00324	3085.9443	0.00371	3085.9443	0.00532
3084.97994	0.0033	3084.97994	0.00371	3084.97994	0.00531
3084.01559	0.00331	3084.01559	0.00371	3084.01559	0.0053
3083.05123	0.00332	3083.05123	0.0037	3083.05123	0.00529
3082.08687	0.00335	3082.08687	0.00369	3082.08687	0.00528
3081.12251	0.00333	3081.12251	0.00368	3081.12251	0.00527
3080.15815	0.00327	3080.15815	0.00367	3080.15815	0.00525
3079.1938	0.00322	3079.1938	0.00365	3079.1938	0.00522
3078.22944	0.00319	3078.22944	0.00363	3078.22944	0.0052
3077.26508	0.0032	3077.26508	0.00361	3077.26508	0.00517
3076.30072	0.00321	3076.30072	0.00359	3076.30072	0.00515
3075.33637	0.00317	3075.33637	0.00357	3075.33637	0.00514
3074.37201	0.00316	3074.37201	0.00356	3074.37201	0.00512
3073.40765	0.0032	3073.40765	0.00357	3073.40765	0.00511
3072.44329	0.00323	3072.44329	0.00357	3072.44329	0.00509
3071.47894	0.00321	3071.47894	0.00358	3071.47894	0.00507
3070.51458	0.00315	3070.51458	0.00358	3070.51458	0.00507
3069.55022	0.00306	3069.55022	0.00358	3069.55022	0.00506
3068.58586	0.00302	3068.58586	0.00358	3068.58586	0.00505
3067.62151	0.00305	3067.62151	0.00358	3067.62151	0.00503
3066.65715	0.00316	3066.65715	0.00358	3066.65715	0.005
3065.69279	0.00328	3065.69279	0.00357	3065.69279	0.00498
3064.72843	0.00327	3064.72843	0.00354	3064.72843	0.00495
3063.76408	0.00315	3063.76408	0.00352	3063.76408	0.00493
3062.79972	0.00298	3062.79972	0.0035	3062.79972	0.00491
3061.83536	0.00285	3061.83536	0.00349	3061.83536	0.00489
3060.871	0.0028	3060.871	0.00348	3060.871	0.00487
3059.90665	0.00278	3059.90665	0.00348	3059.90665	0.00486
3058.94229	0.00274	3058.94229	0.00348	3058.94229	0.00485
3057.97793	0.00266	3057.97793	0.00347	3057.97793	0.00484
3057.01357	0.00264	3057.01357	0.00347	3057.01357	0.00483
3056.04921	0.00276	3056.04921	0.00346	3056.04921	0.00482
3055.08486	0.00285	3055.08486	0.00345	3055.08486	0.00479
3054.1205	0.00281	3054.1205	0.00345	3054.1205	0.00476
3053.15614	0.00272	3053.15614	0.00345	3053.15614	0.00474
3052.19178	0.00266	3052.19178	0.00344	3052.19178	0.00472
3051.22743	0.00265	3051.22743	0.00342	3051.22743	0.0047

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3050.26307	0.00269	3050.26307	0.0034	3050.26307	0.00469
3049.29871	0.00269	3049.29871	0.00338	3049.29871	0.00467
3048.33435	0.00265	3048.33435	0.00336	3048.33435	0.00465
3047.37	0.00263	3047.37	0.00334	3047.37	0.00463
3046.40564	0.00264	3046.40564	0.00333	3046.40564	0.00461
3045.44128	0.00263	3045.44128	0.00333	3045.44128	0.00459
3044.47692	0.00262	3044.47692	0.00332	3044.47692	0.00458
3043.51257	0.00263	3043.51257	0.0033	3043.51257	0.00457
3042.54821	0.00263	3042.54821	0.00329	3042.54821	0.00456
3041.58385	0.0026	3041.58385	0.00327	3041.58385	0.00453
3040.61949	0.00257	3040.61949	0.00326	3040.61949	0.00451
3039.65514	0.00257	3039.65514	0.00323	3039.65514	0.00448
3038.69078	0.0026	3038.69078	0.00321	3038.69078	0.00446
3037.72642	0.0026	3037.72642	0.00318	3037.72642	0.00444
3036.76206	0.00261	3036.76206	0.00316	3036.76206	0.00442
3035.79771	0.00265	3035.79771	0.00314	3035.79771	0.00441
3034.83335	0.00258	3034.83335	0.00312	3034.83335	0.0044
3033.86899	0.00246	3033.86899	0.00311	3033.86899	0.00439
3032.90463	0.00247	3032.90463	0.0031	3032.90463	0.00438
3031.94027	0.00253	3031.94027	0.0031	3031.94027	0.00436
3030.97592	0.0025	3030.97592	0.00309	3030.97592	0.00433
3030.01156	0.00245	3030.01156	0.00308	3030.01156	0.0043
3029.0472	0.00249	3029.0472	0.00307	3029.0472	0.00427
3028.08284	0.00256	3028.08284	0.00306	3028.08284	0.00424
3027.11849	0.00254	3027.11849	0.00304	3027.11849	0.00421
3026.15413	0.00239	3026.15413	0.00302	3026.15413	0.00419
3025.18977	0.00225	3025.18977	0.00301	3025.18977	0.00418
3024.22541	0.00222	3024.22541	0.003	3024.22541	0.00416
3023.26106	0.00225	3023.26106	0.003	3023.26106	0.00413
3022.2967	0.00225	3022.2967	0.003	3022.2967	0.00411
3021.33234	0.00224	3021.33234	0.00299	3021.33234	0.00409
3020.36798	0.00226	3020.36798	0.00299	3020.36798	0.00407
3019.40363	0.00225	3019.40363	0.00294	3019.40363	0.00405
3018.43927	0.00217	3018.43927	0.00286	3018.43927	0.00405
3017.47491	0.00211	3017.47491	0.00275	3017.47491	0.00403
3016.51055	0.00216	3016.51055	0.00265	3016.51055	0.00402
3015.5462	0.00218	3015.5462	0.0026	3015.5462	0.00401
3014.58184	0.0021	3014.58184	0.00261	3014.58184	0.004
3013.61748	0.00201	3013.61748	0.00268	3013.61748	0.00398
3012.65312	0.00197	3012.65312	0.00277	3012.65312	0.00396
3011.68877	0.00201	3011.68877	0.00284	3011.68877	0.00394

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3010.72441	0.00206	3010.72441	0.00287	3010.72441	0.00392
3009.76005	0.00208	3009.76005	0.00285	3009.76005	0.0039
3008.79569	0.00208	3008.79569	0.00281	3008.79569	0.00388
3007.83134	0.00208	3007.83134	0.00279	3007.83134	0.00387
3006.86698	0.0021	3006.86698	0.00276	3006.86698	0.00386
3005.90262	0.00209	3005.90262	0.00275	3005.90262	0.00385
3004.93826	0.00204	3004.93826	0.00275	3004.93826	0.00384
3003.9739	0.00202	3003.9739	0.00274	3003.9739	0.00382
3003.00955	0.00203	3003.00955	0.00273	3003.00955	0.00381
3002.04519	0.00205	3002.04519	0.00271	3002.04519	0.00379
3001.08083	0.00205	3001.08083	0.00269	3001.08083	0.00377
3000.11647	0.00203	3000.11647	0.00268	3000.11647	0.00376
2999.15212	0.00196	2999.15212	0.00266	2999.15212	0.00375
2998.18776	0.00191	2998.18776	0.00265	2998.18776	0.00375
2997.2234	0.00197	2997.2234	0.00265	2997.2234	0.00374
2996.25904	0.0021	2996.25904	0.00265	2996.25904	0.00373
2995.29469	0.00219	2995.29469	0.00265	2995.29469	0.00372
2994.33033	0.00222	2994.33033	0.00266	2994.33033	0.00371
2993.36597	0.00222	2993.36597	0.00268	2993.36597	0.0037
2992.40161	0.00222	2992.40161	0.00269	2992.40161	0.0037
2991.43726	0.0022	2991.43726	0.00271	2991.43726	0.00368
2990.4729	0.00216	2990.4729	0.00272	2990.4729	0.00367
2989.50854	0.00212	2989.50854	0.00273	2989.50854	0.00365
2988.54418	0.00212	2988.54418	0.00273	2988.54418	0.00363
2987.57983	0.00214	2987.57983	0.00274	2987.57983	0.00363
2986.61547	0.00219	2986.61547	0.00275	2986.61547	0.00363
2985.65111	0.00226	2985.65111	0.00277	2985.65111	0.00363
2984.68675	0.00228	2984.68675	0.0028	2984.68675	0.00364
2983.7224	0.00227	2983.7224	0.00282	2983.7224	0.00364
2982.75804	0.00232	2982.75804	0.00284	2982.75804	0.00365
2981.79368	0.0024	2981.79368	0.00285	2981.79368	0.00365
2980.82932	0.00247	2980.82932	0.00285	2980.82932	0.00366
2979.86496	0.00254	2979.86496	0.00284	2979.86496	0.00367
2978.90061	0.00259	2978.90061	0.0028	2978.90061	0.00367
2977.93625	0.00263	2977.93625	0.00271	2977.93625	0.00369
2976.97189	0.00272	2976.97189	0.0026	2976.97189	0.0037
2976.00753	0.00285	2976.00753	0.00253	2976.00753	0.00373
2975.04318	0.00295	2975.04318	0.00252	2975.04318	0.00375
2974.07882	0.00299	2974.07882	0.00258	2974.07882	0.00377
2973.11446	0.00306	2973.11446	0.0027	2973.11446	0.00378
2972.1501	0.0032	2972.1501	0.00284	2972.1501	0.00379

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2971.18575	0.00333	2971.18575	0.00296	2971.18575	0.00379
2970.22139	0.00338	2970.22139	0.00303	2970.22139	0.0038
2969.25703	0.00343	2969.25703	0.00306	2969.25703	0.00381
2968.29267	0.00348	2968.29267	0.00307	2968.29267	0.00382
2967.32832	0.00353	2967.32832	0.00308	2967.32832	0.00383
2966.36396	0.00363	2966.36396	0.00308	2966.36396	0.00384
2965.3996	0.00379	2965.3996	0.00309	2965.3996	0.00386
2964.43524	0.00397	2964.43524	0.0031	2964.43524	0.00386
2963.47089	0.0041	2963.47089	0.00311	2963.47089	0.00387
2962.50653	0.00419	2962.50653	0.00312	2962.50653	0.00386
2961.54217	0.00425	2961.54217	0.00312	2961.54217	0.00386
2960.57781	0.00429	2960.57781	0.00313	2960.57781	0.00386
2959.61346	0.00435	2959.61346	0.00313	2959.61346	0.00387
2958.6491	0.00446	2958.6491	0.00315	2958.6491	0.00388
2957.68474	0.00462	2957.68474	0.00317	2957.68474	0.00388
2956.72038	0.00474	2956.72038	0.00318	2956.72038	0.00389
2955.75603	0.0048	2955.75603	0.00319	2955.75603	0.0039
2954.79167	0.00491	2954.79167	0.00318	2954.79167	0.00391
2953.82731	0.00507	2953.82731	0.00316	2953.82731	0.00392
2952.86295	0.00517	2952.86295	0.00314	2952.86295	0.00393
2951.89859	0.0052	2951.89859	0.00312	2951.89859	0.00395
2950.93424	0.00523	2950.93424	0.00312	2950.93424	0.00396
2949.96988	0.00528	2949.96988	0.00312	2949.96988	0.00397
2949.00552	0.00527	2949.00552	0.00313	2949.00552	0.00398
2948.04116	0.00524	2948.04116	0.00314	2948.04116	0.00399
2947.07681	0.00525	2947.07681	0.00315	2947.07681	0.004
2946.11245	0.00531	2946.11245	0.00315	2946.11245	0.00401
2945.14809	0.00542	2945.14809	0.00315	2945.14809	0.00402
2944.18373	0.00552	2944.18373	0.00315	2944.18373	0.00404
2943.21938	0.00556	2943.21938	0.00315	2943.21938	0.00406
2942.25502	0.00553	2942.25502	0.00317	2942.25502	0.00408
2941.29066	0.00545	2941.29066	0.00318	2941.29066	0.00409
2940.3263	0.00541	2940.3263	0.0032	2940.3263	0.00411
2939.36195	0.00549	2939.36195	0.00322	2939.36195	0.00412
2938.39759	0.00563	2938.39759	0.00323	2938.39759	0.00413
2937.43323	0.00574	2937.43323	0.00324	2937.43323	0.00415
2936.46887	0.00581	2936.46887	0.00325	2936.46887	0.00416
2935.50452	0.00585	2935.50452	0.00325	2935.50452	0.00416
2934.54016	0.00594	2934.54016	0.00325	2934.54016	0.00417
2933.5758	0.0061	2933.5758	0.00326	2933.5758	0.00417
2932.61144	0.0063	2932.61144	0.00327	2932.61144	0.00417

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2931.64709	0.00645	2931.64709	0.00328	2931.64709	0.00416
2930.68273	0.00654	2930.68273	0.00328	2930.68273	0.00416
2929.71837	0.00663	2929.71837	0.00328	2929.71837	0.00416
2928.75401	0.00675	2928.75401	0.00327	2928.75401	0.00416
2927.78965	0.00682	2927.78965	0.00325	2927.78965	0.00416
2926.8253	0.00682	2926.8253	0.00322	2926.8253	0.00416
2925.86094	0.00686	2925.86094	0.0032	2925.86094	0.00414
2924.89658	0.00693	2924.89658	0.00319	2924.89658	0.00412
2923.93222	0.00692	2923.93222	0.00317	2923.93222	0.0041
2922.96787	0.00689	2922.96787	0.00315	2922.96787	0.00408
2922.00351	0.00685	2922.00351	0.00313	2922.00351	0.00407
2921.03915	0.00672	2921.03915	0.00311	2921.03915	0.00405
2920.07479	0.00658	2920.07479	0.00309	2920.07479	0.00403
2919.11044	0.00653	2919.11044	0.00307	2919.11044	0.00402
2918.14608	0.00645	2918.14608	0.00305	2918.14608	0.004
2917.18172	0.00631	2917.18172	0.00303	2917.18172	0.00398
2916.21736	0.00619	2916.21736	0.00301	2916.21736	0.00396
2915.25301	0.0061	2915.25301	0.003	2915.25301	0.00394
2914.28865	0.00595	2914.28865	0.00298	2914.28865	0.00392
2913.32429	0.00579	2913.32429	0.00295	2913.32429	0.0039
2912.35993	0.00566	2912.35993	0.00294	2912.35993	0.00388
2911.39558	0.00555	2911.39558	0.00292	2911.39558	0.00386
2910.43122	0.00544	2910.43122	0.0029	2910.43122	0.00385
2909.46686	0.0054	2909.46686	0.00289	2909.46686	0.00383
2908.5025	0.0054	2908.5025	0.00288	2908.5025	0.00381
2907.53815	0.00532	2907.53815	0.00286	2907.53815	0.00379
2906.57379	0.00519	2906.57379	0.00284	2906.57379	0.00377
2905.60943	0.0051	2905.60943	0.00281	2905.60943	0.00374
2904.64507	0.00505	2904.64507	0.00278	2904.64507	0.00372
2903.68071	0.00492	2903.68071	0.00275	2903.68071	0.0037
2902.71636	0.00473	2902.71636	0.00273	2902.71636	0.00368
2901.752	0.00459	2901.752	0.00271	2901.752	0.00367
2900.78764	0.00453	2900.78764	0.0027	2900.78764	0.00366
2899.82328	0.0045	2899.82328	0.00269	2899.82328	0.00366
2898.85893	0.00441	2898.85893	0.00268	2898.85893	0.00366
2897.89457	0.00427	2897.89457	0.00267	2897.89457	0.00364
2896.93021	0.00422	2896.93021	0.00266	2896.93021	0.00361
2895.96585	0.00425	2895.96585	0.00266	2895.96585	0.0036
2895.0015	0.00421	2895.0015	0.00265	2895.0015	0.00358
2894.03714	0.00407	2894.03714	0.00265	2894.03714	0.00357
2893.07278	0.00391	2893.07278	0.00264	2893.07278	0.00356



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2892.10842	0.00381	2892.10842	0.00263	2892.10842	0.00355
2891.14407	0.00375	2891.14407	0.00262	2891.14407	0.00354
2890.17971	0.00367	2890.17971	0.00261	2890.17971	0.00353
2889.21535	0.00359	2889.21535	0.0026	2889.21535	0.00352
2888.25099	0.00355	2888.25099	0.00259	2888.25099	0.00352
2887.28664	0.00352	2887.28664	0.00259	2887.28664	0.00351
2886.32228	0.00348	2886.32228	0.00258	2886.32228	0.0035
2885.35792	0.00345	2885.35792	0.00257	2885.35792	0.00349
2884.39356	0.00334	2884.39356	0.00257	2884.39356	0.00348
2883.42921	0.0032	2883.42921	0.00257	2883.42921	0.00346
2882.46485	0.00314	2882.46485	0.00257	2882.46485	0.00345
2881.50049	0.00317	2881.50049	0.00258	2881.50049	0.00344
2880.53613	0.00322	2880.53613	0.00259	2880.53613	0.00343
2879.57178	0.00329	2879.57178	0.00259	2879.57178	0.00342
2878.60742	0.00336	2878.60742	0.0026	2878.60742	0.0034
2877.64306	0.00339	2877.64306	0.0026	2877.64306	0.00339
2876.6787	0.00341	2876.6787	0.00261	2876.6787	0.00338
2875.71434	0.00342	2875.71434	0.0026	2875.71434	0.00337
2874.74999	0.0034	2874.74999	0.0026	2874.74999	0.00337
2873.78563	0.0033	2873.78563	0.0026	2873.78563	0.00337
2872.82127	0.00321	2872.82127	0.00261	2872.82127	0.00336
2871.85691	0.00323	2871.85691	0.0026	2871.85691	0.00336
2870.89256	0.00333	2870.89256	0.00259	2870.89256	0.00335
2869.9282	0.00338	2869.9282	0.00258	2869.9282	0.00334
2868.96384	0.00339	2868.96384	0.00256	2868.96384	0.00332
2867.99948	0.00346	2867.99948	0.00253	2867.99948	0.0033
2867.03513	0.0035	2867.03513	0.00251	2867.03513	0.00329
2866.07077	0.00343	2866.07077	0.00247	2866.07077	0.00327
2865.10641	0.00334	2865.10641	0.00244	2865.10641	0.00325
2864.14205	0.00335	2864.14205	0.0024	2864.14205	0.00322
2863.1777	0.00345	2863.1777	0.00238	2863.1777	0.0032
2862.21334	0.00353	2862.21334	0.00236	2862.21334	0.00318
2861.24898	0.00356	2861.24898	0.00235	2861.24898	0.00317
2860.28462	0.00357	2860.28462	0.00234	2860.28462	0.00316
2859.32027	0.00357	2859.32027	0.00234	2859.32027	0.00315
2858.35591	0.00359	2858.35591	0.00232	2858.35591	0.00314
2857.39155	0.00364	2857.39155	0.0023	2857.39155	0.00312
2856.42719	0.00371	2856.42719	0.00228	2856.42719	0.0031
2855.46284	0.0038	2855.46284	0.00226	2855.46284	0.00307
2854.49848	0.00384	2854.49848	0.00224	2854.49848	0.00305
2853.53412	0.00376	2853.53412	0.00223	2853.53412	0.00303

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2852.56976	0.00364	2852.56976	0.00221	2852.56976	0.00302
2851.6054	0.0036	2851.6054	0.0022	2851.6054	0.00301
2850.64105	0.00359	2850.64105	0.00218	2850.64105	0.003
2849.67669	0.00355	2849.67669	0.00217	2849.67669	0.00298
2848.71233	0.00349	2848.71233	0.00215	2848.71233	0.00296
2847.74797	0.00343	2847.74797	0.00213	2847.74797	0.00293
2846.78362	0.00331	2846.78362	0.00212	2846.78362	0.0029
2845.81926	0.00315	2845.81926	0.00211	2845.81926	0.00286
2844.8549	0.00302	2844.8549	0.00211	2844.8549	0.00283
2843.89054	0.00295	2843.89054	0.0021	2843.89054	0.0028
2842.92619	0.00289	2842.92619	0.00209	2842.92619	0.00279
2841.96183	0.00282	2841.96183	0.00208	2841.96183	0.00278
2840.99747	0.00274	2840.99747	0.00206	2840.99747	0.00279
2840.03311	0.00261	2840.03311	0.00203	2840.03311	0.00278
2839.06876	0.00241	2839.06876	0.00202	2839.06876	0.00278
2838.1044	0.00225	2838.1044	0.00201	2838.1044	0.00276
2837.14004	0.00216	2837.14004	0.002	2837.14004	0.00274
2836.17568	0.00214	2836.17568	0.002	2836.17568	0.00273
2835.21133	0.00215	2835.21133	0.00199	2835.21133	0.00271
2834.24697	0.00214	2834.24697	0.00199	2834.24697	0.0027
2833.28261	0.00205	2833.28261	0.00197	2833.28261	0.00269
2832.31825	0.00191	2832.31825	0.00196	2832.31825	0.00267
2831.3539	0.0018	2831.3539	0.00194	2831.3539	0.00266
2830.38954	0.00178	2830.38954	0.00192	2830.38954	0.00264
2829.42518	0.00181	2829.42518	0.00191	2829.42518	0.00263
2828.46082	0.00181	2828.46082	0.00191	2828.46082	0.00261
2827.49647	0.00176	2827.49647	0.0019	2827.49647	0.00259
2826.53211	0.00171	2826.53211	0.00189	2826.53211	0.00257
2825.56775	0.00168	2825.56775	0.00188	2825.56775	0.00255
2824.60339	0.00167	2824.60339	0.00187	2824.60339	0.00253
2823.63903	0.00171	2823.63903	0.00187	2823.63903	0.00253
2822.67468	0.00174	2822.67468	0.00186	2822.67468	0.00253
2821.71032	0.00174	2821.71032	0.00186	2821.71032	0.00252
2820.74596	0.00174	2820.74596	0.00186	2820.74596	0.00251
2819.7816	0.00175	2819.7816	0.00186	2819.7816	0.0025
2818.81725	0.00174	2818.81725	0.00186	2818.81725	0.00249
2817.85289	0.00167	2817.85289	0.00185	2817.85289	0.00247
2816.88853	0.0016	2816.88853	0.00184	2816.88853	0.00246
2815.92417	0.0016	2815.92417	0.00182	2815.92417	0.00245
2814.95982	0.00164	2814.95982	0.00182	2814.95982	0.00244
2813.99546	0.00163	2813.99546	0.00181	2813.99546	0.00244

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2813.0311	0.00153	2813.0311	0.00182	2813.0311	0.00243
2812.06674	0.00144	2812.06674	0.00182	2812.06674	0.00242
2811.10239	0.00144	2811.10239	0.00181	2811.10239	0.00241
2810.13803	0.00154	2810.13803	0.0018	2810.13803	0.00241
2809.17367	0.00159	2809.17367	0.00179	2809.17367	0.0024
2808.20931	0.00154	2808.20931	0.00177	2808.20931	0.00239
2807.24496	0.00148	2807.24496	0.00176	2807.24496	0.00238
2806.2806	0.00146	2806.2806	0.00176	2806.2806	0.00237
2805.31624	0.00144	2805.31624	0.00176	2805.31624	0.00236
2804.35188	0.00141	2804.35188	0.00176	2804.35188	0.00235
2803.38753	0.00143	2803.38753	0.00176	2803.38753	0.00234
2802.42317	0.00147	2802.42317	0.00177	2802.42317	0.00233
2801.45881	0.00148	2801.45881	0.00177	2801.45881	0.00232
2800.49445	0.00146	2800.49445	0.00176	2800.49445	0.00231
2799.53009	0.00144	2799.53009	0.00176	2799.53009	0.0023
2798.56574	0.00145	2798.56574	0.00175	2798.56574	0.00229
2797.60138	0.00149	2797.60138	0.00174	2797.60138	0.00228
2796.63702	0.00148	2796.63702	0.00173	2796.63702	0.00226
2795.67266	0.00142	2795.67266	0.00173	2795.67266	0.00225
2794.70831	0.00138	2794.70831	0.00173	2794.70831	0.00224
2793.74395	0.00138	2793.74395	0.00172	2793.74395	0.00223
2792.77959	0.00135	2792.77959	0.00173	2792.77959	0.00221
2791.81523	0.00132	2791.81523	0.00173	2791.81523	0.00221
2790.85088	0.0013	2790.85088	0.00173	2790.85088	0.0022
2789.88652	0.00127	2789.88652	0.00172	2789.88652	0.0022
2788.92216	0.00121	2788.92216	0.00172	2788.92216	0.00219
2787.9578	0.00116	2787.9578	0.00171	2787.9578	0.00218
2786.99345	0.00118	2786.99345	0.00171	2786.99345	0.00218
2786.02909	0.00122	2786.02909	0.0017	2786.02909	0.00217
2785.06473	0.00125	2785.06473	0.0017	2785.06473	0.00217
2784.10037	0.00128	2784.10037	0.00169	2784.10037	0.00216
2783.13602	0.00126	2783.13602	0.00168	2783.13602	0.00214
2782.17166	0.00117	2782.17166	0.00167	2782.17166	0.00213
2781.2073	0.00107	2781.2073	0.00167	2781.2073	0.00213
2780.24294	0.00105	2780.24294	0.00166	2780.24294	0.00213
2779.27859	0.0011	2779.27859	0.00166	2779.27859	0.00214
2778.31423	0.00113	2778.31423	0.00167	2778.31423	0.00214
2777.34987	0.00109	2777.34987	0.00167	2777.34987	0.00214
2776.38551	0.00109	2776.38551	0.00167	2776.38551	0.00213
2775.42115	0.00114	2775.42115	0.00167	2775.42115	0.00212
2774.4568	0.00122	2774.4568	0.00167	2774.4568	0.00211

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2773.49244	0.00125	2773.49244	0.00166	2773.49244	0.0021
2772.52808	0.0012	2772.52808	0.00165	2772.52808	0.00211
2771.56372	0.00115	2771.56372	0.00165	2771.56372	0.00211
2770.59937	0.00113	2770.59937	0.00164	2770.59937	0.00211
2769.63501	0.00112	2769.63501	0.00164	2769.63501	0.00211
2768.67065	0.00108	2768.67065	0.00163	2768.67065	0.0021
2767.70629	0.00106	2767.70629	0.00163	2767.70629	0.00209
2766.74194	0.00108	2766.74194	0.00163	2766.74194	0.00208
2765.77758	0.00112	2765.77758	0.00162	2765.77758	0.00207
2764.81322	0.00114	2764.81322	0.00162	2764.81322	0.00207
2763.84886	0.00111	2763.84886	0.00162	2763.84886	0.00206
2762.88451	0.00104	2762.88451	0.00162	2762.88451	0.00205
2761.92015	1.00E-03	2761.92015	0.00163	2761.92015	0.00205
2760.95579	0.00102	2760.95579	0.00163	2760.95579	0.00205
2759.99143	0.00105	2759.99143	0.00163	2759.99143	0.00205
2759.02708	0.00105	2759.02708	0.00162	2759.02708	0.00205
2758.06272	0.00103	2758.06272	0.00161	2758.06272	0.00205
2757.09836	0.00103	2757.09836	0.00161	2757.09836	0.00204
2756.134	0.00105	2756.134	0.0016	2756.134	0.00203
2755.16965	0.00103	2755.16965	0.0016	2755.16965	0.00202
2754.20529	0.00104	2754.20529	0.00159	2754.20529	0.00201
2753.24093	0.0011	2753.24093	0.00159	2753.24093	0.002
2752.27657	0.00113	2752.27657	0.00158	2752.27657	0.002
2751.31222	0.00111	2751.31222	0.00158	2751.31222	0.00201
2750.34786	0.00112	2750.34786	0.00159	2750.34786	0.00202
2749.3835	0.00113	2749.3835	0.00159	2749.3835	0.00202
2748.41914	0.00111	2748.41914	0.00159	2748.41914	0.00202
2747.45478	0.00113	2747.45478	0.00158	2747.45478	0.00201
2746.49043	0.00118	2746.49043	0.00157	2746.49043	0.002
2745.52607	0.0012	2745.52607	0.00156	2745.52607	0.002
2744.56171	0.00115	2744.56171	0.00155	2744.56171	0.002
2743.59735	0.00107	2743.59735	0.00155	2743.59735	0.002
2742.633	0.00104	2742.633	0.00155	2742.633	0.002
2741.66864	0.00103	2741.66864	0.00156	2741.66864	0.00199
2740.70428	0.00103	2740.70428	0.00156	2740.70428	0.00197
2739.73992	0.00104	2739.73992	0.00157	2739.73992	0.00197
2738.77557	0.00101	2738.77557	0.00157	2738.77557	0.00197
2737.81121	9.90E-04	2737.81121	0.00156	2737.81121	0.00198
2736.84685	0.00101	2736.84685	0.00155	2736.84685	0.00199
2735.88249	0.00106	2735.88249	0.00153	2735.88249	0.002
2734.91814	0.0011	2734.91814	0.00153	2734.91814	0.00199

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2733.95378	0.0011	2733.95378	0.00153	2733.95378	0.00199
2732.98942	0.00109	2732.98942	0.00153	2732.98942	0.00197
2732.02506	0.00112	2732.02506	0.00153	2732.02506	0.00196
2731.06071	0.0011	2731.06071	0.00154	2731.06071	0.00195
2730.09635	0.00103	2730.09635	0.00154	2730.09635	0.00195
2729.13199	0.00101	2729.13199	0.00153	2729.13199	0.00195
2728.16763	0.00103	2728.16763	0.00153	2728.16763	0.00195
2727.20328	0.00101	2727.20328	0.00153	2727.20328	0.00195
2726.23892	9.80E-04	2726.23892	0.00152	2726.23892	0.00195
2725.27456	1.00E-03	2725.27456	0.00152	2725.27456	0.00195
2724.3102	0.00103	2724.3102	0.00153	2724.3102	0.00194
2723.34584	0.00104	2723.34584	0.00153	2723.34584	0.00194
2722.38149	0.00103	2722.38149	0.00153	2722.38149	0.00193
2721.41713	0.00101	2721.41713	0.00153	2721.41713	0.00193
2720.45277	9.80E-04	2720.45277	0.00152	2720.45277	0.00193
2719.48841	9.20E-04	2719.48841	0.00151	2719.48841	0.00193
2718.52406	8.50E-04	2718.52406	0.0015	2718.52406	0.00192
2717.5597	8.10E-04	2717.5597	0.00149	2717.5597	0.00192
2716.59534	8.20E-04	2716.59534	0.00149	2716.59534	0.00192
2715.63098	8.70E-04	2715.63098	0.00148	2715.63098	0.00191
2714.66663	9.10E-04	2714.66663	0.00148	2714.66663	0.00191
2713.70227	8.90E-04	2713.70227	0.00148	2713.70227	0.0019
2712.73791	8.50E-04	2712.73791	0.00149	2712.73791	0.00189
2711.77355	8.20E-04	2711.77355	0.00149	2711.77355	0.00188
2710.8092	7.80E-04	2710.8092	0.00149	2710.8092	0.00187
2709.84484	7.40E-04	2709.84484	0.00148	2709.84484	0.00187
2708.88048	7.40E-04	2708.88048	0.00147	2708.88048	0.00186
2707.91612	8.10E-04	2707.91612	0.00147	2707.91612	0.00186
2706.95177	8.80E-04	2706.95177	0.00146	2706.95177	0.00185
2705.98741	9.10E-04	2705.98741	0.00146	2705.98741	0.00185
2705.02305	9.10E-04	2705.02305	0.00146	2705.02305	0.00184
2704.05869	9.00E-04	2704.05869	0.00146	2704.05869	0.00184
2703.09434	8.90E-04	2703.09434	0.00146	2703.09434	0.00183
2702.12998	8.60E-04	2702.12998	0.00145	2702.12998	0.00182
2701.16562	8.40E-04	2701.16562	0.00145	2701.16562	0.00181
2700.20126	8.40E-04	2700.20126	0.00145	2700.20126	0.00181
2699.23691	8.40E-04	2699.23691	0.00144	2699.23691	0.00181
2698.27255	8.20E-04	2698.27255	0.00143	2698.27255	0.00181
2697.30819	7.90E-04	2697.30819	0.00142	2697.30819	0.0018
2696.34383	7.50E-04	2696.34383	0.00141	2696.34383	0.0018
2695.37947	7.20E-04	2695.37947	0.0014	2695.37947	0.0018

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2694.41512	7.70E-04	2694.41512	0.0014	2694.41512	0.00179
2693.45076	8.30E-04	2693.45076	0.00139	2693.45076	0.00179
2692.4864	8.50E-04	2692.4864	0.00139	2692.4864	0.00178
2691.52204	8.70E-04	2691.52204	0.00139	2691.52204	0.00178
2690.55769	8.80E-04	2690.55769	0.00138	2690.55769	0.00177
2689.59333	8.40E-04	2689.59333	0.00138	2689.59333	0.00175
2688.62897	8.00E-04	2688.62897	0.00139	2688.62897	0.00174
2687.66461	8.10E-04	2687.66461	0.00139	2687.66461	0.00172
2686.70026	8.30E-04	2686.70026	0.00139	2686.70026	0.00171
2685.7359	8.40E-04	2685.7359	0.00139	2685.7359	0.0017
2684.77154	8.60E-04	2684.77154	0.0014	2684.77154	0.00169
2683.80718	8.90E-04	2683.80718	0.0014	2683.80718	0.00169
2682.84283	8.90E-04	2682.84283	0.00139	2682.84283	0.00168
2681.87847	8.90E-04	2681.87847	0.00139	2681.87847	0.00167
2680.91411	9.00E-04	2680.91411	0.00138	2680.91411	0.00165
2679.94975	9.20E-04	2679.94975	0.00138	2679.94975	0.00165
2678.9854	9.10E-04	2678.9854	0.00137	2678.9854	0.00164
2678.02104	8.60E-04	2678.02104	0.00137	2678.02104	0.00164
2677.05668	8.40E-04	2677.05668	0.00136	2677.05668	0.00164
2676.09232	8.10E-04	2676.09232	0.00136	2676.09232	0.00164
2675.12797	8.00E-04	2675.12797	0.00135	2675.12797	0.00163
2674.16361	8.40E-04	2674.16361	0.00135	2674.16361	0.00163
2673.19925	8.80E-04	2673.19925	0.00136	2673.19925	0.00162
2672.23489	8.70E-04	2672.23489	0.00136	2672.23489	0.00161
2671.27053	8.10E-04	2671.27053	0.00135	2671.27053	0.00159
2670.30618	7.80E-04	2670.30618	0.00134	2670.30618	0.00158
2669.34182	8.00E-04	2669.34182	0.00133	2669.34182	0.00157
2668.37746	8.30E-04	2668.37746	0.00132	2668.37746	0.00156
2667.4131	8.30E-04	2667.4131	0.00131	2667.4131	0.00155
2666.44875	8.30E-04	2666.44875	0.00131	2666.44875	0.00154
2665.48439	8.20E-04	2665.48439	0.00131	2665.48439	0.00153
2664.52003	8.20E-04	2664.52003	0.00131	2664.52003	0.00152
2663.55567	8.30E-04	2663.55567	0.00131	2663.55567	0.00151
2662.59132	8.30E-04	2662.59132	0.00131	2662.59132	0.00151
2661.62696	8.10E-04	2661.62696	0.0013	2661.62696	0.0015
2660.6626	7.90E-04	2660.6626	0.0013	2660.6626	0.00149
2659.69824	7.80E-04	2659.69824	0.00129	2659.69824	0.00148
2658.73389	7.70E-04	2658.73389	0.00128	2658.73389	0.00147
2657.76953	7.70E-04	2657.76953	0.00127	2657.76953	0.00146
2656.80517	7.80E-04	2656.80517	0.00126	2656.80517	0.00146
2655.84081	7.80E-04	2655.84081	0.00125	2655.84081	0.00146

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2654.87646	8.00E-04	2654.87646	0.00126	2654.87646	0.00147
2653.9121	8.10E-04	2653.9121	0.00126	2653.9121	0.00146
2652.94774	7.70E-04	2652.94774	0.00126	2652.94774	0.00145
2651.98338	7.10E-04	2651.98338	0.00126	2651.98338	0.00144
2651.01903	6.60E-04	2651.01903	0.00126	2651.01903	0.00143
2650.05467	6.40E-04	2650.05467	0.00125	2650.05467	0.00142
2649.09031	6.70E-04	2649.09031	0.00124	2649.09031	0.00141
2648.12595	7.50E-04	2648.12595	0.00124	2648.12595	0.00141
2647.1616	8.40E-04	2647.1616	0.00124	2647.1616	0.0014
2646.19724	8.60E-04	2646.19724	0.00124	2646.19724	0.00139
2645.23288	7.70E-04	2645.23288	0.00124	2645.23288	0.00138
2644.26852	7.00E-04	2644.26852	0.00125	2644.26852	0.00138
2643.30416	6.90E-04	2643.30416	0.00125	2643.30416	0.00137
2642.33981	6.80E-04	2642.33981	0.00125	2642.33981	0.00136
2641.37545	6.80E-04	2641.37545	0.00125	2641.37545	0.00135
2640.41109	7.00E-04	2640.41109	0.00124	2640.41109	0.00135
2639.44673	7.50E-04	2639.44673	0.00123	2639.44673	0.00135
2638.48238	7.70E-04	2638.48238	0.00122	2638.48238	0.00135
2637.51802	7.60E-04	2637.51802	0.00121	2637.51802	0.00136
2636.55366	7.70E-04	2636.55366	0.00121	2636.55366	0.00136
2635.5893	7.90E-04	2635.5893	0.00121	2635.5893	0.00136
2634.62495	8.10E-04	2634.62495	0.00121	2634.62495	0.00135
2633.66059	8.30E-04	2633.66059	0.00121	2633.66059	0.00134
2632.69623	8.10E-04	2632.69623	0.00121	2632.69623	0.00132
2631.73187	7.40E-04	2631.73187	0.00121	2631.73187	0.00131
2630.76752	6.90E-04	2630.76752	0.00121	2630.76752	0.00129
2629.80316	7.00E-04	2629.80316	0.00121	2629.80316	0.00129
2628.8388	6.90E-04	2628.8388	0.0012	2628.8388	0.00128
2627.87444	6.80E-04	2627.87444	0.0012	2627.87444	0.00129
2626.91009	7.20E-04	2626.91009	0.00119	2626.91009	0.00129
2625.94573	8.10E-04	2625.94573	0.00118	2625.94573	0.00129
2624.98137	8.50E-04	2624.98137	0.00117	2624.98137	0.00129
2624.01701	8.30E-04	2624.01701	0.00117	2624.01701	0.00128
2623.05266	8.00E-04	2623.05266	0.00117	2623.05266	0.00128
2622.0883	8.00E-04	2622.0883	0.00117	2622.0883	0.00127
2621.12394	8.00E-04	2621.12394	0.00117	2621.12394	0.00126
2620.15958	7.90E-04	2620.15958	0.00117	2620.15958	0.00126
2619.19522	7.70E-04	2619.19522	0.00117	2619.19522	0.00125
2618.23087	7.90E-04	2618.23087	0.00117	2618.23087	0.00124
2617.26651	7.80E-04	2617.26651	0.00117	2617.26651	0.00123
2616.30215	7.50E-04	2616.30215	0.00117	2616.30215	0.00122

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2615.33779	7.70E-04	2615.33779	0.00117	2615.33779	0.00122
2614.37344	8.00E-04	2614.37344	0.00116	2614.37344	0.00122
2613.40908	8.40E-04	2613.40908	0.00116	2613.40908	0.00121
2612.44472	8.60E-04	2612.44472	0.00115	2612.44472	0.00121
2611.48036	8.40E-04	2611.48036	0.00115	2611.48036	0.00121
2610.51601	7.50E-04	2610.51601	0.00114	2610.51601	0.0012
2609.55165	6.70E-04	2609.55165	0.00114	2609.55165	0.00121
2608.58729	6.30E-04	2608.58729	0.00113	2608.58729	0.00121
2607.62293	6.40E-04	2607.62293	0.00112	2607.62293	0.0012
2606.65858	6.90E-04	2606.65858	0.00112	2606.65858	0.0012
2605.69422	7.40E-04	2605.69422	0.00112	2605.69422	0.00119
2604.72986	7.70E-04	2604.72986	0.00112	2604.72986	0.00118
2603.7655	7.60E-04	2603.7655	0.00113	2603.7655	0.00116
2602.80115	7.20E-04	2602.80115	0.00113	2602.80115	0.00115
2601.83679	6.90E-04	2601.83679	0.00112	2601.83679	0.00115
2600.87243	6.90E-04	2600.87243	0.00111	2600.87243	0.00114
2599.90807	7.20E-04	2599.90807	0.0011	2599.90807	0.00114
2598.94372	7.40E-04	2598.94372	0.0011	2598.94372	0.00114
2597.97936	7.20E-04	2597.97936	0.00109	2597.97936	0.00114
2597.015	7.10E-04	2597.015	0.00109	2597.015	0.00114
2596.05064	7.50E-04	2596.05064	0.00109	2596.05064	0.00114
2595.08628	7.60E-04	2595.08628	0.00109	2595.08628	0.00113
2594.12193	7.50E-04	2594.12193	0.00109	2594.12193	0.00113
2593.15757	7.50E-04	2593.15757	0.00109	2593.15757	0.00112
2592.19321	7.20E-04	2592.19321	0.00109	2592.19321	0.00112
2591.22885	6.70E-04	2591.22885	0.00109	2591.22885	0.00111
2590.2645	6.60E-04	2590.2645	0.00109	2590.2645	0.00111
2589.30014	6.80E-04	2589.30014	0.00109	2589.30014	0.0011
2588.33578	6.80E-04	2588.33578	0.00109	2588.33578	0.0011
2587.37142	6.50E-04	2587.37142	0.00109	2587.37142	0.00111
2586.40707	6.30E-04	2586.40707	0.00108	2586.40707	0.00111
2585.44271	6.70E-04	2585.44271	0.00108	2585.44271	0.00112
2584.47835	7.20E-04	2584.47835	0.00107	2584.47835	0.00112
2583.51399	7.00E-04	2583.51399	0.00106	2583.51399	0.00111
2582.54964	6.40E-04	2582.54964	0.00105	2582.54964	0.00111
2581.58528	5.80E-04	2581.58528	0.00104	2581.58528	0.0011
2580.62092	5.80E-04	2580.62092	0.00103	2580.62092	0.00109
2579.65656	6.00E-04	2579.65656	0.00103	2579.65656	0.00109
2578.69221	6.10E-04	2578.69221	0.00103	2578.69221	0.00108
2577.72785	6.00E-04	2577.72785	0.00103	2577.72785	0.00107
2576.76349	6.20E-04	2576.76349	0.00103	2576.76349	0.00106



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2575.79913	6.80E-04	2575.79913	0.00103	2575.79913	0.00105
2574.83478	7.20E-04	2574.83478	0.00103	2574.83478	0.00106
2573.87042	6.80E-04	2573.87042	0.00102	2573.87042	0.00106
2572.90606	6.20E-04	2572.90606	0.00102	2572.90606	0.00105
2571.9417	6.00E-04	2571.9417	0.00103	2571.9417	0.00104
2570.97735	6.20E-04	2570.97735	0.00103	2570.97735	0.00103
2570.01299	6.20E-04	2570.01299	0.00103	2570.01299	0.00102
2569.04863	5.90E-04	2569.04863	0.00103	2569.04863	0.00102
2568.08427	5.50E-04	2568.08427	0.00103	2568.08427	0.00102
2567.11991	5.50E-04	2567.11991	0.00103	2567.11991	0.00102
2566.15556	5.90E-04	2566.15556	0.00103	2566.15556	0.00102
2565.1912	6.20E-04	2565.1912	0.00103	2565.1912	0.00102
2564.22684	6.50E-04	2564.22684	0.00103	2564.22684	1.00E-03
2563.26248	6.80E-04	2563.26248	0.00103	2563.26248	9.90E-04
2562.29813	7.00E-04	2562.29813	0.00103	2562.29813	9.80E-04
2561.33377	7.20E-04	2561.33377	0.00103	2561.33377	9.80E-04
2560.36941	7.30E-04	2560.36941	0.00103	2560.36941	9.80E-04
2559.40505	7.00E-04	2559.40505	0.00103	2559.40505	9.80E-04
2558.4407	6.10E-04	2558.4407	0.00103	2558.4407	9.80E-04
2557.47634	5.00E-04	2557.47634	0.00103	2557.47634	9.90E-04
2556.51198	4.70E-04	2556.51198	0.00102	2556.51198	9.90E-04
2555.54762	5.50E-04	2555.54762	0.00101	2555.54762	9.80E-04
2554.58327	6.70E-04	2554.58327	0.00101	2554.58327	9.80E-04
2553.61891	7.40E-04	2553.61891	1.00E-03	2553.61891	9.70E-04
2552.65455	7.30E-04	2552.65455	9.90E-04	2552.65455	9.70E-04
2551.69019	7.00E-04	2551.69019	9.90E-04	2551.69019	9.60E-04
2550.72584	6.70E-04	2550.72584	1.00E-03	2550.72584	9.70E-04
2549.76148	6.70E-04	2549.76148	1.00E-03	2549.76148	9.70E-04
2548.79712	6.50E-04	2548.79712	1.00E-03	2548.79712	9.60E-04
2547.83276	6.10E-04	2547.83276	9.90E-04	2547.83276	9.60E-04
2546.86841	5.70E-04	2546.86841	9.90E-04	2546.86841	9.50E-04
2545.90405	5.50E-04	2545.90405	9.80E-04	2545.90405	9.40E-04
2544.93969	4.90E-04	2544.93969	9.70E-04	2544.93969	9.30E-04
2543.97533	4.70E-04	2543.97533	9.60E-04	2543.97533	9.30E-04
2543.01097	5.40E-04	2543.01097	9.60E-04	2543.01097	9.20E-04
2542.04662	5.90E-04	2542.04662	9.60E-04	2542.04662	9.10E-04
2541.08226	6.00E-04	2541.08226	9.60E-04	2541.08226	9.10E-04
2540.1179	5.70E-04	2540.1179	9.60E-04	2540.1179	9.10E-04
2539.15354	5.50E-04	2539.15354	9.60E-04	2539.15354	9.10E-04
2538.18919	5.70E-04	2538.18919	9.50E-04	2538.18919	9.10E-04
2537.22483	5.80E-04	2537.22483	9.50E-04	2537.22483	9.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2536.26047	5.30E-04	2536.26047	9.40E-04	2536.26047	9.20E-04
2535.29611	4.80E-04	2535.29611	9.40E-04	2535.29611	9.10E-04
2534.33176	4.80E-04	2534.33176	9.40E-04	2534.33176	9.10E-04
2533.3674	4.70E-04	2533.3674	9.40E-04	2533.3674	9.00E-04
2532.40304	4.40E-04	2532.40304	9.30E-04	2532.40304	8.90E-04
2531.43868	4.30E-04	2531.43868	9.30E-04	2531.43868	8.90E-04
2530.47433	4.40E-04	2530.47433	9.20E-04	2530.47433	8.80E-04
2529.50997	4.40E-04	2529.50997	9.10E-04	2529.50997	8.80E-04
2528.54561	4.40E-04	2528.54561	9.00E-04	2528.54561	8.80E-04
2527.58125	4.30E-04	2527.58125	8.90E-04	2527.58125	8.80E-04
2526.6169	4.30E-04	2526.6169	8.90E-04	2526.6169	8.70E-04
2525.65254	4.40E-04	2525.65254	8.90E-04	2525.65254	8.50E-04
2524.68818	4.40E-04	2524.68818	9.00E-04	2524.68818	8.40E-04
2523.72382	4.20E-04	2523.72382	9.10E-04	2523.72382	8.30E-04
2522.75947	4.30E-04	2522.75947	9.20E-04	2522.75947	8.30E-04
2521.79511	4.70E-04	2521.79511	9.20E-04	2521.79511	8.20E-04
2520.83075	4.90E-04	2520.83075	9.20E-04	2520.83075	8.20E-04
2519.86639	4.90E-04	2519.86639	9.20E-04	2519.86639	8.10E-04
2518.90204	4.80E-04	2518.90204	9.10E-04	2518.90204	8.10E-04
2517.93768	4.40E-04	2517.93768	9.10E-04	2517.93768	8.10E-04
2516.97332	4.20E-04	2516.97332	9.10E-04	2516.97332	8.10E-04
2516.00896	4.40E-04	2516.00896	9.10E-04	2516.00896	8.10E-04
2515.0446	4.50E-04	2515.0446	9.20E-04	2515.0446	8.10E-04
2514.08025	4.40E-04	2514.08025	9.20E-04	2514.08025	8.10E-04
2513.11589	4.20E-04	2513.11589	9.10E-04	2513.11589	8.00E-04
2512.15153	3.70E-04	2512.15153	9.00E-04	2512.15153	8.00E-04
2511.18717	3.20E-04	2511.18717	8.90E-04	2511.18717	7.90E-04
2510.22282	3.50E-04	2510.22282	8.80E-04	2510.22282	7.80E-04
2509.25846	4.10E-04	2509.25846	8.80E-04	2509.25846	7.80E-04
2508.2941	4.00E-04	2508.2941	8.70E-04	2508.2941	7.90E-04
2507.32974	3.50E-04	2507.32974	8.70E-04	2507.32974	7.90E-04
2506.36539	3.70E-04	2506.36539	8.70E-04	2506.36539	7.90E-04
2505.40103	4.10E-04	2505.40103	8.60E-04	2505.40103	7.90E-04
2504.43667	4.30E-04	2504.43667	8.60E-04	2504.43667	7.90E-04
2503.47231	4.60E-04	2503.47231	8.60E-04	2503.47231	7.80E-04
2502.50796	5.10E-04	2502.50796	8.60E-04	2502.50796	7.70E-04
2501.5436	5.30E-04	2501.5436	8.60E-04	2501.5436	7.60E-04
2500.57924	5.00E-04	2500.57924	8.50E-04	2500.57924	7.60E-04
2499.61488	4.60E-04	2499.61488	8.50E-04	2499.61488	7.60E-04
2498.65053	4.30E-04	2498.65053	8.50E-04	2498.65053	7.60E-04
2497.68617	4.10E-04	2497.68617	8.40E-04	2497.68617	7.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2496.72181	4.20E-04	2496.72181	8.40E-04	2496.72181	7.40E-04
2495.75745	4.40E-04	2495.75745	8.40E-04	2495.75745	7.30E-04
2494.7931	4.40E-04	2494.7931	8.30E-04	2494.7931	7.20E-04
2493.82874	4.10E-04	2493.82874	8.20E-04	2493.82874	7.20E-04
2492.86438	3.50E-04	2492.86438	8.20E-04	2492.86438	7.20E-04
2491.90002	3.50E-04	2491.90002	8.10E-04	2491.90002	7.30E-04
2490.93566	4.10E-04	2490.93566	8.10E-04	2490.93566	7.40E-04
2489.97131	4.40E-04	2489.97131	8.20E-04	2489.97131	7.40E-04
2489.00695	4.10E-04	2489.00695	8.20E-04	2489.00695	7.30E-04
2488.04259	3.80E-04	2488.04259	8.10E-04	2488.04259	7.10E-04
2487.07823	4.10E-04	2487.07823	8.00E-04	2487.07823	7.00E-04
2486.11388	4.70E-04	2486.11388	8.00E-04	2486.11388	6.90E-04
2485.14952	5.00E-04	2485.14952	8.00E-04	2485.14952	6.90E-04
2484.18516	4.70E-04	2484.18516	8.00E-04	2484.18516	6.90E-04
2483.2208	4.30E-04	2483.2208	8.00E-04	2483.2208	6.90E-04
2482.25645	4.00E-04	2482.25645	8.00E-04	2482.25645	6.90E-04
2481.29209	3.60E-04	2481.29209	7.90E-04	2481.29209	6.80E-04
2480.32773	3.50E-04	2480.32773	7.80E-04	2480.32773	6.70E-04
2479.36337	3.90E-04	2479.36337	7.60E-04	2479.36337	6.60E-04
2478.39902	4.30E-04	2478.39902	7.60E-04	2478.39902	6.50E-04
2477.43466	4.20E-04	2477.43466	7.70E-04	2477.43466	6.50E-04
2476.4703	4.20E-04	2476.4703	7.80E-04	2476.4703	6.40E-04
2475.50594	4.10E-04	2475.50594	7.80E-04	2475.50594	6.40E-04
2474.54159	3.90E-04	2474.54159	7.80E-04	2474.54159	6.40E-04
2473.57723	4.20E-04	2473.57723	7.70E-04	2473.57723	6.50E-04
2472.61287	5.00E-04	2472.61287	7.70E-04	2472.61287	6.50E-04
2471.64851	5.50E-04	2471.64851	7.60E-04	2471.64851	6.60E-04
2470.68416	5.20E-04	2470.68416	7.60E-04	2470.68416	6.60E-04
2469.7198	4.50E-04	2469.7198	7.70E-04	2469.7198	6.60E-04
2468.75544	4.10E-04	2468.75544	7.70E-04	2468.75544	6.50E-04
2467.79108	3.70E-04	2467.79108	7.70E-04	2467.79108	6.50E-04
2466.82672	3.50E-04	2466.82672	7.70E-04	2466.82672	6.40E-04
2465.86237	3.80E-04	2465.86237	7.70E-04	2465.86237	6.40E-04
2464.89801	4.20E-04	2464.89801	7.70E-04	2464.89801	6.40E-04
2463.93365	4.50E-04	2463.93365	7.70E-04	2463.93365	6.40E-04
2462.96929	4.70E-04	2462.96929	7.70E-04	2462.96929	6.40E-04
2462.00494	4.60E-04	2462.00494	7.70E-04	2462.00494	6.30E-04
2461.04058	4.60E-04	2461.04058	7.70E-04	2461.04058	6.20E-04
2460.07622	4.60E-04	2460.07622	7.70E-04	2460.07622	6.20E-04
2459.11186	4.30E-04	2459.11186	7.60E-04	2459.11186	6.30E-04
2458.14751	3.90E-04	2458.14751	7.50E-04	2458.14751	6.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2457.18315	3.90E-04	2457.18315	7.40E-04	2457.18315	6.20E-04
2456.21879	4.40E-04	2456.21879	7.40E-04	2456.21879	6.20E-04
2455.25443	4.80E-04	2455.25443	7.50E-04	2455.25443	6.20E-04
2454.29008	4.80E-04	2454.29008	7.50E-04	2454.29008	6.20E-04
2453.32572	4.30E-04	2453.32572	7.50E-04	2453.32572	6.20E-04
2452.36136	4.20E-04	2452.36136	7.40E-04	2452.36136	6.20E-04
2451.397	4.30E-04	2451.397	7.20E-04	2451.397	6.20E-04
2450.43265	4.20E-04	2450.43265	7.20E-04	2450.43265	6.10E-04
2449.46829	4.10E-04	2449.46829	7.20E-04	2449.46829	6.00E-04
2448.50393	4.30E-04	2448.50393	7.20E-04	2448.50393	6.00E-04
2447.53957	4.80E-04	2447.53957	7.30E-04	2447.53957	6.00E-04
2446.57522	5.20E-04	2446.57522	7.30E-04	2446.57522	6.00E-04
2445.61086	5.00E-04	2445.61086	7.30E-04	2445.61086	6.00E-04
2444.6465	4.40E-04	2444.6465	7.30E-04	2444.6465	6.00E-04
2443.68214	4.00E-04	2443.68214	7.20E-04	2443.68214	6.00E-04
2442.71779	4.10E-04	2442.71779	7.20E-04	2442.71779	6.00E-04
2441.75343	4.10E-04	2441.75343	7.10E-04	2441.75343	5.90E-04
2440.78907	4.10E-04	2440.78907	7.10E-04	2440.78907	5.90E-04
2439.82471	4.50E-04	2439.82471	7.00E-04	2439.82471	5.80E-04
2438.86035	4.50E-04	2438.86035	7.00E-04	2438.86035	5.80E-04
2437.896	3.90E-04	2437.896	6.90E-04	2437.896	5.70E-04
2436.93164	3.50E-04	2436.93164	6.90E-04	2436.93164	5.70E-04
2435.96728	3.70E-04	2435.96728	6.90E-04	2435.96728	5.70E-04
2435.00292	4.20E-04	2435.00292	6.90E-04	2435.00292	5.70E-04
2434.03857	4.40E-04	2434.03857	6.90E-04	2434.03857	5.70E-04
2433.07421	4.30E-04	2433.07421	7.00E-04	2433.07421	5.70E-04
2432.10985	4.10E-04	2432.10985	7.00E-04	2432.10985	5.60E-04
2431.14549	3.90E-04	2431.14549	7.00E-04	2431.14549	5.60E-04
2430.18114	3.90E-04	2430.18114	7.00E-04	2430.18114	5.60E-04
2429.21678	4.10E-04	2429.21678	7.00E-04	2429.21678	5.60E-04
2428.25242	4.30E-04	2428.25242	7.00E-04	2428.25242	5.70E-04
2427.28806	4.40E-04	2427.28806	6.90E-04	2427.28806	5.70E-04
2426.32371	4.20E-04	2426.32371	6.90E-04	2426.32371	5.70E-04
2425.35935	4.00E-04	2425.35935	6.80E-04	2425.35935	5.60E-04
2424.39499	3.90E-04	2424.39499	6.90E-04	2424.39499	5.50E-04
2423.43063	4.00E-04	2423.43063	6.90E-04	2423.43063	5.50E-04
2422.46628	4.50E-04	2422.46628	6.90E-04	2422.46628	5.50E-04
2421.50192	4.90E-04	2421.50192	6.90E-04	2421.50192	5.60E-04
2420.53756	4.90E-04	2420.53756	6.90E-04	2420.53756	5.60E-04
2419.5732	4.40E-04	2419.5732	6.80E-04	2419.5732	5.70E-04
2418.60885	4.10E-04	2418.60885	6.80E-04	2418.60885	5.60E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2417.64449	3.90E-04	2417.64449	6.80E-04	2417.64449	5.50E-04
2416.68013	3.70E-04	2416.68013	6.80E-04	2416.68013	5.50E-04
2415.71577	3.80E-04	2415.71577	6.90E-04	2415.71577	5.50E-04
2414.75141	4.00E-04	2414.75141	6.90E-04	2414.75141	5.50E-04
2413.78706	3.80E-04	2413.78706	6.90E-04	2413.78706	5.50E-04
2412.8227	3.60E-04	2412.8227	6.90E-04	2412.8227	5.50E-04
2411.85834	3.40E-04	2411.85834	6.90E-04	2411.85834	5.50E-04
2410.89398	3.00E-04	2410.89398	6.80E-04	2410.89398	5.40E-04
2409.92963	2.60E-04	2409.92963	6.80E-04	2409.92963	5.30E-04
2408.96527	2.80E-04	2408.96527	6.80E-04	2408.96527	5.20E-04
2408.00091	3.20E-04	2408.00091	6.70E-04	2408.00091	5.20E-04
2407.03655	3.60E-04	2407.03655	6.60E-04	2407.03655	5.10E-04
2406.0722	3.80E-04	2406.0722	6.60E-04	2406.0722	5.00E-04
2405.10784	3.60E-04	2405.10784	6.60E-04	2405.10784	5.00E-04
2404.14348	3.10E-04	2404.14348	6.70E-04	2404.14348	4.90E-04
2403.17912	3.10E-04	2403.17912	6.80E-04	2403.17912	4.90E-04
2402.21477	3.30E-04	2402.21477	6.90E-04	2402.21477	4.90E-04
2401.25041	3.30E-04	2401.25041	6.90E-04	2401.25041	4.90E-04
2400.28605	3.10E-04	2400.28605	6.90E-04	2400.28605	4.90E-04
2399.32169	3.10E-04	2399.32169	6.90E-04	2399.32169	4.90E-04
2398.35734	3.20E-04	2398.35734	6.90E-04	2398.35734	4.90E-04
2397.39298	3.40E-04	2397.39298	6.90E-04	2397.39298	4.90E-04
2396.42862	3.70E-04	2396.42862	6.90E-04	2396.42862	4.90E-04
2395.46426	3.90E-04	2395.46426	6.80E-04	2395.46426	4.90E-04
2394.49991	4.00E-04	2394.49991	6.70E-04	2394.49991	4.80E-04
2393.53555	4.20E-04	2393.53555	6.70E-04	2393.53555	4.70E-04
2392.57119	4.10E-04	2392.57119	6.70E-04	2392.57119	4.70E-04
2391.60683	3.70E-04	2391.60683	6.70E-04	2391.60683	4.80E-04
2390.64248	3.20E-04	2390.64248	6.70E-04	2390.64248	4.90E-04
2389.67812	2.80E-04	2389.67812	6.60E-04	2389.67812	5.00E-04
2388.71376	2.90E-04	2388.71376	6.60E-04	2388.71376	5.00E-04
2387.7494	3.30E-04	2387.7494	6.50E-04	2387.7494	5.10E-04
2386.78504	3.70E-04	2386.78504	6.40E-04	2386.78504	5.20E-04
2385.82069	3.90E-04	2385.82069	6.40E-04	2385.82069	5.40E-04
2384.85633	3.80E-04	2384.85633	6.20E-04	2384.85633	5.70E-04
2383.89197	4.10E-04	2383.89197	6.10E-04	2383.89197	6.20E-04
2382.92761	4.90E-04	2382.92761	5.90E-04	2382.92761	6.70E-04
2381.96326	5.40E-04	2381.96326	5.70E-04	2381.96326	7.30E-04
2380.9989	5.80E-04	2380.9989	5.50E-04	2380.9989	8.00E-04
2380.03454	6.90E-04	2380.03454	5.40E-04	2380.03454	8.60E-04
2379.07018	8.10E-04	2379.07018	5.40E-04	2379.07018	9.20E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2378.10583	8.40E-04	2378.10583	5.30E-04	2378.10583	9.90E-04
2377.14147	8.00E-04	2377.14147	5.20E-04	2377.14147	0.00105
2376.17711	9.20E-04	2376.17711	4.90E-04	2376.17711	0.00112
2375.21275	0.00125	2375.21275	4.70E-04	2375.21275	0.0012
2374.2484	0.00148	2374.2484	4.50E-04	2374.2484	0.0013
2373.28404	0.00142	2373.28404	4.30E-04	2373.28404	0.00142
2372.31968	0.00138	2372.31968	4.00E-04	2372.31968	0.00153
2371.35532	0.00154	2371.35532	3.60E-04	2371.35532	0.00164
2370.39097	0.00175	2370.39097	3.00E-04	2370.39097	0.00174
2369.42661	0.00202	2369.42661	2.30E-04	2369.42661	0.00182
2368.46225	0.00227	2368.46225	1.60E-04	2368.46225	0.00191
2367.49789	0.00226	2367.49789	1.10E-04	2367.49789	0.002
2366.53354	0.00216	2366.53354	1.00E-04	2366.53354	0.00208
2365.56918	0.00227	2365.56918	1.00E-04	2365.56918	0.00214
2364.60482	0.00245	2364.60482	1.20E-04	2364.60482	0.00218
2363.64046	0.00249	2363.64046	1.30E-04	2363.64046	0.0022
2362.6761	0.00243	2362.6761	1.30E-04	2362.6761	0.00222
2361.71175	0.00231	2361.71175	1.20E-04	2361.71175	0.00223
2360.74739	0.00208	2360.74739	1.20E-04	2360.74739	0.00225
2359.78303	0.00199	2359.78303	1.30E-04	2359.78303	0.00227
2358.81867	0.00219	2358.81867	1.60E-04	2358.81867	0.00228
2357.85432	0.00243	2357.85432	1.80E-04	2357.85432	0.00224
2356.88996	0.00241	2356.88996	1.90E-04	2356.88996	0.00217
2355.9256	0.00216	2355.9256	2.00E-04	2355.9256	0.00208
2354.96124	0.00192	2354.96124	2.20E-04	2354.96124	0.00199
2353.99689	0.00187	2353.99689	2.30E-04	2353.99689	0.00189
2353.03253	0.00189	2353.03253	2.60E-04	2353.03253	0.00178
2352.06817	0.0017	2352.06817	3.10E-04	2352.06817	0.00165
2351.10381	0.00137	2351.10381	3.70E-04	2351.10381	0.00152
2350.13946	0.00114	2350.13946	4.10E-04	2350.13946	0.00141
2349.1751	0.00112	2349.1751	4.30E-04	2349.1751	0.00134
2348.21074	0.00123	2348.21074	4.10E-04	2348.21074	0.00133
2347.24638	0.00141	2347.24638	3.60E-04	2347.24638	0.00139
2346.28203	0.00158	2346.28203	2.90E-04	2346.28203	0.0015
2345.31767	0.00174	2345.31767	2.20E-04	2345.31767	0.00161
2344.35331	0.00187	2344.35331	1.80E-04	2344.35331	0.0017
2343.38895	0.0019	2343.38895	1.80E-04	2343.38895	0.00175
2342.4246	0.00182	2342.4246	1.80E-04	2342.4246	0.00176
2341.46024	0.00175	2341.46024	1.90E-04	2341.46024	0.00175
2340.49588	0.00175	2340.49588	2.10E-04	2340.49588	0.00174
2339.53152	0.00171	2339.53152	2.30E-04	2339.53152	0.00173

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2338.56716	0.00158	2338.56716	2.40E-04	2338.56716	0.00171
2337.60281	0.00159	2337.60281	2.40E-04	2337.60281	0.0017
2336.63845	0.00174	2336.63845	2.60E-04	2336.63845	0.00169
2335.67409	0.00184	2335.67409	2.80E-04	2335.67409	0.00168
2334.70973	0.00187	2334.70973	3.00E-04	2334.70973	0.00167
2333.74538	0.00187	2333.74538	2.90E-04	2333.74538	0.00166
2332.78102	0.00179	2332.78102	2.90E-04	2332.78102	0.00164
2331.81666	0.00166	2331.81666	2.90E-04	2331.81666	0.00161
2330.8523	0.00151	2330.8523	2.90E-04	2330.8523	0.00157
2329.88795	0.00143	2329.88795	3.10E-04	2329.88795	0.00153
2328.92359	0.00149	2328.92359	3.40E-04	2328.92359	0.0015
2327.95923	0.00158	2327.95923	3.70E-04	2327.95923	0.00148
2326.99487	0.00157	2326.99487	3.80E-04	2326.99487	0.00146
2326.03052	0.00154	2326.03052	3.70E-04	2326.03052	0.00145
2325.06616	0.00151	2325.06616	3.60E-04	2325.06616	0.00142
2324.1018	0.00141	2324.1018	3.50E-04	2324.1018	0.00138
2323.13744	0.00134	2323.13744	3.50E-04	2323.13744	0.00134
2322.17309	0.00128	2322.17309	3.70E-04	2322.17309	0.0013
2321.20873	0.00109	2321.20873	4.00E-04	2321.20873	0.00125
2320.24437	8.90E-04	2320.24437	4.10E-04	2320.24437	0.0012
2319.28001	8.60E-04	2319.28001	4.20E-04	2319.28001	0.00115
2318.31566	9.10E-04	2318.31566	4.40E-04	2318.31566	0.00109
2317.3513	8.70E-04	2317.3513	4.50E-04	2317.3513	0.00103
2316.38694	8.10E-04	2316.38694	4.60E-04	2316.38694	1.00E-03
2315.42258	8.20E-04	2315.42258	4.70E-04	2315.42258	9.70E-04
2314.45823	8.80E-04	2314.45823	4.70E-04	2314.45823	9.50E-04
2313.49387	8.90E-04	2313.49387	4.70E-04	2313.49387	9.40E-04
2312.52951	7.80E-04	2312.52951	4.70E-04	2312.52951	9.20E-04
2311.56515	6.80E-04	2311.56515	4.60E-04	2311.56515	8.90E-04
2310.60079	6.50E-04	2310.60079	4.50E-04	2310.60079	8.70E-04
2309.63644	6.50E-04	2309.63644	4.60E-04	2309.63644	8.40E-04
2308.67208	6.20E-04	2308.67208	4.60E-04	2308.67208	8.30E-04
2307.70772	5.70E-04	2307.70772	4.70E-04	2307.70772	8.10E-04
2306.74336	5.10E-04	2306.74336	4.80E-04	2306.74336	7.80E-04
2305.77901	4.40E-04	2305.77901	4.90E-04	2305.77901	7.60E-04
2304.81465	4.30E-04	2304.81465	5.00E-04	2304.81465	7.40E-04
2303.85029	4.90E-04	2303.85029	5.00E-04	2303.85029	7.10E-04
2302.88593	5.40E-04	2302.88593	4.90E-04	2302.88593	6.90E-04
2301.92158	5.50E-04	2301.92158	4.90E-04	2301.92158	6.70E-04
2300.95722	5.40E-04	2300.95722	5.00E-04	2300.95722	6.50E-04
2299.99286	4.80E-04	2299.99286	5.00E-04	2299.99286	6.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2299.0285	4.10E-04	2299.0285	5.10E-04	2299.0285	6.00E-04
2298.06415	4.00E-04	2298.06415	5.20E-04	2298.06415	5.80E-04
2297.09979	4.20E-04	2297.09979	5.30E-04	2297.09979	5.70E-04
2296.13543	4.30E-04	2296.13543	5.20E-04	2296.13543	5.70E-04
2295.17107	4.30E-04	2295.17107	5.20E-04	2295.17107	5.80E-04
2294.20672	4.20E-04	2294.20672	5.10E-04	2294.20672	5.80E-04
2293.24236	4.30E-04	2293.24236	5.10E-04	2293.24236	5.70E-04
2292.278	4.30E-04	2292.278	5.10E-04	2292.278	5.60E-04
2291.31364	4.00E-04	2291.31364	5.20E-04	2291.31364	5.50E-04
2290.34929	3.40E-04	2290.34929	5.30E-04	2290.34929	5.30E-04
2289.38493	2.90E-04	2289.38493	5.40E-04	2289.38493	5.20E-04
2288.42057	2.70E-04	2288.42057	5.40E-04	2288.42057	5.00E-04
2287.45621	3.00E-04	2287.45621	5.50E-04	2287.45621	4.90E-04
2286.49185	3.20E-04	2286.49185	5.50E-04	2286.49185	4.80E-04
2285.5275	2.70E-04	2285.5275	5.50E-04	2285.5275	4.60E-04
2284.56314	2.10E-04	2284.56314	5.40E-04	2284.56314	4.60E-04
2283.59878	1.80E-04	2283.59878	5.30E-04	2283.59878	4.50E-04
2282.63442	1.90E-04	2282.63442	5.30E-04	2282.63442	4.50E-04
2281.67007	2.00E-04	2281.67007	5.30E-04	2281.67007	4.60E-04
2280.70571	2.10E-04	2280.70571	5.30E-04	2280.70571	4.60E-04
2279.74135	2.50E-04	2279.74135	5.30E-04	2279.74135	4.70E-04
2278.77699	2.90E-04	2278.77699	5.30E-04	2278.77699	4.80E-04
2277.81264	3.20E-04	2277.81264	5.30E-04	2277.81264	4.80E-04
2276.84828	3.70E-04	2276.84828	5.20E-04	2276.84828	4.80E-04
2275.88392	3.90E-04	2275.88392	5.20E-04	2275.88392	4.70E-04
2274.91956	3.60E-04	2274.91956	5.20E-04	2274.91956	4.70E-04
2273.95521	3.20E-04	2273.95521	5.20E-04	2273.95521	4.70E-04
2272.99085	3.00E-04	2272.99085	5.30E-04	2272.99085	4.70E-04
2272.02649	2.60E-04	2272.02649	5.30E-04	2272.02649	4.80E-04
2271.06213	2.00E-04	2271.06213	5.40E-04	2271.06213	4.80E-04
2270.09778	1.70E-04	2270.09778	5.40E-04	2270.09778	4.80E-04
2269.13342	1.90E-04	2269.13342	5.40E-04	2269.13342	4.80E-04
2268.16906	2.10E-04	2268.16906	5.40E-04	2268.16906	4.80E-04
2267.2047	2.50E-04	2267.2047	5.30E-04	2267.2047	4.80E-04
2266.24035	2.90E-04	2266.24035	5.30E-04	2266.24035	4.80E-04
2265.27599	3.10E-04	2265.27599	5.40E-04	2265.27599	4.90E-04
2264.31163	3.00E-04	2264.31163	5.40E-04	2264.31163	4.90E-04
2263.34727	2.60E-04	2263.34727	5.40E-04	2263.34727	4.90E-04
2262.38292	2.40E-04	2262.38292	5.30E-04	2262.38292	4.80E-04
2261.41856	2.90E-04	2261.41856	5.30E-04	2261.41856	4.70E-04
2260.4542	3.10E-04	2260.4542	5.30E-04	2260.4542	4.70E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2259.48984	2.70E-04	2259.48984	5.20E-04	2259.48984	4.70E-04
2258.52548	2.50E-04	2258.52548	5.10E-04	2258.52548	4.70E-04
2257.56113	2.60E-04	2257.56113	5.20E-04	2257.56113	4.80E-04
2256.59677	2.60E-04	2256.59677	5.20E-04	2256.59677	4.80E-04
2255.63241	2.30E-04	2255.63241	5.20E-04	2255.63241	4.80E-04
2254.66805	2.20E-04	2254.66805	5.20E-04	2254.66805	4.70E-04
2253.7037	2.30E-04	2253.7037	5.20E-04	2253.7037	4.70E-04
2252.73934	2.20E-04	2252.73934	5.20E-04	2252.73934	4.60E-04
2251.77498	2.10E-04	2251.77498	5.20E-04	2251.77498	4.60E-04
2250.81062	2.00E-04	2250.81062	5.20E-04	2250.81062	4.60E-04
2249.84627	2.10E-04	2249.84627	5.20E-04	2249.84627	4.60E-04
2248.88191	2.10E-04	2248.88191	5.20E-04	2248.88191	4.60E-04
2247.91755	2.10E-04	2247.91755	5.20E-04	2247.91755	4.60E-04
2246.95319	2.00E-04	2246.95319	5.20E-04	2246.95319	4.60E-04
2245.98884	1.80E-04	2245.98884	5.20E-04	2245.98884	4.60E-04
2245.02448	1.50E-04	2245.02448	5.10E-04	2245.02448	4.50E-04
2244.06012	1.40E-04	2244.06012	5.10E-04	2244.06012	4.50E-04
2243.09576	1.50E-04	2243.09576	5.10E-04	2243.09576	4.50E-04
2242.13141	1.50E-04	2242.13141	5.10E-04	2242.13141	4.50E-04
2241.16705	1.50E-04	2241.16705	5.10E-04	2241.16705	4.50E-04
2240.20269	1.90E-04	2240.20269	5.10E-04	2240.20269	4.60E-04
2239.23833	2.30E-04	2239.23833	5.20E-04	2239.23833	4.60E-04
2238.27398	2.40E-04	2238.27398	5.30E-04	2238.27398	4.60E-04
2237.30962	2.40E-04	2237.30962	5.30E-04	2237.30962	4.50E-04
2236.34526	2.10E-04	2236.34526	5.30E-04	2236.34526	4.40E-04
2235.3809	1.80E-04	2235.3809	5.30E-04	2235.3809	4.40E-04
2234.41654	1.80E-04	2234.41654	5.20E-04	2234.41654	4.40E-04
2233.45219	1.90E-04	2233.45219	5.10E-04	2233.45219	4.40E-04
2232.48783	1.70E-04	2232.48783	5.00E-04	2232.48783	4.40E-04
2231.52347	1.50E-04	2231.52347	5.00E-04	2231.52347	4.40E-04
2230.55911	1.60E-04	2230.55911	5.00E-04	2230.55911	4.50E-04
2229.59476	1.80E-04	2229.59476	5.10E-04	2229.59476	4.40E-04
2228.6304	1.90E-04	2228.6304	5.20E-04	2228.6304	4.40E-04
2227.66604	1.80E-04	2227.66604	5.20E-04	2227.66604	4.40E-04
2226.70168	1.90E-04	2226.70168	5.20E-04	2226.70168	4.50E-04
2225.73733	2.30E-04	2225.73733	5.10E-04	2225.73733	4.50E-04
2224.77297	2.40E-04	2224.77297	5.10E-04	2224.77297	4.60E-04
2223.80861	2.00E-04	2223.80861	5.00E-04	2223.80861	4.60E-04
2222.84425	1.60E-04	2222.84425	5.00E-04	2222.84425	4.60E-04
2221.8799	1.60E-04	2221.8799	5.10E-04	2221.8799	4.50E-04
2220.91554	1.60E-04	2220.91554	5.10E-04	2220.91554	4.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2219.95118	1.40E-04	2219.95118	5.10E-04	2219.95118	4.40E-04
2218.98682	1.40E-04	2218.98682	5.00E-04	2218.98682	4.30E-04
2218.02247	1.60E-04	2218.02247	5.00E-04	2218.02247	4.20E-04
2217.05811	1.70E-04	2217.05811	5.00E-04	2217.05811	4.20E-04
2216.09375	1.80E-04	2216.09375	5.10E-04	2216.09375	4.30E-04
2215.12939	1.80E-04	2215.12939	5.10E-04	2215.12939	4.40E-04
2214.16504	1.80E-04	2214.16504	5.10E-04	2214.16504	4.60E-04
2213.20068	1.60E-04	2213.20068	5.20E-04	2213.20068	4.60E-04
2212.23632	1.40E-04	2212.23632	5.10E-04	2212.23632	4.60E-04
2211.27196	1.40E-04	2211.27196	5.10E-04	2211.27196	4.50E-04
2210.30761	1.70E-04	2210.30761	5.10E-04	2210.30761	4.50E-04
2209.34325	1.50E-04	2209.34325	5.10E-04	2209.34325	4.50E-04
2208.37889	1.00E-04	2208.37889	5.10E-04	2208.37889	4.50E-04
2207.41453	8.00E-05	2207.41453	5.10E-04	2207.41453	4.50E-04
2206.45017	1.20E-04	2206.45017	5.20E-04	2206.45017	4.50E-04
2205.48582	1.50E-04	2205.48582	5.20E-04	2205.48582	4.50E-04
2204.52146	1.30E-04	2204.52146	5.20E-04	2204.52146	4.40E-04
2203.5571	1.20E-04	2203.5571	5.20E-04	2203.5571	4.40E-04
2202.59274	1.40E-04	2202.59274	5.10E-04	2202.59274	4.50E-04
2201.62839	1.90E-04	2201.62839	5.00E-04	2201.62839	4.50E-04
2200.66403	2.10E-04	2200.66403	5.00E-04	2200.66403	4.60E-04
2199.69967	2.00E-04	2199.69967	5.00E-04	2199.69967	4.60E-04
2198.73531	1.80E-04	2198.73531	5.00E-04	2198.73531	4.60E-04
2197.77096	1.70E-04	2197.77096	5.00E-04	2197.77096	4.60E-04
2196.8066	1.80E-04	2196.8066	5.00E-04	2196.8066	4.60E-04
2195.84224	1.90E-04	2195.84224	5.00E-04	2195.84224	4.50E-04
2194.87788	1.80E-04	2194.87788	5.00E-04	2194.87788	4.50E-04
2193.91353	1.70E-04	2193.91353	5.10E-04	2193.91353	4.50E-04
2192.94917	1.80E-04	2192.94917	5.10E-04	2192.94917	4.50E-04
2191.98481	1.90E-04	2191.98481	5.20E-04	2191.98481	4.40E-04
2191.02045	1.60E-04	2191.02045	5.20E-04	2191.02045	4.40E-04
2190.0561	1.50E-04	2190.0561	5.30E-04	2190.0561	4.30E-04
2189.09174	1.80E-04	2189.09174	5.30E-04	2189.09174	4.30E-04
2188.12738	1.90E-04	2188.12738	5.30E-04	2188.12738	4.30E-04
2187.16302	1.60E-04	2187.16302	5.30E-04	2187.16302	4.40E-04
2186.19867	1.40E-04	2186.19867	5.30E-04	2186.19867	4.40E-04
2185.23431	1.50E-04	2185.23431	5.30E-04	2185.23431	4.40E-04
2184.26995	1.40E-04	2184.26995	5.20E-04	2184.26995	4.40E-04
2183.30559	1.20E-04	2183.30559	5.20E-04	2183.30559	4.50E-04
2182.34123	1.20E-04	2182.34123	5.20E-04	2182.34123	4.50E-04
2181.37688	1.20E-04	2181.37688	5.30E-04	2181.37688	4.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2180.41252	9.00E-05	2180.41252	5.30E-04	2180.41252	4.50E-04
2179.44816	6.00E-05	2179.44816	5.30E-04	2179.44816	4.50E-04
2178.4838	7.00E-05	2178.4838	5.30E-04	2178.4838	4.40E-04
2177.51945	1.10E-04	2177.51945	5.30E-04	2177.51945	4.30E-04
2176.55509	1.60E-04	2176.55509	5.30E-04	2176.55509	4.30E-04
2175.59073	1.70E-04	2175.59073	5.30E-04	2175.59073	4.40E-04
2174.62637	1.80E-04	2174.62637	5.20E-04	2174.62637	4.50E-04
2173.66202	1.80E-04	2173.66202	5.10E-04	2173.66202	4.50E-04
2172.69766	1.60E-04	2172.69766	5.10E-04	2172.69766	4.50E-04
2171.7333	1.20E-04	2171.7333	5.00E-04	2171.7333	4.50E-04
2170.76894	1.00E-04	2170.76894	5.00E-04	2170.76894	4.50E-04
2169.80459	8.00E-05	2169.80459	5.00E-04	2169.80459	4.50E-04
2168.84023	6.00E-05	2168.84023	5.10E-04	2168.84023	4.50E-04
2167.87587	6.00E-05	2167.87587	5.10E-04	2167.87587	4.60E-04
2166.91151	8.00E-05	2166.91151	5.20E-04	2166.91151	4.50E-04
2165.94716	1.10E-04	2165.94716	5.20E-04	2165.94716	4.50E-04
2164.9828	1.20E-04	2164.9828	5.30E-04	2164.9828	4.40E-04
2164.01844	1.20E-04	2164.01844	5.30E-04	2164.01844	4.30E-04
2163.05408	1.40E-04	2163.05408	5.30E-04	2163.05408	4.30E-04
2162.08973	1.20E-04	2162.08973	5.20E-04	2162.08973	4.20E-04
2161.12537	1.00E-04	2161.12537	5.10E-04	2161.12537	4.30E-04
2160.16101	1.00E-04	2160.16101	5.00E-04	2160.16101	4.30E-04
2159.19665	1.10E-04	2159.19665	5.00E-04	2159.19665	4.30E-04
2158.23229	1.10E-04	2158.23229	5.10E-04	2158.23229	4.30E-04
2157.26794	1.30E-04	2157.26794	5.10E-04	2157.26794	4.30E-04
2156.30358	1.10E-04	2156.30358	5.00E-04	2156.30358	4.30E-04
2155.33922	1.10E-04	2155.33922	5.00E-04	2155.33922	4.40E-04
2154.37486	1.40E-04	2154.37486	4.90E-04	2154.37486	4.40E-04
2153.41051	1.80E-04	2153.41051	5.00E-04	2153.41051	4.40E-04
2152.44615	2.00E-04	2152.44615	5.00E-04	2152.44615	4.40E-04
2151.48179	2.00E-04	2151.48179	5.10E-04	2151.48179	4.50E-04
2150.51743	2.00E-04	2150.51743	5.20E-04	2150.51743	4.40E-04
2149.55308	1.50E-04	2149.55308	5.20E-04	2149.55308	4.40E-04
2148.58872	7.00E-05	2148.58872	5.10E-04	2148.58872	4.30E-04
2147.62436	4.00E-05	2147.62436	5.10E-04	2147.62436	4.30E-04
2146.66	8.00E-05	2146.66	5.00E-04	2146.66	4.20E-04
2145.69565	1.50E-04	2145.69565	5.00E-04	2145.69565	4.10E-04
2144.73129	1.80E-04	2144.73129	5.00E-04	2144.73129	4.10E-04
2143.76693	1.70E-04	2143.76693	5.10E-04	2143.76693	4.10E-04
2142.80257	1.50E-04	2142.80257	5.10E-04	2142.80257	4.10E-04
2141.83822	1.60E-04	2141.83822	5.10E-04	2141.83822	4.20E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2140.87386	1.80E-04	2140.87386	5.00E-04	2140.87386	4.20E-04
2139.9095	1.50E-04	2139.9095	5.00E-04	2139.9095	4.20E-04
2138.94514	1.10E-04	2138.94514	5.00E-04	2138.94514	4.20E-04
2137.98079	1.00E-04	2137.98079	4.90E-04	2137.98079	4.20E-04
2137.01643	1.10E-04	2137.01643	4.90E-04	2137.01643	4.20E-04
2136.05207	1.40E-04	2136.05207	4.80E-04	2136.05207	4.10E-04
2135.08771	1.40E-04	2135.08771	4.80E-04	2135.08771	4.00E-04
2134.12336	1.20E-04	2134.12336	4.80E-04	2134.12336	4.00E-04
2133.159	1.00E-04	2133.159	4.80E-04	2133.159	4.00E-04
2132.19464	9.00E-05	2132.19464	4.80E-04	2132.19464	4.00E-04
2131.23028	9.00E-05	2131.23028	4.80E-04	2131.23028	4.00E-04
2130.26592	1.00E-04	2130.26592	4.90E-04	2130.26592	4.00E-04
2129.30157	1.10E-04	2129.30157	4.90E-04	2129.30157	4.00E-04
2128.33721	1.20E-04	2128.33721	4.80E-04	2128.33721	4.00E-04
2127.37285	1.30E-04	2127.37285	4.80E-04	2127.37285	4.00E-04
2126.40849	1.50E-04	2126.40849	4.70E-04	2126.40849	3.90E-04
2125.44414	1.50E-04	2125.44414	4.70E-04	2125.44414	3.90E-04
2124.47978	1.30E-04	2124.47978	4.70E-04	2124.47978	3.90E-04
2123.51542	1.20E-04	2123.51542	4.70E-04	2123.51542	3.90E-04
2122.55106	1.20E-04	2122.55106	4.70E-04	2122.55106	3.90E-04
2121.58671	1.30E-04	2121.58671	4.70E-04	2121.58671	3.90E-04
2120.62235	1.00E-04	2120.62235	4.60E-04	2120.62235	3.90E-04
2119.65799	8.00E-05	2119.65799	4.60E-04	2119.65799	3.80E-04
2118.69363	8.00E-05	2118.69363	4.50E-04	2118.69363	3.80E-04
2117.72928	1.10E-04	2117.72928	4.50E-04	2117.72928	3.70E-04
2116.76492	1.20E-04	2116.76492	4.50E-04	2116.76492	3.60E-04
2115.80056	1.50E-04	2115.80056	4.50E-04	2115.80056	3.60E-04
2114.8362	1.70E-04	2114.8362	4.40E-04	2114.8362	3.70E-04
2113.87185	1.60E-04	2113.87185	4.40E-04	2113.87185	3.70E-04
2112.90749	1.60E-04	2112.90749	4.30E-04	2112.90749	3.80E-04
2111.94313	1.70E-04	2111.94313	4.30E-04	2111.94313	3.80E-04
2110.97877	1.50E-04	2110.97877	4.30E-04	2110.97877	3.80E-04
2110.01442	1.20E-04	2110.01442	4.40E-04	2110.01442	3.70E-04
2109.05006	1.30E-04	2109.05006	4.50E-04	2109.05006	3.60E-04
2108.0857	1.50E-04	2108.0857	4.40E-04	2108.0857	3.60E-04
2107.12134	1.70E-04	2107.12134	4.40E-04	2107.12134	3.50E-04
2106.15698	1.80E-04	2106.15698	4.30E-04	2106.15698	3.50E-04
2105.19263	1.90E-04	2105.19263	4.20E-04	2105.19263	3.40E-04
2104.22827	1.80E-04	2104.22827	4.20E-04	2104.22827	3.40E-04
2103.26391	1.50E-04	2103.26391	4.20E-04	2103.26391	3.40E-04
2102.29955	1.40E-04	2102.29955	4.10E-04	2102.29955	3.40E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2101.3352	1.40E-04	2101.3352	4.10E-04	2101.3352	3.40E-04
2100.37084	1.60E-04	2100.37084	4.00E-04	2100.37084	3.50E-04
2099.40648	1.90E-04	2099.40648	4.10E-04	2099.40648	3.50E-04
2098.44212	1.90E-04	2098.44212	4.10E-04	2098.44212	3.50E-04
2097.47777	1.60E-04	2097.47777	4.10E-04	2097.47777	3.40E-04
2096.51341	1.00E-04	2096.51341	4.10E-04	2096.51341	3.30E-04
2095.54905	8.00E-05	2095.54905	4.10E-04	2095.54905	3.20E-04
2094.58469	7.00E-05	2094.58469	4.10E-04	2094.58469	3.20E-04
2093.62034	5.00E-05	2093.62034	4.10E-04	2093.62034	3.20E-04
2092.65598	6.00E-05	2092.65598	4.10E-04	2092.65598	3.30E-04
2091.69162	9.00E-05	2091.69162	4.10E-04	2091.69162	3.30E-04
2090.72726	1.30E-04	2090.72726	4.00E-04	2090.72726	3.30E-04
2089.76291	1.50E-04	2089.76291	4.00E-04	2089.76291	3.20E-04
2088.79855	1.80E-04	2088.79855	3.90E-04	2088.79855	3.20E-04
2087.83419	2.20E-04	2087.83419	3.90E-04	2087.83419	3.10E-04
2086.86983	2.10E-04	2086.86983	3.90E-04	2086.86983	3.10E-04
2085.90548	1.40E-04	2085.90548	4.00E-04	2085.90548	3.10E-04
2084.94112	8.00E-05	2084.94112	4.00E-04	2084.94112	3.10E-04
2083.97676	8.00E-05	2083.97676	4.00E-04	2083.97676	3.00E-04
2083.0124	1.30E-04	2083.0124	3.90E-04	2083.0124	3.00E-04
2082.04805	1.70E-04	2082.04805	3.90E-04	2082.04805	2.90E-04
2081.08369	1.80E-04	2081.08369	3.90E-04	2081.08369	2.90E-04
2080.11933	1.50E-04	2080.11933	3.80E-04	2080.11933	2.90E-04
2079.15497	1.50E-04	2079.15497	3.80E-04	2079.15497	2.90E-04
2078.19061	2.00E-04	2078.19061	3.70E-04	2078.19061	2.90E-04
2077.22626	2.40E-04	2077.22626	3.60E-04	2077.22626	2.90E-04
2076.2619	2.10E-04	2076.2619	3.50E-04	2076.2619	2.80E-04
2075.29754	1.60E-04	2075.29754	3.50E-04	2075.29754	2.70E-04
2074.33318	1.60E-04	2074.33318	3.50E-04	2074.33318	2.70E-04
2073.36883	1.80E-04	2073.36883	3.50E-04	2073.36883	2.70E-04
2072.40447	1.80E-04	2072.40447	3.60E-04	2072.40447	2.70E-04
2071.44011	1.70E-04	2071.44011	3.60E-04	2071.44011	2.70E-04
2070.47575	1.40E-04	2070.47575	3.60E-04	2070.47575	2.70E-04
2069.5114	1.10E-04	2069.5114	3.50E-04	2069.5114	2.60E-04
2068.54704	1.00E-04	2068.54704	3.50E-04	2068.54704	2.60E-04
2067.58268	1.10E-04	2067.58268	3.40E-04	2067.58268	2.70E-04
2066.61832	1.20E-04	2066.61832	3.40E-04	2066.61832	2.70E-04
2065.65397	1.30E-04	2065.65397	3.40E-04	2065.65397	2.70E-04
2064.68961	1.20E-04	2064.68961	3.50E-04	2064.68961	2.70E-04
2063.72525	6.00E-05	2063.72525	3.40E-04	2063.72525	2.60E-04
2062.76089	3.00E-05	2062.76089	3.40E-04	2062.76089	2.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2061.79654	6.00E-05	2061.79654	3.30E-04	2061.79654	2.40E-04
2060.83218	1.00E-04	2060.83218	3.20E-04	2060.83218	2.30E-04
2059.86782	1.00E-04	2059.86782	3.20E-04	2059.86782	2.40E-04
2058.90346	9.00E-05	2058.90346	3.20E-04	2058.90346	2.40E-04
2057.93911	1.10E-04	2057.93911	3.30E-04	2057.93911	2.40E-04
2056.97475	1.50E-04	2056.97475	3.40E-04	2056.97475	2.40E-04
2056.01039	1.80E-04	2056.01039	3.40E-04	2056.01039	2.40E-04
2055.04603	2.00E-04	2055.04603	3.40E-04	2055.04603	2.30E-04
2054.08167	2.10E-04	2054.08167	3.30E-04	2054.08167	2.30E-04
2053.11732	1.90E-04	2053.11732	3.30E-04	2053.11732	2.30E-04
2052.15296	1.70E-04	2052.15296	3.20E-04	2052.15296	2.40E-04
2051.1886	1.90E-04	2051.1886	3.20E-04	2051.1886	2.30E-04
2050.22424	2.20E-04	2050.22424	3.20E-04	2050.22424	2.30E-04
2049.25989	2.30E-04	2049.25989	3.20E-04	2049.25989	2.20E-04
2048.29553	2.20E-04	2048.29553	3.20E-04	2048.29553	2.20E-04
2047.33117	2.00E-04	2047.33117	3.20E-04	2047.33117	2.20E-04
2046.36681	1.60E-04	2046.36681	3.20E-04	2046.36681	2.10E-04
2045.40246	1.20E-04	2045.40246	3.10E-04	2045.40246	2.10E-04
2044.4381	1.10E-04	2044.4381	3.10E-04	2044.4381	2.10E-04
2043.47374	1.20E-04	2043.47374	3.10E-04	2043.47374	2.10E-04
2042.50938	1.40E-04	2042.50938	3.00E-04	2042.50938	2.00E-04
2041.54503	1.60E-04	2041.54503	3.00E-04	2041.54503	2.00E-04
2040.58067	1.70E-04	2040.58067	3.00E-04	2040.58067	1.90E-04
2039.61631	1.60E-04	2039.61631	2.90E-04	2039.61631	2.00E-04
2038.65195	1.40E-04	2038.65195	2.90E-04	2038.65195	2.00E-04
2037.6876	1.40E-04	2037.6876	2.90E-04	2037.6876	2.00E-04
2036.72324	1.80E-04	2036.72324	3.00E-04	2036.72324	2.10E-04
2035.75888	1.90E-04	2035.75888	3.00E-04	2035.75888	2.10E-04
2034.79452	1.80E-04	2034.79452	3.00E-04	2034.79452	2.10E-04
2033.83017	1.80E-04	2033.83017	3.00E-04	2033.83017	2.10E-04
2032.86581	1.80E-04	2032.86581	2.90E-04	2032.86581	2.10E-04
2031.90145	1.70E-04	2031.90145	2.90E-04	2031.90145	2.10E-04
2030.93709	1.40E-04	2030.93709	2.80E-04	2030.93709	2.00E-04
2029.97273	1.10E-04	2029.97273	2.70E-04	2029.97273	1.90E-04
2029.00838	1.20E-04	2029.00838	2.70E-04	2029.00838	1.90E-04
2028.04402	1.40E-04	2028.04402	2.70E-04	2028.04402	1.80E-04
2027.07966	1.30E-04	2027.07966	2.70E-04	2027.07966	1.80E-04
2026.1153	1.00E-04	2026.1153	2.70E-04	2026.1153	1.70E-04
2025.15095	8.00E-05	2025.15095	2.70E-04	2025.15095	1.70E-04
2024.18659	8.00E-05	2024.18659	2.70E-04	2024.18659	1.60E-04
2023.22223	1.00E-04	2023.22223	2.70E-04	2023.22223	1.60E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2022.25787	1.20E-04	2022.25787	2.70E-04	2022.25787	1.60E-04
2021.29352	1.50E-04	2021.29352	2.60E-04	2021.29352	1.60E-04
2020.32916	1.50E-04	2020.32916	2.50E-04	2020.32916	1.60E-04
2019.3648	1.30E-04	2019.3648	2.50E-04	2019.3648	1.60E-04
2018.40044	1.30E-04	2018.40044	2.40E-04	2018.40044	1.70E-04
2017.43609	1.40E-04	2017.43609	2.40E-04	2017.43609	1.70E-04
2016.47173	1.50E-04	2016.47173	2.30E-04	2016.47173	1.60E-04
2015.50737	1.50E-04	2015.50737	2.30E-04	2015.50737	1.50E-04
2014.54301	1.30E-04	2014.54301	2.30E-04	2014.54301	1.40E-04
2013.57866	1.10E-04	2013.57866	2.30E-04	2013.57866	1.40E-04
2012.6143	1.20E-04	2012.6143	2.40E-04	2012.6143	1.30E-04
2011.64994	1.40E-04	2011.64994	2.40E-04	2011.64994	1.30E-04
2010.68558	1.00E-04	2010.68558	2.40E-04	2010.68558	1.30E-04
2009.72123	5.00E-05	2009.72123	2.40E-04	2009.72123	1.30E-04
2008.75687	4.00E-05	2008.75687	2.40E-04	2008.75687	1.30E-04
2007.79251	5.00E-05	2007.79251	2.40E-04	2007.79251	1.30E-04
2006.82815	5.00E-05	2006.82815	2.30E-04	2006.82815	1.40E-04
2005.8638	5.00E-05	2005.8638	2.40E-04	2005.8638	1.40E-04
2004.89944	7.00E-05	2004.89944	2.40E-04	2004.89944	1.40E-04
2003.93508	6.00E-05	2003.93508	2.30E-04	2003.93508	1.30E-04
2002.97072	4.00E-05	2002.97072	2.30E-04	2002.97072	1.30E-04
2002.00636	3.00E-05	2002.00636	2.30E-04	2002.00636	1.20E-04
2001.04201	2.00E-05	2001.04201	2.30E-04	2001.04201	1.10E-04
2000.07765	3.00E-05	2000.07765	2.30E-04	2000.07765	1.20E-04
1999.11329	6.00E-05	1999.11329	2.30E-04	1999.11329	1.20E-04
1998.14893	9.00E-05	1998.14893	2.30E-04	1998.14893	1.20E-04
1997.18458	1.30E-04	1997.18458	2.30E-04	1997.18458	1.20E-04
1996.22022	1.20E-04	1996.22022	2.30E-04	1996.22022	1.20E-04
1995.25586	9.00E-05	1995.25586	2.30E-04	1995.25586	1.20E-04
1994.2915	7.00E-05	1994.2915	2.20E-04	1994.2915	1.30E-04
1993.32715	7.00E-05	1993.32715	2.20E-04	1993.32715	1.30E-04
1992.36279	7.00E-05	1992.36279	2.10E-04	1992.36279	1.30E-04
1991.39843	8.00E-05	1991.39843	2.10E-04	1991.39843	1.30E-04
1990.43407	7.00E-05	1990.43407	2.10E-04	1990.43407	1.20E-04
1989.46972	0	1989.46972	2.10E-04	1989.46972	1.00E-04
1988.50536	-3.00E-05	1988.50536	2.00E-04	1988.50536	9.00E-05
1987.541	2.00E-05	1987.541	2.00E-04	1987.541	8.00E-05
1986.57664	1.00E-04	1986.57664	1.90E-04	1986.57664	7.00E-05
1985.61229	1.30E-04	1985.61229	1.90E-04	1985.61229	7.00E-05
1984.64793	1.10E-04	1984.64793	1.90E-04	1984.64793	7.00E-05
1983.68357	7.00E-05	1983.68357	2.00E-04	1983.68357	7.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1982.71921	5.00E-05	1982.71921	2.10E-04	1982.71921	8.00E-05
1981.75486	4.00E-05	1981.75486	2.10E-04	1981.75486	8.00E-05
1980.7905	4.00E-05	1980.7905	2.10E-04	1980.7905	9.00E-05
1979.82614	7.00E-05	1979.82614	2.00E-04	1979.82614	8.00E-05
1978.86178	1.10E-04	1978.86178	2.00E-04	1978.86178	8.00E-05
1977.89742	1.20E-04	1977.89742	2.00E-04	1977.89742	8.00E-05
1976.93307	9.00E-05	1976.93307	2.00E-04	1976.93307	7.00E-05
1975.96871	4.00E-05	1975.96871	2.00E-04	1975.96871	7.00E-05
1975.00435	2.00E-05	1975.00435	1.90E-04	1975.00435	7.00E-05
1974.03999	6.00E-05	1974.03999	1.90E-04	1974.03999	8.00E-05
1973.07564	8.00E-05	1973.07564	1.90E-04	1973.07564	8.00E-05
1972.11128	9.00E-05	1972.11128	1.90E-04	1972.11128	8.00E-05
1971.14692	7.00E-05	1971.14692	2.00E-04	1971.14692	8.00E-05
1970.18256	3.00E-05	1970.18256	1.90E-04	1970.18256	8.00E-05
1969.21821	0	1969.21821	1.90E-04	1969.21821	9.00E-05
1968.25385	2.00E-05	1968.25385	1.80E-04	1968.25385	9.00E-05
1967.28949	6.00E-05	1967.28949	1.80E-04	1967.28949	9.00E-05
1966.32513	8.00E-05	1966.32513	1.80E-04	1966.32513	1.00E-04
1965.36078	7.00E-05	1965.36078	1.80E-04	1965.36078	1.00E-04
1964.39642	8.00E-05	1964.39642	1.90E-04	1964.39642	1.00E-04
1963.43206	9.00E-05	1963.43206	2.00E-04	1963.43206	9.00E-05
1962.4677	7.00E-05	1962.4677	2.10E-04	1962.4677	9.00E-05
1961.50335	5.00E-05	1961.50335	2.20E-04	1961.50335	9.00E-05
1960.53899	7.00E-05	1960.53899	2.20E-04	1960.53899	8.00E-05
1959.57463	1.00E-04	1959.57463	2.20E-04	1959.57463	7.00E-05
1958.61027	9.00E-05	1958.61027	2.10E-04	1958.61027	6.00E-05
1957.64592	6.00E-05	1957.64592	1.90E-04	1957.64592	6.00E-05
1956.68156	7.00E-05	1956.68156	1.80E-04	1956.68156	6.00E-05
1955.7172	9.00E-05	1955.7172	1.70E-04	1955.7172	6.00E-05
1954.75284	1.00E-04	1954.75284	1.70E-04	1954.75284	6.00E-05
1953.78849	9.00E-05	1953.78849	1.70E-04	1953.78849	6.00E-05
1952.82413	6.00E-05	1952.82413	1.80E-04	1952.82413	6.00E-05
1951.85977	5.00E-05	1951.85977	1.80E-04	1951.85977	5.00E-05
1950.89541	7.00E-05	1950.89541	1.80E-04	1950.89541	5.00E-05
1949.93105	9.00E-05	1949.93105	1.80E-04	1949.93105	5.00E-05
1948.9667	9.00E-05	1948.9667	1.70E-04	1948.9667	6.00E-05
1948.00234	1.00E-04	1948.00234	1.60E-04	1948.00234	7.00E-05
1947.03798	1.10E-04	1947.03798	1.60E-04	1947.03798	7.00E-05
1946.07362	1.40E-04	1946.07362	1.50E-04	1946.07362	8.00E-05
1945.10927	1.70E-04	1945.10927	1.50E-04	1945.10927	1.00E-04
1944.14491	1.90E-04	1944.14491	1.50E-04	1944.14491	1.10E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1943.18055	1.60E-04	1943.18055	1.50E-04	1943.18055	1.20E-04
1942.21619	1.00E-04	1942.21619	1.60E-04	1942.21619	1.10E-04
1941.25184	4.00E-05	1941.25184	1.60E-04	1941.25184	1.00E-04
1940.28748	4.00E-05	1940.28748	1.60E-04	1940.28748	8.00E-05
1939.32312	8.00E-05	1939.32312	1.60E-04	1939.32312	5.00E-05
1938.35876	1.50E-04	1938.35876	1.60E-04	1938.35876	4.00E-05
1937.39441	2.10E-04	1937.39441	1.60E-04	1937.39441	4.00E-05
1936.43005	2.10E-04	1936.43005	1.50E-04	1936.43005	4.00E-05
1935.46569	1.70E-04	1935.46569	1.50E-04	1935.46569	4.00E-05
1934.50133	1.20E-04	1934.50133	1.50E-04	1934.50133	4.00E-05
1933.53698	1.00E-04	1933.53698	1.50E-04	1933.53698	4.00E-05
1932.57262	1.00E-04	1932.57262	1.50E-04	1932.57262	4.00E-05
1931.60826	1.00E-04	1931.60826	1.60E-04	1931.60826	4.00E-05
1930.6439	8.00E-05	1930.6439	1.60E-04	1930.6439	3.00E-05
1929.67955	7.00E-05	1929.67955	1.60E-04	1929.67955	3.00E-05
1928.71519	7.00E-05	1928.71519	1.50E-04	1928.71519	2.00E-05
1927.75083	9.00E-05	1927.75083	1.50E-04	1927.75083	1.00E-05
1926.78647	1.10E-04	1926.78647	1.50E-04	1926.78647	2.00E-05
1925.82211	1.00E-04	1925.82211	1.50E-04	1925.82211	4.00E-05
1924.85776	9.00E-05	1924.85776	1.50E-04	1924.85776	7.00E-05
1923.8934	1.10E-04	1923.8934	1.50E-04	1923.8934	1.00E-04
1922.92904	1.40E-04	1922.92904	1.50E-04	1922.92904	1.10E-04
1921.96468	1.50E-04	1921.96468	1.60E-04	1921.96468	1.00E-04
1921.00033	1.40E-04	1921.00033	1.60E-04	1921.00033	1.00E-04
1920.03597	1.60E-04	1920.03597	1.60E-04	1920.03597	1.00E-04
1919.07161	1.80E-04	1919.07161	1.60E-04	1919.07161	1.00E-04
1918.10725	1.50E-04	1918.10725	1.50E-04	1918.10725	9.00E-05
1917.1429	1.20E-04	1917.1429	1.50E-04	1917.1429	9.00E-05
1916.17854	1.40E-04	1916.17854	1.50E-04	1916.17854	7.00E-05
1915.21418	1.70E-04	1915.21418	1.50E-04	1915.21418	5.00E-05
1914.24982	1.90E-04	1914.24982	1.50E-04	1914.24982	3.00E-05
1913.28547	2.00E-04	1913.28547	1.50E-04	1913.28547	3.00E-05
1912.32111	2.20E-04	1912.32111	1.40E-04	1912.32111	5.00E-05
1911.35675	2.50E-04	1911.35675	1.40E-04	1911.35675	6.00E-05
1910.39239	2.50E-04	1910.39239	1.30E-04	1910.39239	7.00E-05
1909.42804	2.10E-04	1909.42804	1.30E-04	1909.42804	7.00E-05
1908.46368	1.90E-04	1908.46368	1.40E-04	1908.46368	6.00E-05
1907.49932	2.00E-04	1907.49932	1.40E-04	1907.49932	5.00E-05
1906.53496	2.20E-04	1906.53496	1.40E-04	1906.53496	4.00E-05
1905.57061	2.30E-04	1905.57061	1.40E-04	1905.57061	4.00E-05
1904.60625	2.30E-04	1904.60625	1.40E-04	1904.60625	4.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1903.64189	2.60E-04	1903.64189	1.40E-04	1903.64189	4.00E-05
1902.67753	2.90E-04	1902.67753	1.50E-04	1902.67753	5.00E-05
1901.71317	3.10E-04	1901.71317	1.50E-04	1901.71317	4.00E-05
1900.74882	2.90E-04	1900.74882	1.40E-04	1900.74882	4.00E-05
1899.78446	2.50E-04	1899.78446	1.40E-04	1899.78446	4.00E-05
1898.8201	2.20E-04	1898.8201	1.30E-04	1898.8201	4.00E-05
1897.85574	2.20E-04	1897.85574	1.20E-04	1897.85574	6.00E-05
1896.89139	2.10E-04	1896.89139	1.20E-04	1896.89139	7.00E-05
1895.92703	2.00E-04	1895.92703	1.20E-04	1895.92703	8.00E-05
1894.96267	2.00E-04	1894.96267	1.20E-04	1894.96267	7.00E-05
1893.99831	2.20E-04	1893.99831	1.20E-04	1893.99831	7.00E-05
1893.03396	2.30E-04	1893.03396	1.20E-04	1893.03396	6.00E-05
1892.0696	2.20E-04	1892.0696	1.20E-04	1892.0696	7.00E-05
1891.10524	2.00E-04	1891.10524	1.20E-04	1891.10524	8.00E-05
1890.14088	1.90E-04	1890.14088	1.20E-04	1890.14088	9.00E-05
1889.17653	1.70E-04	1889.17653	1.20E-04	1889.17653	9.00E-05
1888.21217	1.70E-04	1888.21217	1.20E-04	1888.21217	8.00E-05
1887.24781	1.50E-04	1887.24781	1.20E-04	1887.24781	6.00E-05
1886.28345	1.40E-04	1886.28345	1.20E-04	1886.28345	4.00E-05
1885.3191	1.50E-04	1885.3191	1.20E-04	1885.3191	3.00E-05
1884.35474	1.60E-04	1884.35474	1.20E-04	1884.35474	4.00E-05
1883.39038	1.60E-04	1883.39038	1.20E-04	1883.39038	4.00E-05
1882.42602	1.60E-04	1882.42602	1.20E-04	1882.42602	4.00E-05
1881.46167	1.50E-04	1881.46167	1.20E-04	1881.46167	3.00E-05
1880.49731	1.30E-04	1880.49731	1.10E-04	1880.49731	2.00E-05
1879.53295	1.10E-04	1879.53295	1.00E-04	1879.53295	2.00E-05
1878.56859	1.40E-04	1878.56859	1.00E-04	1878.56859	2.00E-05
1877.60424	1.80E-04	1877.60424	1.00E-04	1877.60424	2.00E-05
1876.63988	1.60E-04	1876.63988	1.10E-04	1876.63988	3.00E-05
1875.67552	1.10E-04	1875.67552	1.10E-04	1875.67552	3.00E-05
1874.71116	8.00E-05	1874.71116	1.10E-04	1874.71116	3.00E-05
1873.7468	8.00E-05	1873.7468	1.10E-04	1873.7468	3.00E-05
1872.78245	8.00E-05	1872.78245	1.00E-04	1872.78245	5.00E-05
1871.81809	1.00E-04	1871.81809	9.00E-05	1871.81809	9.00E-05
1870.85373	1.40E-04	1870.85373	9.00E-05	1870.85373	1.40E-04
1869.88937	1.80E-04	1869.88937	1.00E-04	1869.88937	1.80E-04
1868.92502	1.80E-04	1868.92502	1.10E-04	1868.92502	2.00E-04
1867.96066	1.40E-04	1867.96066	1.10E-04	1867.96066	1.90E-04
1866.9963	1.00E-04	1866.9963	1.10E-04	1866.9963	1.50E-04
1866.03194	8.00E-05	1866.03194	1.10E-04	1866.03194	1.00E-04
1865.06759	8.00E-05	1865.06759	1.10E-04	1865.06759	5.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1864.10323	9.00E-05	1864.10323	1.00E-04	1864.10323	2.00E-05
1863.13887	1.00E-04	1863.13887	1.00E-04	1863.13887	1.00E-05
1862.17451	1.10E-04	1862.17451	1.10E-04	1862.17451	1.00E-05
1861.21016	9.00E-05	1861.21016	1.10E-04	1861.21016	1.00E-05
1860.2458	8.00E-05	1860.2458	1.10E-04	1860.2458	1.00E-05
1859.28144	8.00E-05	1859.28144	1.10E-04	1859.28144	1.00E-05
1858.31708	8.00E-05	1858.31708	1.10E-04	1858.31708	1.00E-05
1857.35273	4.00E-05	1857.35273	1.10E-04	1857.35273	1.00E-05
1856.38837	2.00E-05	1856.38837	1.00E-04	1856.38837	0
1855.42401	5.00E-05	1855.42401	9.00E-05	1855.42401	0
1854.45965	8.00E-05	1854.45965	9.00E-05	1854.45965	0
1853.4953	9.00E-05	1853.4953	1.00E-04	1853.4953	0
1852.53094	9.00E-05	1852.53094	1.10E-04	1852.53094	0
1851.56658	7.00E-05	1851.56658	1.10E-04	1851.56658	0
1850.60222	6.00E-05	1850.60222	1.10E-04	1850.60222	1.00E-05
1849.63786	7.00E-05	1849.63786	1.00E-04	1849.63786	3.00E-05
1848.67351	1.00E-04	1848.67351	9.00E-05	1848.67351	4.00E-05
1847.70915	1.10E-04	1847.70915	8.00E-05	1847.70915	7.00E-05
1846.74479	1.20E-04	1846.74479	7.00E-05	1846.74479	1.20E-04
1845.78043	1.40E-04	1845.78043	7.00E-05	1845.78043	1.60E-04
1844.81608	1.00E-04	1844.81608	8.00E-05	1844.81608	1.70E-04
1843.85172	6.00E-05	1843.85172	9.00E-05	1843.85172	1.50E-04
1842.88736	7.00E-05	1842.88736	1.00E-04	1842.88736	1.20E-04
1841.923	8.00E-05	1841.923	1.10E-04	1841.923	7.00E-05
1840.95865	7.00E-05	1840.95865	1.20E-04	1840.95865	2.00E-05
1839.99429	7.00E-05	1839.99429	1.20E-04	1839.99429	0
1839.02993	9.00E-05	1839.02993	1.10E-04	1839.02993	1.00E-05
1838.06557	9.00E-05	1838.06557	1.10E-04	1838.06557	2.00E-05
1837.10122	1.00E-04	1837.10122	1.10E-04	1837.10122	3.00E-05
1836.13686	1.00E-04	1836.13686	1.10E-04	1836.13686	2.00E-05
1835.1725	9.00E-05	1835.1725	1.10E-04	1835.1725	1.00E-05
1834.20814	6.00E-05	1834.20814	1.10E-04	1834.20814	-1.00E-05
1833.24379	3.00E-05	1833.24379	1.10E-04	1833.24379	1.00E-05
1832.27943	3.00E-05	1832.27943	1.00E-04	1832.27943	6.00E-05
1831.31507	6.00E-05	1831.31507	1.00E-04	1831.31507	1.10E-04
1830.35071	1.00E-04	1830.35071	1.00E-04	1830.35071	1.40E-04
1829.38636	1.20E-04	1829.38636	1.00E-04	1829.38636	1.40E-04
1828.422	1.10E-04	1828.422	1.00E-04	1828.422	1.40E-04
1827.45764	9.00E-05	1827.45764	9.00E-05	1827.45764	1.30E-04
1826.49328	1.00E-04	1826.49328	9.00E-05	1826.49328	1.10E-04
1825.52893	1.10E-04	1825.52893	8.00E-05	1825.52893	1.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1824.56457	9.00E-05	1824.56457	7.00E-05	1824.56457	1.10E-04
1823.60021	7.00E-05	1823.60021	7.00E-05	1823.60021	9.00E-05
1822.63585	3.00E-05	1822.63585	7.00E-05	1822.63585	5.00E-05
1821.67149	0	1821.67149	7.00E-05	1821.67149	1.00E-05
1820.70714	1.00E-05	1820.70714	7.00E-05	1820.70714	0
1819.74278	3.00E-05	1819.74278	7.00E-05	1819.74278	0
1818.77842	5.00E-05	1818.77842	6.00E-05	1818.77842	0
1817.81406	8.00E-05	1817.81406	5.00E-05	1817.81406	0
1816.84971	9.00E-05	1816.84971	4.00E-05	1816.84971	0
1815.88535	6.00E-05	1815.88535	3.00E-05	1815.88535	-1.00E-05
1814.92099	2.00E-05	1814.92099	3.00E-05	1814.92099	-2.00E-05
1813.95663	1.00E-05	1813.95663	2.00E-05	1813.95663	-2.00E-05
1812.99228	1.00E-05	1812.99228	1.00E-05	1812.99228	0
1812.02792	3.00E-05	1812.02792	1.00E-05	1812.02792	1.00E-05
1811.06356	2.00E-05	1811.06356	0	1811.06356	2.00E-05
1810.0992	2.00E-05	1810.0992	0	1810.0992	3.00E-05
1809.13485	5.00E-05	1809.13485	0	1809.13485	2.00E-05
1808.17049	8.00E-05	1808.17049	0	1808.17049	-1.00E-05
1807.20613	8.00E-05	1807.20613	1.00E-05	1807.20613	-4.00E-05
1806.24177	6.00E-05	1806.24177	1.00E-05	1806.24177	-6.00E-05
1805.27742	5.00E-05	1805.27742	1.00E-05	1805.27742	-6.00E-05
1804.31306	4.00E-05	1804.31306	0	1804.31306	-5.00E-05
1803.3487	4.00E-05	1803.3487	0	1803.3487	-3.00E-05
1802.38434	5.00E-05	1802.38434	0	1802.38434	1.00E-05
1801.41999	6.00E-05	1801.41999	1.00E-05	1801.41999	3.00E-05
1800.45563	7.00E-05	1800.45563	1.00E-05	1800.45563	3.00E-05
1799.49127	8.00E-05	1799.49127	2.00E-05	1799.49127	1.00E-05
1798.52691	1.10E-04	1798.52691	3.00E-05	1798.52691	-1.00E-05
1797.56255	1.10E-04	1797.56255	4.00E-05	1797.56255	-4.00E-05
1796.5982	7.00E-05	1796.5982	4.00E-05	1796.5982	-5.00E-05
1795.63384	4.00E-05	1795.63384	4.00E-05	1795.63384	-2.00E-05
1794.66948	6.00E-05	1794.66948	3.00E-05	1794.66948	4.00E-05
1793.70512	1.00E-04	1793.70512	4.00E-05	1793.70512	9.00E-05
1792.74077	1.10E-04	1792.74077	4.00E-05	1792.74077	1.20E-04
1791.77641	9.00E-05	1791.77641	5.00E-05	1791.77641	1.10E-04
1790.81205	6.00E-05	1790.81205	7.00E-05	1790.81205	7.00E-05
1789.84769	4.00E-05	1789.84769	8.00E-05	1789.84769	1.00E-05
1788.88334	4.00E-05	1788.88334	1.00E-04	1788.88334	-6.00E-05
1787.91898	2.00E-05	1787.91898	1.00E-04	1787.91898	-8.00E-05
1786.95462	0	1786.95462	1.00E-04	1786.95462	-7.00E-05
1785.99026	2.00E-05	1785.99026	1.00E-04	1785.99026	-6.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1785.02591	5.00E-05	1785.02591	9.00E-05	1785.02591	-5.00E-05
1784.06155	7.00E-05	1784.06155	9.00E-05	1784.06155	-4.00E-05
1783.09719	1.00E-04	1783.09719	9.00E-05	1783.09719	-2.00E-05
1782.13283	1.20E-04	1782.13283	9.00E-05	1782.13283	0
1781.16848	1.10E-04	1781.16848	9.00E-05	1781.16848	1.00E-05
1780.20412	1.00E-04	1780.20412	9.00E-05	1780.20412	1.00E-05
1779.23976	1.30E-04	1779.23976	9.00E-05	1779.23976	1.00E-05
1778.2754	1.70E-04	1778.2754	9.00E-05	1778.2754	0
1777.31105	1.80E-04	1777.31105	9.00E-05	1777.31105	-2.00E-05
1776.34669	1.60E-04	1776.34669	8.00E-05	1776.34669	-2.00E-05
1775.38233	1.50E-04	1775.38233	7.00E-05	1775.38233	4.00E-05
1774.41797	1.60E-04	1774.41797	7.00E-05	1774.41797	1.30E-04
1773.45362	1.70E-04	1773.45362	7.00E-05	1773.45362	1.90E-04
1772.48926	1.60E-04	1772.48926	7.00E-05	1772.48926	2.10E-04
1771.5249	1.40E-04	1771.5249	7.00E-05	1771.5249	2.00E-04
1770.56054	1.40E-04	1770.56054	8.00E-05	1770.56054	1.80E-04
1769.59618	1.70E-04	1769.59618	9.00E-05	1769.59618	1.30E-04
1768.63183	1.80E-04	1768.63183	9.00E-05	1768.63183	7.00E-05
1767.66747	1.50E-04	1767.66747	9.00E-05	1767.66747	3.00E-05
1766.70311	1.30E-04	1766.70311	9.00E-05	1766.70311	1.00E-05
1765.73875	1.20E-04	1765.73875	9.00E-05	1765.73875	-1.00E-05
1764.7744	9.00E-05	1764.7744	9.00E-05	1764.7744	0
1763.81004	9.00E-05	1763.81004	9.00E-05	1763.81004	4.00E-05
1762.84568	1.70E-04	1762.84568	9.00E-05	1762.84568	8.00E-05
1761.88132	2.20E-04	1761.88132	1.00E-04	1761.88132	1.00E-04
1760.91697	1.80E-04	1760.91697	1.10E-04	1760.91697	1.00E-04
1759.95261	1.50E-04	1759.95261	1.20E-04	1759.95261	1.00E-04
1758.98825	1.80E-04	1758.98825	1.20E-04	1758.98825	1.10E-04
1758.02389	2.20E-04	1758.02389	1.20E-04	1758.02389	1.20E-04
1757.05954	2.20E-04	1757.05954	1.20E-04	1757.05954	1.40E-04
1756.09518	2.30E-04	1756.09518	1.30E-04	1756.09518	1.40E-04
1755.13082	2.60E-04	1755.13082	1.50E-04	1755.13082	1.40E-04
1754.16646	2.80E-04	1754.16646	1.70E-04	1754.16646	1.60E-04
1753.20211	2.70E-04	1753.20211	1.80E-04	1753.20211	2.10E-04
1752.23775	2.80E-04	1752.23775	1.90E-04	1752.23775	2.90E-04
1751.27339	3.00E-04	1751.27339	2.00E-04	1751.27339	4.00E-04
1750.30903	3.60E-04	1750.30903	2.20E-04	1750.30903	4.80E-04
1749.34468	4.40E-04	1749.34468	2.30E-04	1749.34468	5.20E-04
1748.38032	4.70E-04	1748.38032	2.50E-04	1748.38032	5.10E-04
1747.41596	4.50E-04	1747.41596	2.70E-04	1747.41596	4.90E-04
1746.4516	4.10E-04	1746.4516	2.90E-04	1746.4516	4.90E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1745.48724	4.20E-04	1745.48724	3.10E-04	1745.48724	4.90E-04
1744.52289	4.50E-04	1744.52289	3.40E-04	1744.52289	5.00E-04
1743.55853	4.50E-04	1743.55853	3.60E-04	1743.55853	5.20E-04
1742.59417	4.60E-04	1742.59417	3.80E-04	1742.59417	5.70E-04
1741.62981	5.20E-04	1741.62981	4.00E-04	1741.62981	6.20E-04
1740.66546	5.80E-04	1740.66546	4.20E-04	1740.66546	6.40E-04
1739.7011	5.70E-04	1739.7011	4.50E-04	1739.7011	6.40E-04
1738.73674	5.60E-04	1738.73674	4.90E-04	1738.73674	6.40E-04
1737.77238	5.90E-04	1737.77238	5.20E-04	1737.77238	6.70E-04
1736.80803	6.50E-04	1736.80803	5.40E-04	1736.80803	7.70E-04
1735.84367	7.40E-04	1735.84367	5.60E-04	1735.84367	8.80E-04
1734.87931	8.40E-04	1734.87931	5.80E-04	1734.87931	9.80E-04
1733.91495	8.70E-04	1733.91495	6.10E-04	1733.91495	0.00104
1732.9506	8.40E-04	1732.9506	6.50E-04	1732.9506	0.00104
1731.98624	8.30E-04	1731.98624	7.00E-04	1731.98624	1.00E-03
1731.02188	8.40E-04	1731.02188	7.40E-04	1731.02188	9.10E-04
1730.05752	8.40E-04	1730.05752	7.80E-04	1730.05752	8.50E-04
1729.09317	8.60E-04	1729.09317	8.10E-04	1729.09317	8.40E-04
1728.12881	8.90E-04	1728.12881	8.40E-04	1728.12881	8.40E-04
1727.16445	9.10E-04	1727.16445	8.70E-04	1727.16445	8.20E-04
1726.20009	9.50E-04	1726.20009	9.00E-04	1726.20009	8.20E-04
1725.23574	9.90E-04	1725.23574	9.30E-04	1725.23574	8.50E-04
1724.27138	1.00E-03	1724.27138	9.60E-04	1724.27138	8.90E-04
1723.30702	1.00E-03	1723.30702	1.00E-03	1723.30702	9.10E-04
1722.34266	0.00105	1722.34266	0.00104	1722.34266	9.40E-04
1721.3783	0.00112	1721.3783	0.00108	1721.3783	0.00102
1720.41395	0.0012	1720.41395	0.0011	1720.41395	0.00114
1719.44959	0.00128	1719.44959	0.00113	1719.44959	0.00127
1718.48523	0.00133	1718.48523	0.00118	1718.48523	0.00139
1717.52087	0.00133	1717.52087	0.00122	1717.52087	0.00148
1716.55652	0.00136	1716.55652	0.00128	1716.55652	0.00152
1715.59216	0.0014	1715.59216	0.00134	1715.59216	0.00149
1714.6278	0.00141	1714.6278	0.00141	1714.6278	0.00142
1713.66344	0.00143	1713.66344	0.00147	1713.66344	0.00139
1712.69909	0.00145	1712.69909	0.00153	1712.69909	0.00138
1711.73473	0.00146	1711.73473	0.0016	1711.73473	0.00138
1710.77037	0.00146	1710.77037	0.00168	1710.77037	0.0014
1709.80601	0.0015	1709.80601	0.00176	1709.80601	0.00146
1708.84166	0.00158	1708.84166	0.00184	1708.84166	0.00156
1707.8773	0.00167	1707.8773	0.00194	1707.8773	0.00168
1706.91294	0.00175	1706.91294	0.00205	1706.91294	0.00181

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1705.94858	0.00183	1705.94858	0.00219	1705.94858	0.00192
1704.98423	0.00192	1704.98423	0.00233	1704.98423	0.002
1704.01987	0.00204	1704.01987	0.00248	1704.01987	0.00208
1703.05551	0.00216	1703.05551	0.00264	1703.05551	0.00226
1702.09115	0.00231	1702.09115	0.00282	1702.09115	0.00246
1701.1268	0.00249	1701.1268	0.00302	1701.1268	0.00264
1700.16244	0.00262	1700.16244	0.00325	1700.16244	0.00278
1699.19808	0.0027	1699.19808	0.00348	1699.19808	0.00293
1698.23372	0.00283	1698.23372	0.00373	1698.23372	0.00306
1697.26937	0.00302	1697.26937	0.00401	1697.26937	0.00313
1696.30501	0.00325	1696.30501	0.0043	1696.30501	0.00321
1695.34065	0.00352	1695.34065	0.0046	1695.34065	0.00333
1694.37629	0.00379	1694.37629	0.00493	1694.37629	0.00343
1693.41193	0.00407	1693.41193	0.00527	1693.41193	0.0035
1692.44758	0.00438	1692.44758	0.00561	1692.44758	0.0036
1691.48322	0.0047	1691.48322	0.00594	1691.48322	0.00377
1690.51886	0.00506	1690.51886	0.00629	1690.51886	0.00401
1689.5545	0.00549	1689.5545	0.00668	1689.5545	0.00423
1688.59015	0.00594	1688.59015	0.00707	1688.59015	0.00443
1687.62579	0.00638	1687.62579	0.00745	1687.62579	0.00469
1686.66143	0.00682	1686.66143	0.00783	1686.66143	0.00504
1685.69707	0.00723	1685.69707	0.00823	1685.69707	0.00539
1684.73272	0.0077	1684.73272	0.00864	1684.73272	0.0057
1683.76836	0.00821	1683.76836	0.00906	1683.76836	0.00595
1682.804	0.00859	1682.804	0.0095	1682.804	0.00614
1681.83964	0.00892	1681.83964	0.00993	1681.83964	0.00628
1680.87529	0.00925	1680.87529	0.01036	1680.87529	0.00638
1679.91093	0.0096	1679.91093	0.01077	1679.91093	0.00654
1678.94657	0.00994	1678.94657	0.01117	1678.94657	0.00679
1677.98221	0.01026	1677.98221	0.0116	1677.98221	0.00709
1677.01786	0.01056	1677.01786	0.01204	1677.01786	0.0074
1676.0535	0.01083	1676.0535	0.01249	1676.0535	0.00769
1675.08914	0.0111	1675.08914	0.01294	1675.08914	0.00798
1674.12478	0.01136	1674.12478	0.01341	1674.12478	0.00828
1673.16043	0.01157	1673.16043	0.01388	1673.16043	0.00857
1672.19607	0.01175	1672.19607	0.01435	1672.19607	0.00888
1671.23171	0.01194	1671.23171	0.01483	1671.23171	0.00923
1670.26735	0.01218	1670.26735	0.01534	1670.26735	0.00959
1669.30299	0.01236	1669.30299	0.01587	1669.30299	0.00991
1668.33864	0.01241	1668.33864	0.01642	1668.33864	0.01017
1667.37428	0.01245	1667.37428	0.01698	1667.37428	0.01041

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1666.40992	0.01251	1666.40992	0.01754	1666.40992	0.01067
1665.44556	0.01256	1665.44556	0.0181	1665.44556	0.011
1664.48121	0.01261	1664.48121	0.01866	1664.48121	0.01139
1663.51685	0.01262	1663.51685	0.01921	1663.51685	0.01179
1662.55249	0.01256	1662.55249	0.01976	1662.55249	0.01217
1661.58813	0.01253	1661.58813	0.02029	1661.58813	0.01251
1660.62378	0.01252	1660.62378	0.02079	1660.62378	0.01281
1659.65942	0.01248	1659.65942	0.02126	1659.65942	0.0131
1658.69506	0.01241	1658.69506	0.02168	1658.69506	0.0134
1657.7307	0.01231	1657.7307	0.02208	1657.7307	0.01375
1656.76635	0.0122	1656.76635	0.02245	1656.76635	0.01418
1655.80199	0.01211	1655.80199	0.02273	1655.80199	0.01472
1654.83763	0.01206	1654.83763	0.02289	1654.83763	0.01523
1653.87327	0.01196	1653.87327	0.02298	1653.87327	0.01565
1652.90892	0.01155	1652.90892	0.02302	1652.90892	0.01595
1651.94456	0.0112	1651.94456	0.02304	1651.94456	0.01615
1650.9802	0.01104	1650.9802	0.02306	1650.9802	0.01629
1650.01584	0.01088	1650.01584	0.0231	1650.01584	0.01647
1649.05149	0.0107	1649.05149	0.02313	1649.05149	0.01677
1648.08713	0.01053	1648.08713	0.02308	1648.08713	0.01718
1647.12277	0.01033	1647.12277	0.02295	1647.12277	0.01754
1646.15841	0.01005	1646.15841	0.02282	1646.15841	0.01782
1645.19406	0.00975	1645.19406	0.02271	1645.19406	0.01804
1644.2297	0.00953	1644.2297	0.02261	1644.2297	0.01823
1643.26534	0.00933	1643.26534	0.02255	1643.26534	0.01844
1642.30098	0.00914	1642.30098	0.02249	1642.30098	0.01871
1641.33662	0.00897	1641.33662	0.02244	1641.33662	0.01903
1640.37227	0.00878	1640.37227	0.02237	1640.37227	0.01938
1639.40791	0.00861	1639.40791	0.02233	1639.40791	0.01976
1638.44355	0.00848	1638.44355	0.02228	1638.44355	0.0202
1637.47919	0.00839	1637.47919	0.02221	1637.47919	0.02067
1636.51484	0.00833	1636.51484	0.02212	1636.51484	0.02111
1635.55048	0.00812	1635.55048	0.02205	1635.55048	0.02148
1634.58612	0.00786	1634.58612	0.02198	1634.58612	0.02177
1633.62176	0.00775	1633.62176	0.02194	1633.62176	0.02201
1632.65741	0.00766	1632.65741	0.02193	1632.65741	0.02224
1631.69305	0.00757	1631.69305	0.02196	1631.69305	0.02252
1630.72869	0.00754	1630.72869	0.02198	1630.72869	0.0229
1629.76433	0.00756	1629.76433	0.02198	1629.76433	0.02334
1628.79998	0.0076	1628.79998	0.02198	1628.79998	0.02378
1627.83562	0.00768	1627.83562	0.02199	1627.83562	0.02421



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1626.87126	0.0078	1626.87126	0.02202	1626.87126	0.02465
1625.9069	0.00793	1625.9069	0.02205	1625.9069	0.02512
1624.94255	0.00809	1624.94255	0.02209	1624.94255	0.02558
1623.97819	0.00833	1623.97819	0.02214	1623.97819	0.02603
1623.01383	0.00867	1623.01383	0.0222	1623.01383	0.02648
1622.04947	0.00904	1622.04947	0.02226	1622.04947	0.02692
1621.08512	0.00942	1621.08512	0.02235	1621.08512	0.02735
1620.12076	0.00984	1620.12076	0.02248	1620.12076	0.0278
1619.1564	0.0103	1619.1564	0.02261	1619.1564	0.02834
1618.19204	0.01077	1618.19204	0.02272	1618.19204	0.02894
1617.22768	0.01134	1617.22768	0.02283	1617.22768	0.02951
1616.26333	0.01207	1616.26333	0.02295	1616.26333	0.03004
1615.29897	0.01267	1615.29897	0.02306	1615.29897	0.03052
1614.33461	0.01314	1614.33461	0.02318	1614.33461	0.03097
1613.37025	0.01356	1613.37025	0.02331	1613.37025	0.03138
1612.4059	0.01393	1612.4059	0.02344	1612.4059	0.03182
1611.44154	0.01423	1611.44154	0.02354	1611.44154	0.03229
1610.47718	0.01442	1610.47718	0.02362	1610.47718	0.03274
1609.51282	0.01446	1609.51282	0.02369	1609.51282	0.03316
1608.54847	0.01434	1608.54847	0.02374	1608.54847	0.03352
1607.58411	0.01405	1607.58411	0.02379	1607.58411	0.03384
1606.61975	0.01364	1606.61975	0.02383	1606.61975	0.03411
1605.65539	0.01319	1605.65539	0.02387	1605.65539	0.03434
1604.69104	0.01274	1604.69104	0.02389	1604.69104	0.03453
1603.72668	0.01224	1603.72668	0.02388	1603.72668	0.03468
1602.76232	0.0117	1602.76232	0.02385	1602.76232	0.03479
1601.79796	0.01116	1601.79796	0.02379	1601.79796	0.03484
1600.83361	0.01069	1600.83361	0.02371	1600.83361	0.03483
1599.86925	0.01028	1599.86925	0.02361	1599.86925	0.03477
1598.90489	0.00995	1598.90489	0.0235	1598.90489	0.03467
1597.94053	0.00974	1597.94053	0.02337	1597.94053	0.03452
1596.97618	0.00964	1596.97618	0.0232	1596.97618	0.03432
1596.01182	0.00965	1596.01182	0.023	1596.01182	0.03408
1595.04746	0.00978	1595.04746	0.02277	1595.04746	0.03378
1594.0831	0.01006	1594.0831	0.02251	1594.0831	0.03342
1593.11874	0.01045	1593.11874	0.02222	1593.11874	0.033
1592.15439	0.01094	1592.15439	0.02192	1592.15439	0.03254
1591.19003	0.01149	1591.19003	0.02159	1591.19003	0.03203
1590.22567	0.01205	1590.22567	0.02125	1590.22567	0.03148
1589.26131	0.01255	1589.26131	0.02088	1589.26131	0.03088
1588.29696	0.0129	1588.29696	0.0205	1588.29696	0.03022

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1587.3326	0.01306	1587.3326	0.0201	1587.3326	0.02952
1586.36824	0.01298	1586.36824	0.01969	1586.36824	0.02875
1585.40388	0.01268	1585.40388	0.01927	1585.40388	0.02794
1584.43953	0.01221	1584.43953	0.01883	1584.43953	0.02709
1583.47517	0.01161	1583.47517	0.01839	1583.47517	0.0262
1582.51081	0.01093	1582.51081	0.01794	1582.51081	0.02527
1581.54645	0.01025	1581.54645	0.01749	1581.54645	0.02431
1580.5821	0.0096	1580.5821	0.01707	1580.5821	0.02338
1579.61774	0.00896	1579.61774	0.01668	1579.61774	0.02255
1578.65338	0.00838	1578.65338	0.01627	1578.65338	0.02173
1577.68902	0.00792	1577.68902	0.01585	1577.68902	0.02084
1576.72467	0.00742	1576.72467	0.01544	1576.72467	0.01991
1575.76031	0.00678	1575.76031	0.01505	1575.76031	0.01895
1574.79595	0.00634	1574.79595	0.0147	1574.79595	0.01797
1573.83159	0.00611	1573.83159	0.01439	1573.83159	0.01705
1572.86724	0.00597	1572.86724	0.01414	1572.86724	0.01631
1571.90288	0.00595	1571.90288	0.01391	1571.90288	0.01573
1570.93852	0.00601	1570.93852	0.01365	1570.93852	0.01514
1569.97416	0.00608	1569.97416	0.0134	1569.97416	0.01451
1569.00981	0.00618	1569.00981	0.01317	1569.00981	0.01388
1568.04545	0.00635	1568.04545	0.01299	1568.04545	0.01327
1567.08109	0.00654	1567.08109	0.01283	1567.08109	0.01269
1566.11673	0.00676	1566.11673	0.01273	1566.11673	0.01217
1565.15237	0.00706	1565.15237	0.01265	1565.15237	0.01172
1564.18802	0.00742	1564.18802	0.0126	1564.18802	0.01133
1563.22366	0.00779	1563.22366	0.01257	1563.22366	0.01101
1562.2593	0.00814	1562.2593	0.01257	1562.2593	0.01085
1561.29494	0.0085	1561.29494	0.01258	1561.29494	0.01081
1560.33059	0.0089	1560.33059	0.0126	1560.33059	0.01076
1559.36623	0.00943	1559.36623	0.01265	1559.36623	0.01059
1558.40187	0.01001	1558.40187	0.01273	1558.40187	0.01031
1557.43751	0.01046	1557.43751	0.01285	1557.43751	0.00996
1556.47316	0.01077	1556.47316	0.01301	1556.47316	0.00958
1555.5088	0.01105	1555.5088	0.0132	1555.5088	0.00924
1554.54444	0.01143	1554.54444	0.01342	1554.54444	0.00901
1553.58008	0.01188	1553.58008	0.01363	1553.58008	0.00889
1552.61573	0.01228	1552.61573	0.01385	1552.61573	0.00879
1551.65137	0.01266	1551.65137	0.01406	1551.65137	0.00868
1550.68701	0.01307	1550.68701	0.01426	1550.68701	0.00856
1549.72265	0.01351	1549.72265	0.01446	1549.72265	0.00846
1548.7583	0.01389	1548.7583	0.01464	1548.7583	0.00836

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1547.79394	0.01423	1547.79394	0.01479	1547.79394	0.00827
1546.82958	0.01457	1546.82958	0.01492	1546.82958	0.00818
1545.86522	0.01491	1545.86522	0.01503	1545.86522	0.00814
1544.90087	0.0152	1544.90087	0.01511	1544.90087	0.00814
1543.93651	0.01541	1543.93651	0.01515	1543.93651	0.00814
1542.97215	0.01558	1542.97215	0.01516	1542.97215	0.00815
1542.00779	0.0157	1542.00779	0.01512	1542.00779	0.00816
1541.04343	0.01579	1541.04343	0.01502	1541.04343	0.0081
1540.07908	0.01578	1540.07908	0.01489	1540.07908	0.00794
1539.11472	0.01553	1539.11472	0.01476	1539.11472	0.00768
1538.15036	0.01522	1538.15036	0.01463	1538.15036	0.00737
1537.186	0.01498	1537.186	0.01451	1537.186	0.0071
1536.22165	0.01473	1536.22165	0.01438	1536.22165	0.00691
1535.25729	0.01447	1535.25729	0.01422	1535.25729	0.00681
1534.29293	0.01414	1534.29293	0.01401	1534.29293	0.00673
1533.32857	0.01361	1533.32857	0.01375	1533.32857	0.0066
1532.36422	0.01308	1532.36422	0.01349	1532.36422	0.00642
1531.39986	0.01266	1531.39986	0.01324	1531.39986	0.00622
1530.4355	0.01224	1530.4355	0.01299	1530.4355	0.00602
1529.47114	0.0118	1529.47114	0.01276	1529.47114	0.00588
1528.50679	0.01132	1528.50679	0.01252	1528.50679	0.0058
1527.54243	0.01081	1527.54243	0.01225	1527.54243	0.00573
1526.57807	0.01034	1526.57807	0.01198	1526.57807	0.00563
1525.61371	0.00986	1525.61371	0.01172	1525.61371	0.00553
1524.64936	0.0094	1524.64936	0.01149	1524.64936	0.00548
1523.685	0.00911	1523.685	0.01125	1523.685	0.00547
1522.72064	0.00886	1522.72064	0.01102	1522.72064	0.00543
1521.75628	0.00849	1521.75628	0.01082	1521.75628	0.00535
1520.79193	0.00801	1520.79193	0.01065	1520.79193	0.00525
1519.82757	0.00764	1519.82757	0.01049	1519.82757	0.00516
1518.86321	0.00743	1518.86321	0.01034	1518.86321	0.00506
1517.89885	0.00727	1517.89885	0.0102	1517.89885	0.00496
1516.9345	0.00711	1516.9345	0.01003	1516.9345	0.00488
1515.97014	0.00704	1515.97014	0.0098	1515.97014	0.00479
1515.00578	0.00706	1515.00578	0.00952	1515.00578	0.00466
1514.04142	0.00715	1514.04142	0.00921	1514.04142	0.00449
1513.07706	0.00733	1513.07706	0.00888	1513.07706	0.00433
1512.11271	0.00768	1512.11271	0.00856	1512.11271	0.00423
1511.14835	0.00818	1511.14835	0.00824	1511.14835	0.00418
1510.18399	0.00877	1510.18399	0.00793	1510.18399	0.00421
1509.21963	0.00951	1509.21963	0.00763	1509.21963	0.00431

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1508.25528	0.01037	1508.25528	0.0073	1508.25528	0.00439
1507.29092	0.01145	1507.29092	0.00697	1507.29092	0.00439
1506.32656	0.01268	1506.32656	0.00664	1506.32656	0.00427
1505.3622	0.01344	1505.3622	0.00633	1505.3622	0.00406
1504.39785	0.01369	1504.39785	0.00604	1504.39785	0.0038
1503.43349	0.01365	1503.43349	0.0058	1503.43349	0.00353
1502.46913	0.01338	1502.46913	0.00559	1502.46913	0.00335
1501.50477	0.01294	1501.50477	0.00539	1501.50477	0.00328
1500.54042	0.01252	1500.54042	0.00517	1500.54042	0.00323
1499.57606	0.0122	1499.57606	0.00497	1499.57606	0.0032
1498.6117	0.01203	1498.6117	0.00475	1498.6117	0.00318
1497.64734	0.01208	1497.64734	0.00452	1497.64734	0.00315
1496.68299	0.01248	1496.68299	0.00429	1496.68299	0.00309
1495.71863	0.01338	1495.71863	0.00406	1495.71863	0.00301
1494.75427	0.01462	1494.75427	0.00384	1494.75427	0.00293
1493.78991	0.01619	1493.78991	0.00363	1493.78991	0.00292
1492.82556	0.01818	1492.82556	0.00343	1492.82556	0.003
1491.8612	0.02042	1491.8612	0.00325	1491.8612	0.00316
1490.89684	0.02287	1490.89684	0.00307	1490.89684	0.00334
1489.93248	0.02521	1489.93248	0.0029	1489.93248	0.00347
1488.96812	0.02654	1488.96812	0.00274	1488.96812	0.00349
1488.00377	0.02658	1488.00377	0.00259	1488.00377	0.00339
1487.03941	0.02533	1487.03941	0.00246	1487.03941	0.00318
1486.07505	0.02326	1486.07505	0.00236	1486.07505	0.00295
1485.11069	0.02101	1485.11069	0.00227	1485.11069	0.00274
1484.14634	0.01874	1484.14634	0.00221	1484.14634	0.00257
1483.18198	0.01669	1483.18198	0.00216	1483.18198	0.00245
1482.21762	0.01501	1482.21762	0.00213	1482.21762	0.00237
1481.25326	0.01354	1481.25326	0.00211	1481.25326	0.0023
1480.28891	0.01223	1480.28891	0.00211	1480.28891	0.00226
1479.32455	0.01115	1479.32455	0.00213	1479.32455	0.00225
1478.36019	0.01027	1478.36019	0.00216	1478.36019	0.00228
1477.39583	0.00952	1477.39583	0.00222	1477.39583	0.00234
1476.43148	0.00878	1476.43148	0.0023	1476.43148	0.00243
1475.46712	0.00815	1475.46712	0.0024	1475.46712	0.00256
1474.50276	0.00773	1474.50276	0.00251	1474.50276	0.0027
1473.5384	0.00732	1473.5384	0.00263	1473.5384	0.00282
1472.57405	0.00686	1472.57405	0.00278	1472.57405	0.00291
1471.60969	0.00652	1471.60969	0.00292	1471.60969	0.00297
1470.64533	0.00633	1470.64533	0.00306	1470.64533	0.003
1469.68097	0.00623	1469.68097	0.00319	1469.68097	0.00302

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1468.71662	0.00618	1468.71662	0.00331	1468.71662	0.00307
1467.75226	0.00619	1467.75226	0.0034	1467.75226	0.00321
1466.7879	0.00625	1466.7879	0.00348	1466.7879	0.0034
1465.82354	0.00634	1465.82354	0.00358	1465.82354	0.0036
1464.85918	0.00641	1464.85918	0.00369	1464.85918	0.00377
1463.89483	0.00646	1463.89483	0.00381	1463.89483	0.00391
1462.93047	0.00653	1462.93047	0.00396	1462.93047	0.00402
1461.96611	0.0066	1461.96611	0.00412	1461.96611	0.00414
1461.00175	0.00671	1461.00175	0.00429	1461.00175	0.00432
1460.0374	0.0069	1460.0374	0.00445	1460.0374	0.0046
1459.07304	0.00711	1459.07304	0.00463	1459.07304	0.00493
1458.10868	0.00728	1458.10868	0.00482	1458.10868	0.00526
1457.14432	0.0074	1457.14432	0.00504	1457.14432	0.00552
1456.17997	0.00757	1456.17997	0.00526	1456.17997	0.00571
1455.21561	0.00775	1455.21561	0.00549	1455.21561	0.00582
1454.25125	0.00787	1454.25125	0.00571	1454.25125	0.00592
1453.28689	0.00797	1453.28689	0.00592	1453.28689	0.00605
1452.32254	0.00813	1452.32254	0.00611	1452.32254	0.00624
1451.35818	0.00831	1451.35818	0.00628	1451.35818	0.0065
1450.39382	0.00842	1450.39382	0.00645	1450.39382	0.0068
1449.42946	0.00843	1449.42946	0.00663	1449.42946	0.00713
1448.46511	0.00836	1448.46511	0.00682	1448.46511	0.00745
1447.50075	0.00828	1447.50075	0.00702	1447.50075	0.00777
1446.53639	0.0083	1446.53639	0.00722	1446.53639	0.00809
1445.57203	0.00833	1445.57203	0.00743	1445.57203	0.00841
1444.60768	0.00825	1444.60768	0.00765	1444.60768	0.00875
1443.64332	0.00817	1443.64332	0.00788	1443.64332	0.00912
1442.67896	0.00811	1442.67896	0.0081	1442.67896	0.00953
1441.7146	0.00802	1441.7146	0.00832	1441.7146	0.00996
1440.75025	0.00792	1440.75025	0.00854	1440.75025	0.01039
1439.78589	0.00779	1439.78589	0.00877	1439.78589	0.01087
1438.82153	0.0076	1438.82153	0.00899	1438.82153	0.01141
1437.85717	0.00741	1437.85717	0.00921	1437.85717	0.01196
1436.89281	0.0072	1436.89281	0.00942	1436.89281	0.01247
1435.92846	0.00703	1435.92846	0.00961	1435.92846	0.01295
1434.9641	0.00695	1434.9641	0.0098	1434.9641	0.01337
1433.99974	0.00689	1433.99974	0.00999	1433.99974	0.01376
1433.03538	0.00685	1433.03538	0.01018	1433.03538	0.01413
1432.07103	0.00684	1432.07103	0.01038	1432.07103	0.01455
1431.10667	0.00684	1431.10667	0.01057	1431.10667	0.015
1430.14231	0.0068	1430.14231	0.01076	1430.14231	0.01541

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1429.17795	0.00673	1429.17795	0.01095	1429.17795	0.01579
1428.2136	0.0067	1428.2136	0.01114	1428.2136	0.01612
1427.24924	0.00669	1427.24924	0.01132	1427.24924	0.01643
1426.28488	0.00673	1426.28488	0.0115	1426.28488	0.01674
1425.32052	0.00681	1425.32052	0.01168	1425.32052	0.01702
1424.35617	0.00694	1424.35617	0.01184	1424.35617	0.01728
1423.39181	0.00709	1423.39181	0.012	1423.39181	0.0175
1422.42745	0.00723	1422.42745	0.01214	1422.42745	0.01771
1421.46309	0.00738	1421.46309	0.01225	1421.46309	0.01788
1420.49874	0.00756	1420.49874	0.01235	1420.49874	0.018
1419.53438	0.00777	1419.53438	0.01243	1419.53438	0.01807
1418.57002	0.00789	1418.57002	0.01249	1418.57002	0.01808
1417.60566	0.00793	1417.60566	0.01253	1417.60566	0.01801
1416.64131	0.00795	1416.64131	0.01255	1416.64131	0.01787
1415.67695	0.00796	1415.67695	0.0125	1415.67695	0.01769
1414.71259	0.00792	1414.71259	0.01239	1414.71259	0.01752
1413.74823	0.00783	1413.74823	0.01226	1413.74823	0.01734
1412.78387	0.00768	1412.78387	0.01214	1412.78387	0.01713
1411.81952	0.00744	1411.81952	0.01204	1411.81952	0.01688
1410.85516	0.00713	1410.85516	0.01195	1410.85516	0.01659
1409.8908	0.00679	1409.8908	0.01188	1409.8908	0.01626
1408.92644	0.00642	1408.92644	0.01179	1408.92644	0.01591
1407.96209	0.00605	1407.96209	0.01164	1407.96209	0.01556
1406.99773	0.00577	1406.99773	0.01144	1406.99773	0.01521
1406.03337	0.00554	1406.03337	0.01123	1406.03337	0.01483
1405.06901	0.00522	1405.06901	0.01101	1405.06901	0.01442
1404.10466	0.00484	1404.10466	0.01078	1404.10466	0.014
1403.1403	0.00451	1403.1403	0.01056	1403.1403	0.01357
1402.17594	0.00425	1402.17594	0.01034	1402.17594	0.01316
1401.21158	0.00406	1401.21158	0.01012	1401.21158	0.01278
1400.24723	0.00387	1400.24723	0.00989	1400.24723	0.01241
1399.28287	0.00358	1399.28287	0.00966	1399.28287	0.01202
1398.31851	0.00331	1398.31851	0.00944	1398.31851	0.01163
1397.35415	0.0032	1397.35415	0.00921	1397.35415	0.01124
1396.3898	0.00313	1396.3898	0.00897	1396.3898	0.01082
1395.42544	0.003	1395.42544	0.00873	1395.42544	0.01038
1394.46108	0.00285	1394.46108	0.00849	1394.46108	0.00995
1393.49672	0.00277	1393.49672	0.00825	1393.49672	0.0095
1392.53237	0.00276	1392.53237	0.00802	1392.53237	0.00905
1391.56801	0.00278	1391.56801	0.00779	1391.56801	0.00862
1390.60365	0.00284	1390.60365	0.00758	1390.60365	0.00826

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1389.63929	0.00291	1389.63929	0.00735	1389.63929	0.00795
1388.67494	0.00301	1388.67494	0.00711	1388.67494	0.00764
1387.71058	0.00308	1387.71058	0.00686	1387.71058	0.00733
1386.74622	0.0031	1386.74622	0.00661	1386.74622	0.00702
1385.78186	0.0031	1385.78186	0.00637	1385.78186	0.00671
1384.8175	0.00309	1384.8175	0.00613	1384.8175	0.00641
1383.85315	0.00307	1383.85315	0.0059	1383.85315	0.00613
1382.88879	0.00302	1382.88879	0.00569	1382.88879	0.0059
1381.92443	0.00296	1381.92443	0.00549	1381.92443	0.0057
1380.96007	0.00292	1380.96007	0.0053	1380.96007	0.00553
1379.99572	0.00295	1379.99572	0.00513	1379.99572	0.00539
1379.03136	0.00299	1379.03136	0.00497	1379.03136	0.00528
1378.067	0.00295	1378.067	0.00483	1378.067	0.00519
1377.10264	0.00287	1377.10264	0.00471	1377.10264	0.00513
1376.13829	0.00281	1376.13829	0.00459	1376.13829	0.0051
1375.17393	0.00277	1375.17393	0.00449	1375.17393	0.00507
1374.20957	0.0027	1374.20957	0.00441	1374.20957	0.00504
1373.24521	0.00262	1373.24521	0.00434	1373.24521	0.00501
1372.28086	0.00258	1372.28086	0.0043	1372.28086	0.00499
1371.3165	0.00261	1371.3165	0.00429	1371.3165	0.00497
1370.35214	0.00266	1370.35214	0.00429	1370.35214	0.00497
1369.38778	0.00267	1369.38778	0.00428	1369.38778	0.00498
1368.42343	0.00271	1368.42343	0.00426	1368.42343	0.005
1367.45907	0.00283	1367.45907	0.00422	1367.45907	0.00501
1366.49471	0.00296	1366.49471	0.00417	1366.49471	0.00502
1365.53035	0.00306	1365.53035	0.00411	1365.53035	0.00505
1364.566	0.00315	1364.566	0.00405	1364.566	0.0051
1363.60164	0.00321	1363.60164	0.004	1363.60164	0.00515
1362.63728	0.0032	1362.63728	0.00395	1362.63728	0.00518
1361.67292	0.0031	1361.67292	0.00392	1361.67292	0.00517
1360.70856	0.00293	1360.70856	0.00389	1360.70856	0.00512
1359.74421	0.00275	1359.74421	0.00387	1359.74421	0.00505
1358.77985	0.00263	1358.77985	0.00385	1358.77985	0.00498
1357.81549	0.0026	1357.81549	0.00383	1357.81549	0.00493
1356.85113	0.00265	1356.85113	0.0038	1356.85113	0.0049
1355.88678	0.00271	1355.88678	0.00377	1355.88678	0.00488
1354.92242	0.00277	1354.92242	0.00375	1354.92242	0.00487
1353.95806	0.00286	1353.95806	0.00373	1353.95806	0.00485
1352.9937	0.00297	1352.9937	0.00371	1352.9937	0.00484
1352.02935	0.00311	1352.02935	0.00369	1352.02935	0.00483
1351.06499	0.00324	1351.06499	0.00367	1351.06499	0.00483

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1350.10063	0.00334	1350.10063	0.00366	1350.10063	0.00483
1349.13627	0.00345	1349.13627	0.00366	1349.13627	0.00483
1348.17192	0.00358	1348.17192	0.00366	1348.17192	0.00484
1347.20756	0.0037	1347.20756	0.00366	1347.20756	0.00485
1346.2432	0.00383	1346.2432	0.00366	1346.2432	0.00487
1345.27884	0.00399	1345.27884	0.00367	1345.27884	0.00488
1344.31449	0.00421	1344.31449	0.00368	1344.31449	0.00491
1343.35013	0.00443	1343.35013	0.0037	1343.35013	0.00495
1342.38577	0.0046	1342.38577	0.00373	1342.38577	0.005
1341.42141	0.00477	1341.42141	0.00375	1341.42141	0.00506
1340.45706	0.00497	1340.45706	0.00377	1340.45706	0.00511
1339.4927	0.00522	1339.4927	0.00378	1339.4927	0.00515
1338.52834	0.0055	1338.52834	0.00379	1338.52834	0.00517
1337.56398	0.00579	1337.56398	0.0038	1337.56398	0.00517
1336.59963	0.00609	1336.59963	0.00382	1336.59963	0.00516
1335.63527	0.00644	1335.63527	0.00384	1335.63527	0.00515
1334.67091	0.00684	1334.67091	0.00386	1334.67091	0.00516
1333.70655	0.00726	1333.70655	0.00388	1333.70655	0.00517
1332.74219	0.0077	1332.74219	0.0039	1332.74219	0.00518
1331.77784	0.00816	1331.77784	0.00392	1331.77784	0.00519
1330.81348	0.00866	1330.81348	0.00394	1330.81348	0.00521
1329.84912	0.00916	1329.84912	0.00396	1329.84912	0.00524
1328.88476	0.0096	1328.88476	0.00398	1328.88476	0.00527
1327.92041	0.0099	1327.92041	0.00401	1327.92041	0.0053
1326.95605	0.01009	1326.95605	0.00405	1326.95605	0.00533
1325.99169	0.01025	1325.99169	0.0041	1325.99169	0.00537
1325.02733	0.01036	1325.02733	0.00415	1325.02733	0.0054
1324.06298	0.01037	1324.06298	0.0042	1324.06298	0.00543
1323.09862	0.01027	1323.09862	0.00425	1323.09862	0.00546
1322.13426	0.01008	1322.13426	0.0043	1322.13426	0.00549
1321.1699	0.00983	1321.1699	0.00436	1321.1699	0.00551
1320.20555	0.0096	1320.20555	0.00441	1320.20555	0.00551
1319.24119	0.00938	1319.24119	0.00446	1319.24119	0.0055
1318.27683	0.00915	1318.27683	0.00451	1318.27683	0.00548
1317.31247	0.00889	1317.31247	0.00454	1317.31247	0.00547
1316.34812	0.00864	1316.34812	0.00457	1316.34812	0.00545
1315.38376	0.00849	1315.38376	0.00459	1315.38376	0.00544
1314.4194	0.00847	1314.4194	0.00461	1314.4194	0.00544
1313.45504	0.00852	1313.45504	0.00463	1313.45504	0.00543
1312.49069	0.00862	1312.49069	0.00466	1312.49069	0.00543
1311.52633	0.00876	1311.52633	0.00468	1311.52633	0.00542



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1310.56197	0.00893	1310.56197	0.00469	1310.56197	0.00542
1309.59761	0.0091	1309.59761	0.0047	1309.59761	0.00543
1308.63325	0.00921	1308.63325	0.0047	1308.63325	0.00544
1307.6689	0.0092	1307.6689	0.00469	1307.6689	0.00545
1306.70454	0.00912	1306.70454	0.00469	1306.70454	0.00545
1305.74018	0.00906	1305.74018	0.00469	1305.74018	0.00546
1304.77582	0.00905	1304.77582	0.00469	1304.77582	0.00547
1303.81147	0.00907	1303.81147	0.0047	1303.81147	0.00549
1302.84711	0.00912	1302.84711	0.00471	1302.84711	0.00554
1301.88275	0.0092	1301.88275	0.00473	1301.88275	0.00559
1300.91839	0.0093	1300.91839	0.00476	1300.91839	0.00564
1299.95404	0.00945	1299.95404	0.00478	1299.95404	0.00569
1298.98968	0.0097	1298.98968	0.00481	1298.98968	0.00575
1298.02532	0.01004	1298.02532	0.00484	1298.02532	0.0058
1297.06096	0.01033	1297.06096	0.00485	1297.06096	0.00585
1296.09661	0.01049	1296.09661	0.00485	1296.09661	0.0059
1295.13225	0.01054	1295.13225	0.00484	1295.13225	0.00591
1294.16789	0.01049	1294.16789	0.00483	1294.16789	0.0059
1293.20353	0.01028	1293.20353	0.00482	1293.20353	0.00587
1292.23918	0.00991	1292.23918	0.00481	1292.23918	0.00581
1291.27482	0.00947	1291.27482	0.0048	1291.27482	0.00573
1290.31046	0.00905	1290.31046	0.00478	1290.31046	0.00564
1289.3461	0.00871	1289.3461	0.00475	1289.3461	0.00554
1288.38175	0.00844	1288.38175	0.00469	1288.38175	0.00545
1287.41739	0.00824	1287.41739	0.00463	1287.41739	0.00535
1286.45303	0.00804	1286.45303	0.00455	1286.45303	0.00524
1285.48867	0.00778	1285.48867	0.00447	1285.48867	0.00512
1284.52431	0.00754	1284.52431	0.00438	1284.52431	0.00499
1283.55996	0.00736	1283.55996	0.00431	1283.55996	0.00485
1282.5956	0.00717	1282.5956	0.00423	1282.5956	0.00469
1281.63124	0.00699	1281.63124	0.00414	1281.63124	0.00454
1280.66688	0.00685	1280.66688	0.00404	1280.66688	0.0044
1279.70253	0.00671	1279.70253	0.00393	1279.70253	0.00427
1278.73817	0.00661	1278.73817	0.00381	1278.73817	0.00414
1277.77381	0.00656	1277.77381	0.00369	1277.77381	0.00403
1276.80945	0.00654	1276.80945	0.00359	1276.80945	0.00393
1275.8451	0.00652	1275.8451	0.00351	1275.8451	0.00384
1274.88074	0.00652	1274.88074	0.00344	1274.88074	0.00375
1273.91638	0.00658	1273.91638	0.00338	1273.91638	0.00368
1272.95202	0.00665	1272.95202	0.00332	1272.95202	0.00361
1271.98767	0.00673	1271.98767	0.00327	1271.98767	0.00356

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1271.02331	0.00685	1271.02331	0.00322	1271.02331	0.00352
1270.05895	0.00706	1270.05895	0.00316	1270.05895	0.00349
1269.09459	0.0074	1269.09459	0.0031	1269.09459	0.00347
1268.13024	0.00779	1268.13024	0.00304	1268.13024	0.00347
1267.16588	0.00819	1267.16588	0.00299	1267.16588	0.00347
1266.20152	0.00867	1266.20152	0.00295	1266.20152	0.00348
1265.23716	0.00922	1265.23716	0.00292	1265.23716	0.00349
1264.27281	0.00983	1264.27281	0.00289	1264.27281	0.0035
1263.30845	0.01052	1263.30845	0.00285	1263.30845	0.00353
1262.34409	0.01131	1262.34409	0.00281	1262.34409	0.00356
1261.37973	0.01219	1261.37973	0.00276	1261.37973	0.00361
1260.41538	0.0132	1260.41538	0.00271	1260.41538	0.00367
1259.45102	0.01435	1259.45102	0.00267	1259.45102	0.00374
1258.48666	0.01556	1258.48666	0.00264	1258.48666	0.00381
1257.5223	0.0168	1257.5223	0.0026	1257.5223	0.00389
1256.55794	0.0181	1256.55794	0.00257	1256.55794	0.00397
1255.59359	0.01942	1255.59359	0.00253	1255.59359	0.00405
1254.62923	0.02072	1254.62923	0.00249	1254.62923	0.00413
1253.66487	0.022	1253.66487	0.00244	1253.66487	0.0042
1252.70051	0.02326	1252.70051	0.00241	1252.70051	0.00427
1251.73616	0.02442	1251.73616	0.00239	1251.73616	0.00433
1250.7718	0.02541	1250.7718	0.00237	1250.7718	0.00438
1249.80744	0.02627	1249.80744	0.00237	1249.80744	0.00443
1248.84308	0.02703	1248.84308	0.00236	1248.84308	0.00448
1247.87873	0.02762	1247.87873	0.00234	1247.87873	0.00453
1246.91437	0.02807	1246.91437	0.00232	1246.91437	0.00458
1245.95001	0.0284	1245.95001	0.0023	1245.95001	0.00462
1244.98565	0.02858	1244.98565	0.00229	1244.98565	0.00464
1244.0213	0.02857	1244.0213	0.00228	1244.0213	0.00464
1243.05694	0.02831	1243.05694	0.00228	1243.05694	0.00461
1242.09258	0.02779	1242.09258	0.00228	1242.09258	0.00456
1241.12822	0.02712	1241.12822	0.00228	1241.12822	0.0045
1240.16387	0.02635	1240.16387	0.00226	1240.16387	0.00443
1239.19951	0.02541	1239.19951	0.00222	1239.19951	0.00434
1238.23515	0.02427	1238.23515	0.00217	1238.23515	0.00422
1237.27079	0.02302	1237.27079	0.00211	1237.27079	0.00409
1236.30644	0.02175	1236.30644	0.00205	1236.30644	0.00393
1235.34208	0.02049	1235.34208	0.00199	1235.34208	0.00377
1234.37772	0.01924	1234.37772	0.00194	1234.37772	0.00361
1233.41336	0.01799	1233.41336	0.00187	1233.41336	0.00345
1232.449	0.01671	1232.449	0.00181	1232.449	0.00329

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1231.48465	0.01546	1231.48465	0.00175	1231.48465	0.00313
1230.52029	0.0143	1230.52029	0.00168	1230.52029	0.00296
1229.55593	0.01322	1229.55593	0.00162	1229.55593	0.0028
1228.59157	0.01218	1228.59157	0.00155	1228.59157	0.00263
1227.62722	0.01122	1227.62722	0.00148	1227.62722	0.00248
1226.66286	0.01035	1226.66286	0.00141	1226.66286	0.00233
1225.6985	0.00955	1225.6985	0.00134	1225.6985	0.00219
1224.73414	0.00881	1224.73414	0.00127	1224.73414	0.00206
1223.76979	0.00812	1223.76979	0.00121	1223.76979	0.00195
1222.80543	0.00753	1222.80543	0.00115	1222.80543	0.00185
1221.84107	0.00703	1221.84107	0.00109	1221.84107	0.00174
1220.87671	0.00658	1220.87671	0.00103	1220.87671	0.00165
1219.91236	0.00615	1219.91236	9.80E-04	1219.91236	0.00156
1218.948	0.00576	1218.948	9.30E-04	1218.948	0.00147
1217.98364	0.00542	1217.98364	8.90E-04	1217.98364	0.0014
1217.01928	0.0051	1217.01928	8.40E-04	1217.01928	0.00133
1216.05493	0.00481	1216.05493	7.80E-04	1216.05493	0.00128
1215.09057	0.00458	1215.09057	7.40E-04	1215.09057	0.00124
1214.12621	0.00443	1214.12621	6.90E-04	1214.12621	0.0012
1213.16185	0.00434	1213.16185	6.50E-04	1213.16185	0.00116
1212.1975	0.00426	1212.1975	6.20E-04	1212.1975	0.00111
1211.23314	0.0042	1211.23314	5.80E-04	1211.23314	0.00106
1210.26878	0.00421	1210.26878	5.40E-04	1210.26878	1.00E-03
1209.30442	0.00427	1209.30442	4.90E-04	1209.30442	9.40E-04
1208.34007	0.00433	1208.34007	4.40E-04	1208.34007	8.80E-04
1207.37571	0.00436	1207.37571	4.00E-04	1207.37571	8.10E-04
1206.41135	0.00435	1206.41135	3.60E-04	1206.41135	7.40E-04
1205.44699	0.0043	1205.44699	3.40E-04	1205.44699	6.50E-04
1204.48263	0.00422	1204.48263	3.10E-04	1204.48263	5.50E-04
1203.51828	0.00411	1203.51828	2.70E-04	1203.51828	4.50E-04
1202.55392	0.00396	1202.55392	2.30E-04	1202.55392	3.60E-04
1201.58956	0.00377	1201.58956	1.80E-04	1201.58956	2.80E-04
1200.6252	0.0036	1200.6252	1.40E-04	1200.6252	2.10E-04
1199.66085	0.00341	1199.66085	1.00E-04	1199.66085	1.40E-04
1198.69649	0.0032	1198.69649	9.00E-05	1198.69649	8.00E-05
1197.73213	0.00303	1197.73213	8.00E-05	1197.73213	3.00E-05
1196.76777	0.00292	1196.76777	9.00E-05	1196.76777	1.00E-05
1195.80342	0.00282	1195.80342	1.00E-04	1195.80342	0
1194.83906	0.00274	1194.83906	1.20E-04	1194.83906	1.00E-05
1193.8747	0.00267	1193.8747	1.40E-04	1193.8747	4.00E-05
1192.91034	0.00258	1192.91034	1.80E-04	1192.91034	9.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1191.94599	0.00252	1191.94599	2.50E-04	1191.94599	1.70E-04
1190.98163	0.00255	1190.98163	3.50E-04	1190.98163	2.40E-04
1190.01727	0.00259	1190.01727	4.60E-04	1190.01727	3.30E-04
1189.05291	0.00259	1189.05291	5.90E-04	1189.05291	4.10E-04
1188.08856	0.00257	1188.08856	7.10E-04	1188.08856	5.20E-04
1187.1242	0.00259	1187.1242	8.20E-04	1187.1242	6.50E-04
1186.15984	0.00265	1186.15984	9.30E-04	1186.15984	7.90E-04
1185.19548	0.00275	1185.19548	0.00106	1185.19548	9.60E-04
1184.23113	0.00288	1184.23113	0.0012	1184.23113	0.00115
1183.26677	0.00306	1183.26677	0.00135	1183.26677	0.00133
1182.30241	0.00329	1182.30241	0.00152	1182.30241	0.0015
1181.33805	0.00358	1181.33805	0.00167	1181.33805	0.00166
1180.37369	0.00392	1180.37369	0.00181	1180.37369	0.00181
1179.40934	0.00438	1179.40934	0.00194	1179.40934	0.00196
1178.44498	0.00497	1178.44498	0.00207	1178.44498	0.00212
1177.48062	0.00566	1177.48062	0.0022	1177.48062	0.00231
1176.51626	0.00642	1176.51626	0.00234	1176.51626	0.0025
1175.55191	0.00726	1175.55191	0.00248	1175.55191	0.0027
1174.58755	0.00816	1174.58755	0.00259	1174.58755	0.00287
1173.62319	0.00908	1173.62319	0.00268	1173.62319	0.00301
1172.65883	0.00991	1172.65883	0.00274	1172.65883	0.00311
1171.69448	0.01056	1171.69448	0.00279	1171.69448	0.00317
1170.73012	0.01103	1170.73012	0.00284	1170.73012	0.00321
1169.76576	0.01128	1169.76576	0.00288	1169.76576	0.00324
1168.8014	0.01117	1168.8014	0.00291	1168.8014	0.00325
1167.83705	0.01068	1167.83705	0.00294	1167.83705	0.00324
1166.87269	0.00993	1166.87269	0.00295	1166.87269	0.0032
1165.90833	0.00908	1165.90833	0.00295	1165.90833	0.00312
1164.94397	0.00827	1164.94397	0.00294	1164.94397	0.00302
1163.97962	0.00759	1163.97962	0.00292	1163.97962	0.00291
1163.01526	0.00705	1163.01526	0.00289	1163.01526	0.00282
1162.0509	0.00657	1162.0509	0.00286	1162.0509	0.00274
1161.08654	0.00625	1161.08654	0.00284	1161.08654	0.00268
1160.12219	0.00636	1160.12219	0.00281	1160.12219	0.00265
1159.15783	0.00707	1159.15783	0.00279	1159.15783	0.00266
1158.19347	0.00836	1158.19347	0.00279	1158.19347	0.00271
1157.22911	0.01018	1157.22911	0.00281	1157.22911	0.00282
1156.26475	0.01234	1156.26475	0.00283	1156.26475	0.00299
1155.3004	0.01451	1155.3004	0.00284	1155.3004	0.00317
1154.33604	0.01629	1154.33604	0.00285	1154.33604	0.00333
1153.37168	0.01745	1153.37168	0.00283	1153.37168	0.00343

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1152.40732	0.01799	1152.40732	0.00279	1152.40732	0.00348
1151.44297	0.01793	1151.44297	0.00275	1151.44297	0.00351
1150.47861	0.01733	1150.47861	0.00273	1150.47861	0.00351
1149.51425	0.01636	1149.51425	0.0027	1149.51425	0.0035
1148.54989	0.01509	1148.54989	0.00264	1148.54989	0.00346
1147.58554	0.01354	1147.58554	0.00253	1147.58554	0.00339
1146.62118	0.01188	1146.62118	0.00237	1146.62118	0.00331
1145.65682	0.01034	1145.65682	0.00216	1145.65682	0.00324
1144.69246	0.00898	1144.69246	0.00192	1144.69246	0.00316
1143.72811	0.00785	1143.72811	0.00165	1143.72811	0.0031
1142.76375	0.00699	1142.76375	0.00136	1142.76375	0.00307
1141.79939	0.00623	1141.79939	0.00111	1141.79939	0.00307
1140.83503	0.0055	1140.83503	9.70E-04	1140.83503	0.00308
1139.87068	0.00501	1139.87068	9.70E-04	1139.87068	0.0031
1138.90632	0.00477	1138.90632	0.00115	1138.90632	0.00317
1137.94196	0.00453	1137.94196	0.0015	1137.94196	0.00328
1136.9776	0.00425	1136.9776	0.00195	1136.9776	0.00341
1136.01325	0.00404	1136.01325	0.00241	1136.01325	0.0036
1135.04889	0.00394	1135.04889	0.00286	1135.04889	0.00386
1134.08453	0.00389	1134.08453	0.00332	1134.08453	0.00417
1133.12017	0.00381	1133.12017	0.00382	1133.12017	0.00449
1132.15582	0.00368	1132.15582	0.00437	1132.15582	0.00483
1131.19146	0.00365	1131.19146	0.00494	1131.19146	0.00519
1130.2271	0.00379	1130.2271	0.00548	1130.2271	0.00553
1129.26274	0.00389	1129.26274	0.00594	1129.26274	0.00584
1128.29838	0.00386	1128.29838	0.0063	1128.29838	0.00611
1127.33403	0.00393	1127.33403	0.00659	1127.33403	0.00634
1126.36967	0.00418	1126.36967	0.0068	1126.36967	0.00653
1125.40531	0.00435	1125.40531	0.00697	1125.40531	0.00668
1124.44095	0.00426	1124.44095	0.00711	1124.44095	0.00678
1123.4766	0.00405	1123.4766	0.00723	1123.4766	0.00682
1122.51224	0.004	1122.51224	0.00734	1122.51224	0.0068
1121.54788	0.00419	1121.54788	0.00742	1121.54788	0.0067
1120.58352	0.00442	1120.58352	0.00746	1120.58352	0.00652
1119.61917	0.00461	1119.61917	0.00747	1119.61917	0.0063
1118.65481	0.00494	1118.65481	0.00744	1118.65481	0.00611
1117.69045	0.00541	1117.69045	0.00737	1117.69045	0.00598
1116.72609	0.00587	1116.72609	0.00732	1116.72609	0.00591
1115.76174	0.0063	1115.76174	0.00731	1115.76174	0.00593
1114.79738	0.00687	1114.79738	0.00734	1114.79738	0.00603
1113.83302	0.00768	1113.83302	0.00739	1113.83302	0.0062

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1112.86866	0.00868	1112.86866	0.00746	1112.86866	0.00643
1111.90431	0.00975	1111.90431	0.00757	1111.90431	0.00674
1110.93995	0.01093	1110.93995	0.00775	1110.93995	0.00715
1109.97559	0.01217	1109.97559	0.00797	1109.97559	0.00764
1109.01123	0.01325	1109.01123	0.00826	1109.01123	0.00818
1108.04688	0.01398	1108.04688	0.0086	1108.04688	0.00877
1107.08252	0.01436	1107.08252	0.00895	1107.08252	0.00936
1106.11816	0.01439	1106.11816	0.00931	1106.11816	0.00996
1105.1538	0.01392	1105.1538	0.00969	1105.1538	0.01055
1104.18944	0.01302	1104.18944	0.01008	1104.18944	0.01112
1103.22509	0.01204	1103.22509	0.01046	1103.22509	0.01167
1102.26073	0.01107	1102.26073	0.01082	1102.26073	0.01219
1101.29637	0.01	1101.29637	0.01115	1101.29637	0.01267
1100.33201	0.00897	1100.33201	0.01146	1100.33201	0.01311
1099.36766	0.00817	1099.36766	0.01174	1099.36766	0.01349
1098.4033	0.00751	1098.4033	0.012	1098.4033	0.01384
1097.43894	0.00691	1097.43894	0.01222	1097.43894	0.01417
1096.47458	0.00633	1096.47458	0.01242	1096.47458	0.01447
1095.51023	0.00574	1095.51023	0.0126	1095.51023	0.01473
1094.54587	0.00522	1094.54587	0.01281	1094.54587	0.01499
1093.58151	0.00477	1093.58151	0.01302	1093.58151	0.01526
1092.61715	0.00439	1092.61715	0.01324	1092.61715	0.01551
1091.6528	0.00417	1091.6528	0.01348	1091.6528	0.01576
1090.68844	0.00409	1090.68844	0.01368	1090.68844	0.01599
1089.72408	0.00409	1089.72408	0.01381	1089.72408	0.0162
1088.75972	0.00408	1088.75972	0.01388	1088.75972	0.01639
1087.79537	0.00399	1087.79537	0.01392	1087.79537	0.01653
1086.83101	0.00397	1086.83101	0.01392	1086.83101	0.01664
1085.86665	0.00409	1085.86665	0.0139	1085.86665	0.01673
1084.90229	0.0042	1084.90229	0.01386	1084.90229	0.0168
1083.93794	0.00437	1083.93794	0.01379	1083.93794	0.01685
1082.97358	0.00471	1082.97358	0.01367	1082.97358	0.01687
1082.00922	0.00499	1082.00922	0.01347	1082.00922	0.01681
1081.04486	0.00493	1081.04486	0.01321	1081.04486	0.01668
1080.08051	0.00464	1080.08051	0.01293	1080.08051	0.01644
1079.11615	0.00436	1079.11615	0.01264	1079.11615	0.01614
1078.15179	0.00416	1078.15179	0.01235	1078.15179	0.01581
1077.18743	0.00407	1077.18743	0.01208	1077.18743	0.01547
1076.22307	0.00402	1076.22307	0.01182	1076.22307	0.01512
1075.25872	0.00391	1075.25872	0.01157	1075.25872	0.01476
1074.29436	0.00375	1074.29436	0.01133	1074.29436	0.01441

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1073.33	0.0035	1073.33	0.0111	1073.33	0.0141
1072.36564	0.00315	1072.36564	0.0109	1072.36564	0.01383
1071.40129	0.00279	1071.40129	0.01071	1071.40129	0.01364
1070.43693	0.0025	1070.43693	0.01058	1070.43693	0.01353
1069.47257	0.00222	1069.47257	0.01052	1069.47257	0.01347
1068.50821	0.00198	1068.50821	0.01053	1068.50821	0.01345
1067.54386	0.00182	1067.54386	0.01057	1067.54386	0.01348
1066.5795	0.0017	1066.5795	0.01065	1066.5795	0.01357
1065.61514	0.00158	1065.61514	0.01076	1065.61514	0.01373
1064.65078	0.00148	1064.65078	0.01088	1064.65078	0.01391
1063.68643	0.00141	1063.68643	0.01099	1063.68643	0.01411
1062.72207	0.00131	1062.72207	0.01111	1062.72207	0.01433
1061.75771	0.00124	1061.75771	0.01124	1061.75771	0.01454
1060.79335	0.00118	1060.79335	0.01136	1060.79335	0.01473
1059.829	0.00114	1059.829	0.01146	1059.829	0.01491
1058.86464	0.00111	1058.86464	0.01154	1058.86464	0.01508
1057.90028	0.00105	1057.90028	0.01161	1057.90028	0.01522
1056.93592	9.40E-04	1056.93592	0.01167	1056.93592	0.01533
1055.97157	8.40E-04	1055.97157	0.01172	1055.97157	0.01541
1055.00721	7.40E-04	1055.00721	0.01174	1055.00721	0.01548
1054.04285	6.30E-04	1054.04285	0.01175	1054.04285	0.01555
1053.07849	6.30E-04	1053.07849	0.01176	1053.07849	0.01562
1052.11413	7.40E-04	1052.11413	0.01179	1052.11413	0.01571
1051.14978	7.90E-04	1051.14978	0.01185	1051.14978	0.01579
1050.18542	7.20E-04	1050.18542	0.01195	1050.18542	0.0159
1049.22106	6.80E-04	1049.22106	0.0121	1049.22106	0.01603
1048.2567	6.80E-04	1048.2567	0.0123	1048.2567	0.01624
1047.29235	5.80E-04	1047.29235	0.01255	1047.29235	0.01655
1046.32799	4.30E-04	1046.32799	0.01284	1046.32799	0.01698
1045.36363	3.60E-04	1045.36363	0.01318	1045.36363	0.01752
1044.39927	3.80E-04	1044.39927	0.01359	1044.39927	0.01814
1043.43492	4.70E-04	1043.43492	0.01406	1043.43492	0.01881
1042.47056	5.30E-04	1042.47056	0.01459	1042.47056	0.01952
1041.5062	4.60E-04	1041.5062	0.01518	1041.5062	0.02026
1040.54184	3.50E-04	1040.54184	0.01582	1040.54184	0.02103
1039.57749	3.40E-04	1039.57749	0.01647	1039.57749	0.02181
1038.61313	3.70E-04	1038.61313	0.01709	1038.61313	0.02258
1037.64877	3.90E-04	1037.64877	0.01765	1037.64877	0.0233
1036.68441	4.40E-04	1036.68441	0.01814	1036.68441	0.02395
1035.72006	4.50E-04	1035.72006	0.01854	1035.72006	0.02453
1034.7557	4.00E-04	1034.7557	0.01887	1034.7557	0.025

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1033.79134	4.10E-04	1033.79134	0.01913	1033.79134	0.02538
1032.82698	4.30E-04	1032.82698	0.01931	1032.82698	0.02566
1031.86263	3.70E-04	1031.86263	0.01942	1031.86263	0.02581
1030.89827	2.90E-04	1030.89827	0.01946	1030.89827	0.02581
1029.93391	2.80E-04	1029.93391	0.01942	1029.93391	0.02566
1028.96955	3.10E-04	1028.96955	0.01929	1028.96955	0.02539
1028.0052	3.00E-04	1028.0052	0.01905	1028.0052	0.025
1027.04084	2.00E-04	1027.04084	0.01873	1027.04084	0.0245
1026.07648	1.20E-04	1026.07648	0.01831	1026.07648	0.0239
1025.11212	1.60E-04	1025.11212	0.01781	1025.11212	0.0232
1024.14776	2.60E-04	1024.14776	0.01726	1024.14776	0.0224
1023.18341	3.50E-04	1023.18341	0.01669	1023.18341	0.02153
1022.21905	4.80E-04	1022.21905	0.0161	1022.21905	0.02063
1021.25469	7.50E-04	1021.25469	0.01551	1021.25469	0.01974
1020.29033	0.00107	1020.29033	0.01495	1020.29033	0.01889
1019.32598	0.00139	1019.32598	0.01444	1019.32598	0.01808
1018.36162	0.00189	1018.36162	0.01396	1018.36162	0.01733
1017.39726	0.00256	1017.39726	0.01352	1017.39726	0.01663
1016.4329	0.00325	1016.4329	0.01309	1016.4329	0.01597
1015.46855	0.00374	1015.46855	0.01267	1015.46855	0.01533
1014.50419	0.0039	1014.50419	0.01224	1014.50419	0.01467
1013.53983	0.00371	1013.53983	0.01182	1013.53983	0.01397
1012.57547	0.00331	1012.57547	0.01141	1012.57547	0.01321
1011.61112	0.00293	1011.61112	0.01097	1011.61112	0.01238
1010.64676	0.00256	1010.64676	0.01049	1010.64676	0.01147
1009.6824	0.00214	1009.6824	0.00997	1009.6824	0.01046
1008.71804	0.00182	1008.71804	0.00941	1008.71804	0.00938
1007.75369	0.00155	1007.75369	0.00879	1007.75369	0.00826
1006.78933	0.00125	1006.78933	0.00816	1006.78933	0.00711
1005.82497	0.00102	1005.82497	0.00753	1005.82497	0.00597
1004.86061	9.10E-04	1004.86061	0.00694	1004.86061	0.00487
1003.89626	8.10E-04	1003.89626	0.00639	1003.89626	0.00385
1002.9319	7.80E-04	1002.9319	0.00591	1002.9319	0.00291
1001.96754	9.20E-04	1001.96754	0.00553	1001.96754	0.00291
1001.00318	0.00104	1001.00318	0.00525	1001.00318	0.00291
1000.03882	0.00101	1000.03882	0.00504	1000.03882	0.00291
999.07447	9.80E-04	999.07447	0.00487	999.07447	0.00291
998.11011	0.00101	998.11011	0.00475		
997.14575	0.00102	997.14575	0.00464		
996.18139	0.00103	996.18139	0.00455		
995.21704	0.00101	995.21704	0.00447		



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
994.25268	9.20E-04	994.25268	0.00438		
993.28832	9.30E-04	993.28832	0.00425		
992.32396	0.00114	992.32396	0.00407		
991.35961	0.00134	991.35961	0.00383		
990.39525	0.00146	990.39525	0.00352		
989.43089	0.00152	989.43089	0.00319		
988.46653	0.00154	988.46653	0.00287		
987.50218	0.00163	987.50218	0.00257		
986.53782	0.00178	986.53782	0.00228		
985.57346	0.00195	985.57346	0.00202		
984.6091	0.00211	984.6091	0.0018		
983.64475	0.00211	983.64475	0.00162		
982.68039	0.00186	982.68039	0.00146		
981.71603	0.00162	981.71603	0.00131		
980.75167	0.0017	980.75167	0.00111		
979.78732	0.00208	979.78732	8.80E-04		
978.82296	0.0025	978.82296	6.70E-04		
977.8586	0.00273	977.8586	5.30E-04		
976.89424	0.00281	976.89424	4.80E-04		
975.92988	0.00289	975.92988	5.10E-04		
974.96553	0.00301	974.96553	5.90E-04		
974.00117	0.00311	974.00117	6.40E-04		
973.03681	0.00314	973.03681	6.00E-04		
972.07245	0.00307	972.07245	5.30E-04		
971.1081	0.00298	971.1081	5.30E-04		
970.14374	0.0031	970.14374	6.30E-04		
969.17938	0.00339	969.17938	7.80E-04		
968.21502	0.00347	968.21502	9.70E-04		
967.25067	0.00332	967.25067	0.00114		
966.28631	0.00322	966.28631	0.00129		
965.32195	0.00328	965.32195	0.00139		
964.35759	0.00346	964.35759	0.00144		
963.39324	0.0036	963.39324	0.0014		
962.42888	0.00358	962.42888	0.00131		
961.46452	0.00345	961.46452	0.00119		
960.50016	0.0033	960.50016	0.00109		
959.53581	0.00316	959.53581	0.00104		
958.57145	0.00314	958.57145	0.00105		
957.60709	0.00339	957.60709	0.00111		
956.64273	0.00363	956.64273	0.00113		
955.67838	0.00357	955.67838	0.00109		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
954.71402	0.00346	954.71402	0.00103		
953.74966	0.00355	953.74966	9.90E-04		
952.7853	0.00364	952.7853	9.80E-04		
951.82095	0.00363	951.82095	9.60E-04		
950.85659	0.0036	950.85659	9.40E-04		
949.89223	0.0035	949.89223	9.10E-04		
948.92787	0.00342	948.92787	8.50E-04		
947.96351	0.00339	947.96351	7.80E-04		
946.99916	0.0034	946.99916	7.70E-04		
946.0348	0.00351	946.0348	8.30E-04		
945.07044	0.00349	945.07044	9.10E-04		
944.10608	0.00315	944.10608	0.00103		
943.14173	0.00282	943.14173	0.00119		
942.17737	0.0029	942.17737	0.00131		
941.21301	0.00324	941.21301	0.00135		
940.24865	0.00338	940.24865	0.00136		
939.2843	0.00337	939.2843	0.00142		
938.31994	0.00348	938.31994	0.0015		
937.35558	0.00368	937.35558	0.0016		
936.39122	0.00378	936.39122	0.00169		
935.42687	0.0036	935.42687	0.00176		
934.46251	0.00327	934.46251	0.00176		
933.49815	0.00323	933.49815	0.00171		
932.53379	0.0035	932.53379	0.00168		
931.56944	0.00388	931.56944	0.00168		
930.60508	0.00427	930.60508	0.00168		
929.64072	0.00451	929.64072	0.00171		
928.67636	0.00462	928.67636	0.00177		
927.71201	0.00476	927.71201	0.00186		
926.74765	0.00482	926.74765	0.00191		
925.78329	0.00482	925.78329	0.00193		
924.81893	0.00483	924.81893	0.00196		
923.85457	0.00483	923.85457	0.00204		
922.89022	0.00492	922.89022	0.00214		
921.92586	0.00523	921.92586	0.00231		
920.9615	0.00539	920.9615	0.00257		
919.99714	0.0051	919.99714	0.00283		
919.03279	0.00487	919.03279	0.00303		
918.06843	0.00508	918.06843	0.00322		
917.10407	0.00556	917.10407	0.00341		
916.13971	0.00639	916.13971	0.00357		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
915.17536	0.00727	915.17536	0.00371		
914.211	0.00761	914.211	0.0039		
913.24664	0.00771	913.24664	0.00414		
912.28228	0.00806	912.28228	0.00443		
911.31793	0.00828	911.31793	0.00482		
910.35357	0.00819	910.35357	0.00521		
909.38921	0.00839	909.38921	0.00545		
908.42485	0.00883	908.42485	0.00551		
907.4605	0.00888	907.4605	0.0056		
906.49614	0.00865	906.49614	0.00577		
905.53178	0.00872	905.53178	0.00594		
904.56742	0.00887	904.56742	0.00608		
903.60307	0.00863	903.60307	0.0063		
902.63871	0.00834	902.63871	0.00648		
901.67435	0.00825	901.67435	0.00649		
900.70999	0.00827	900.70999	0.00637		
899.74564	0.00838	899.74564	0.0063		
898.78128	0.00825	898.78128	0.00629		
897.81692	0.00783	897.81692	0.00627		
896.85256	0.00773	896.85256	0.00635		
895.8882	0.00799	895.8882	0.00677		
894.92385	0.00801	894.92385	0.0075		
893.95949	0.00793	893.95949	0.00813		
892.99513	0.00817	892.99513	0.00837		
892.03077	0.00857	892.03077	0.00831		
891.06642	0.0087	891.06642	0.00816		
890.10206	0.00862	890.10206	0.00793		
889.1377	0.00876	889.1377	0.00777		
888.17334	0.00902	888.17334	0.00788		
887.20899	0.00924	887.20899	0.00813		
886.24463	0.00949	886.24463	0.00811		
885.28027	0.00963	885.28027	0.00769		
884.31591	0.00978	884.31591	0.00722		
883.35156	0.00979	883.35156	0.00699		
882.3872	0.00946	882.3872	0.0069		
881.42284	0.00949	881.42284	0.00687		
880.45848	0.01033	880.45848	0.00693		
879.49413	0.01114	879.49413	0.00696		
878.52977	0.01113	878.52977	0.00672		
877.56541	0.01073	877.56541	0.0063		
876.60105	0.01074	876.60105	0.00602		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
875.6367	0.0112	875.6367	0.00597		
874.67234	0.0115	874.67234	0.006		
873.70798	0.01159	873.70798	0.00596		
872.74362	0.01158	872.74362	0.00585		
871.77926	0.01124	871.77926	0.0057		
870.81491	0.01084	870.81491	0.00551		
869.85055	0.01039	869.85055	0.00535		
868.88619	0.00935	868.88619	0.00529		
867.92183	0.0082	867.92183	0.00524		
866.95748	0.00789	866.95748	0.00509		
865.99312	0.00844	865.99312	0.00473		
865.02876	0.00903	865.02876	0.00419		
864.0644	0.00913	864.0644	0.00366		
863.10005	0.00888	863.10005	0.00331		
862.13569	0.00856	862.13569	0.00314		
861.17133	0.00832	861.17133	0.0031		
860.20697	0.00818	860.20697	0.00311		
859.24262	0.00809	859.24262	0.00312		
858.27826	0.00819	858.27826	0.00304		
857.3139	0.00831	857.3139	0.0028		
856.34954	0.00812	856.34954	0.0025		
855.38519	0.00783	855.38519	0.00226		
854.42083	0.00789	854.42083	0.002		
853.45647	0.00827	853.45647	0.00165		
852.49211	0.00839	852.49211	0.00121		
851.52776	0.00793	851.52776	8.10E-04		
850.5634	0.00743	850.5634	5.00E-04		
849.59904	0.00739	849.59904	2.80E-04		
848.63468	0.00739	848.63468	1.70E-04		
847.67032	0.00664	847.67032	1.80E-04		
846.70597	0.00555	846.70597	2.50E-04		
845.74161	0.00536	845.74161	2.80E-04		
844.77725	0.00596	844.77725	2.60E-04		
843.81289	0.00649	843.81289	1.90E-04		
842.84854	0.00674	842.84854	1.20E-04		
841.88418	0.00688	841.88418	7.00E-05		
840.91982	0.00715	840.91982	3.00E-05		
839.95546	0.00747	839.95546	0		
838.99111	0.00763	838.99111	5.00E-05		
838.02675	0.00779	838.02675	2.40E-04		
837.06239	0.00812	837.06239	5.40E-04		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
836.09803	0.00855	836.09803	8.60E-04		
835.13368	0.0088	835.13368	0.0012		
834.16932	0.00883	834.16932	0.00163		
833.20496	0.00902	833.20496	0.00214		
832.2406	0.00919	832.2406	0.00263		
831.27625	0.00906	831.27625	0.00301		
830.31189	0.00906	830.31189	0.00333		
829.34753	0.00907	829.34753	0.00363		
828.38317	0.00868	828.38317	0.00398		
827.41882	0.00839	827.41882	0.00446		
826.45446	0.0086	826.45446	0.00507		
825.4901	0.00865	825.4901	0.00571		
824.52574	0.00805	824.52574	0.00629		
823.56139	0.0074	823.56139	0.00679		
822.59703	0.0074	822.59703	0.0072		
821.63267	0.00789	821.63267	0.00748		
820.66831	0.00812	820.66831	0.0077		
819.70395	0.00789	819.70395	0.0079		
818.7396	0.0077	818.7396	0.00801		
817.77524	0.00767	817.77524	0.00785		
816.81088	0.00779	816.81088	0.00746		
815.84652	0.00806	815.84652	0.00705		
814.88217	0.00789	814.88217	0.0067		
813.91781	0.00722	813.91781	0.0064		
812.95345	0.00664	812.95345	0.00616		
811.98909	0.00626	811.98909	0.00607		
811.02474	0.00615	811.02474	0.0061		
810.06038	0.00645	810.06038	0.0061		
809.09602	0.00682	809.09602	0.00595		
808.13166	0.00688	808.13166	0.00568		
807.16731	0.00659	807.16731	0.00535		
806.20295	0.0062	806.20295	0.00498		
805.23859	0.00603	805.23859	0.00461		
804.27423	0.00579	804.27423	0.00427		
803.30988	0.00515	803.30988	0.00401		
802.34552	0.00457	802.34552	0.00383		
801.38116	0.0045	801.38116	0.00374		
800.4168	0.00469	800.4168	0.00379		
799.45245	0.00489	799.45245	0.00402		
798.48809	0.00511	798.48809	0.00436		
797.52373	0.0055	797.52373	0.00468		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
796.55937	0.00597	796.55937	0.00494		
795.59501	0.00641	795.59501	0.0051		
794.63066	0.00685	794.63066	0.00515		
793.6663	0.00713	793.6663	0.00518		
792.70194	0.00718	792.70194	0.00528		
791.73758	0.00703	791.73758	0.00542		
790.77323	0.00657	790.77323	0.00553		
789.80887	0.0061	789.80887	0.00565		
788.84451	0.00629	788.84451	0.00585		
787.88015	0.00688	787.88015	0.00607		
786.9158	0.00683	786.9158	0.0062		
785.95144	0.00639	785.95144	0.00616		
784.98708	0.00661	784.98708	0.00592		
784.02272	0.00692	784.02272	0.00555		
783.05837	0.00676	783.05837	0.00522		
782.09401	0.0067	782.09401	0.00512		
781.12965	0.00681	781.12965	0.00531		
780.16529	0.00679	780.16529	0.00563		
779.20094	0.00692	779.20094	0.00592		
778.23658	0.00728	778.23658	0.00605		
777.27222	0.0072	777.27222	0.00594		
776.30786	0.0065	776.30786	0.00568		
775.34351	0.00597	775.34351	0.00546		
774.37915	0.00611	774.37915	0.00546		
773.41479	0.00638	773.41479	0.00565		
772.45043	0.00639	772.45043	0.00586		
771.48608	0.00656	771.48608	0.00598		
770.52172	0.00698	770.52172	0.00594		
769.55736	0.00723	769.55736	0.00573		
768.593	0.00713	768.593	0.00534		
767.62864	0.00696	767.62864	0.00499		
766.66429	0.00724	766.66429	0.00496		
765.69993	0.00766	765.69993	0.00528		
764.73557	0.00753	764.73557	0.00578		
763.77121	0.00714	763.77121	0.00629		
762.80686	0.00737	762.80686	0.00672		
761.8425	0.00826	761.8425	0.00697		
760.87814	0.00839	760.87814	0.00699		
759.91378	0.00734	759.91378	0.00692		
758.94943	0.00675	758.94943	0.00695		
757.98507	0.00725	757.98507	0.00711		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
757.02071	0.00782	757.02071	0.00732		
756.05635	0.00825	756.05635	0.00754		
755.092	0.00859	755.092	0.00776		
754.12764	0.00843	754.12764	0.00793		
753.16328	0.0082	753.16328	0.00805		
752.19892	0.00847	752.19892	0.00816		
751.23457	0.00852	751.23457	0.00815		
750.27021	0.00809	750.27021	0.00797		
749.30585	0.00799	749.30585	0.00777		
748.34149	0.00811	748.34149	0.00767		
747.37714	0.00792	747.37714	0.00754		
746.41278	0.00818	746.41278	0.00737		
745.44842	0.00924	745.44842	0.00728		
744.48406	0.00981	744.48406	0.00726		
743.5197	0.00913	743.5197	0.00724		
742.55535	0.00802	742.55535	0.00742		
741.59099	0.00744	741.59099	0.00791		
740.62663	0.00783	740.62663	0.00844		
739.66227	0.00918	739.66227	0.00867		
738.69792	0.01056	738.69792	0.00853		
737.73356	0.01075	737.73356	0.00809		
736.7692	0.00978	736.7692	0.00755		
735.80484	0.00882	735.80484	0.0073		
734.84049	0.00854	734.84049	0.00748		
733.87613	0.00872	733.87613	0.00777		
732.91177	0.00897	732.91177	0.00785		
731.94741	0.00891	731.94741	0.00774		
730.98306	0.00853	730.98306	0.00749		
730.0187	0.00845	730.0187	0.00721		
729.05434	0.00892	729.05434	0.00718		
728.08998	0.0093	728.08998	0.00748		
727.12563	0.00921	727.12563	0.00774		
726.16127	0.00867	726.16127	0.00771		
725.19691	0.0081	725.19691	0.00748		
724.23255	0.00808	724.23255	0.00724		
723.2682	0.00831	723.2682	0.00709		
722.30384	0.00809	722.30384	0.00709		
721.33948	0.00759	721.33948	0.00725		
720.37512	0.00715	720.37512	0.00746		
719.41076	0.00675	719.41076	0.00759		
718.44641	0.00661	718.44641	0.00757		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
717.48205	0.00669	717.48205	0.00743		
716.51769	0.00659	716.51769	0.00724		
715.55333	0.00632	715.55333	0.00711		
714.58898	0.00604	714.58898	0.00709		
713.62462	0.00565	713.62462	0.00718		
712.66026	0.00507	712.66026	0.00734		
711.6959	0.00446	711.6959	0.0075		
710.73155	0.00404	710.73155	0.00758		
709.76719	0.00374	709.76719	0.00758		
708.80283	0.00334	708.80283	0.00763		
707.83847	0.00291	707.83847	0.00779		
706.87412	0.00272	706.87412	0.008		
705.90976	0.00285	705.90976	0.00821		
704.9454	0.00315	704.9454	0.00837		
703.98104	0.00344	703.98104	0.00848		
703.01669	0.00373	703.01669	0.00856		
702.05233	0.00409	702.05233	0.00865		
701.08797	0.00445	701.08797	0.00879		
700.12361	0.0048	700.12361	0.00895		
699.15926	0.00517	699.15926	0.00909		
698.1949	0.00551	698.1949	0.00916		
697.23054	0.00586	697.23054	0.00917		
696.26618	0.00626	696.26618	0.00912		
695.30183	0.00646	695.30183	0.00901		
694.33747	0.0063	694.33747	0.00889		
693.37311	0.00606	693.37311	0.00883		
692.40875	0.00598	692.40875	0.00884		
691.44439	0.00599	691.44439	0.00887		
690.48004	0.00597	690.48004	0.00889		
689.51568	0.00588	689.51568	0.00888		
688.55132	0.00583	688.55132	0.00886		
687.58696	0.00596	687.58696	0.00887		
686.62261	0.00608	686.62261	0.00897		
685.65825	0.00588	685.65825	0.00917		
684.69389	0.00542	684.69389	0.00942		
683.72953	0.00493	683.72953	0.00967		
682.76518	0.00452	682.76518	0.00985		
681.80082	0.00422	681.80082	0.00989		
680.83646	0.004	680.83646	0.00984		
679.8721	0.00376	679.8721	0.0098		
678.90775	0.00328	678.90775	0.00983		



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
677.94339	0.00279	677.94339	0.00997		
676.97903	0.00256	676.97903	0.01022		
676.01467	0.00248	676.01467	0.01047		
675.05032	0.00239	675.05032	0.01058		
674.08596	0.00227	674.08596	0.01052		
673.1216	0.00227	673.1216	0.01036		
672.15724	0.00241	672.15724	0.01015		
671.19289	0.00245	671.19289	0.00997		
670.22853	0.00242	670.22853	0.00996		
669.26417	0.0025	669.26417	0.01007		
668.29981	0.00239	668.29981	0.01021		
667.33545	0.00224	667.33545	0.01036		
666.3711	0.00266	666.3711	0.01059		
665.40674	0.00299	665.40674	0.01092		
664.44238	0.0029	664.44238	0.01121		
663.47802	0.00252	663.47802	0.0114		
662.51367	0.0021	662.51367	0.01146		
661.54931	0.00194	661.54931	0.01137		
660.58495	0.00218	660.58495	0.01113		
659.62059	0.00258	659.62059	0.01084		
658.65624	0.00265	658.65624	0.01064		
657.69188	0.00234	657.69188	0.01058		
656.72752	0.00207	656.72752	0.01067		
655.76316	0.00189	655.76316	0.01086		
654.79881	0.00153	654.79881	0.01107		
653.83445	0.00115	653.83445	0.01121		
652.87009	0.0012	652.87009	0.01123		
651.90573	0.00157	651.90573	0.01121		
650.94138	0.00195	650.94138	0.01119		
649.97702	0.00225	649.97702	0.01119		
649.01266	0.00243	649.01266	0.01121		
648.0483	0.00237	648.0483	0.01125		
647.08395	0.00213	647.08395	0.01126		
646.11959	0.00187	646.11959	0.0112		
645.15523	0.00165	645.15523	0.01116		
644.19087	0.00166	644.19087	0.01126		
643.22652	0.00211	643.22652	0.01142		
642.26216	0.00281	642.26216	0.01158		
641.2978	0.00341	641.2978	0.01169		
640.33344	0.00383	640.33344	0.01174		
639.36908	0.00385	639.36908	0.01175		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
638.40473	0.00354	638.40473	0.01176		
637.44037	0.00359	637.44037	0.01179		
636.47601	0.00398	636.47601	0.01182		
635.51165	0.00416	635.51165	0.01189		
634.5473	0.00422	634.5473	0.01194		
633.58294	0.00429	633.58294	0.01176		
632.61858	0.00411	632.61858	0.01128		
631.65422	0.00402	631.65422	0.01055		
630.68987	0.00461	630.68987	0.00953		
629.72551	0.00562	629.72551	0.00837		
628.76115	0.00653	628.76115	0.00757		
627.79679	0.00741	627.79679	0.00732		
626.83244	0.00785	626.83244	0.0073		
625.86808	0.00759	625.86808	0.00716		
624.90372	0.00691	624.90372	0.00683		
623.93936	0.00588	623.93936	0.00637		
622.97501	0.00473	622.97501	0.00579		
622.01065	0.00399	622.01065	0.00531		
621.04629	0.00452	621.04629	0.00517		
620.08193	0.00606	620.08193	0.00525		
619.11758	0.00683	619.11758	0.00523		
618.15322	0.00641	618.15322	0.00499		
617.18886	0.00619	617.18886	0.00466		
616.2245	0.0067	616.2245	0.0045		
615.26014	0.00729	615.26014	0.00455		
614.29579	0.00729	614.29579	0.00465		
613.33143	0.00679	613.33143	0.00484		
612.36707	0.00688	612.36707	0.00512		
611.40271	0.00757	611.40271	0.00516		
610.43836	0.00808	610.43836	0.00488		
609.474	0.00833	609.474	0.0046		
608.50964	0.00734	608.50964	0.00451		
607.54528	0.00528	607.54528	0.00452		
606.58093	0.00446	606.58093	0.00458		
605.61657	0.00512	605.61657	0.0048		
604.65221	0.00576	604.65221	0.00512		
603.68785	0.00627	603.68785	0.00517		
602.7235	0.00776	602.7235	0.00468		
601.75914	0.00991	601.75914	0.00388		
600.79478	0.01046	600.79478	0.0032		
599.83042	0.00939	599.83042	0.00293		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
598.86607	0.00869	598.86607	0.00307		
597.90171	0.00851	597.90171	0.00346		
596.93735	0.00855	596.93735	0.0039		
595.97299	0.00876	595.97299	0.00414		
595.00864	0.00844	595.00864	0.00397		
594.04428	0.00812	594.04428	0.00373		
593.07992	0.00865	593.07992	0.00387		
592.11556	0.00932	592.11556	0.00434		
591.15121	0.00952	591.15121	0.00482		
590.18685	0.00919	590.18685	0.00502		
589.22249	0.0078	589.22249	0.00488		
588.25813	0.00595	588.25813	0.00465		
587.29377	0.00551	587.29377	0.00475		
586.32942	0.00653	586.32942	0.0054		
585.36506	0.00763	585.36506	0.00621		
584.4007	0.00804	584.4007	0.00669		
583.43634	0.00734	583.43634	0.00669		
582.47199	0.00579	582.47199	0.00622		
581.50763	0.00508	581.50763	0.00547		
580.54327	0.00628	580.54327	0.00487		
579.57891	0.00795	579.57891	0.00472		
578.61456	0.00849	578.61456	0.00497		
577.6502	0.00818	577.6502	0.00529		
576.68584	0.00773	576.68584	0.00543		
575.72148	0.00721	575.72148	0.00536		
574.75713	0.00643	574.75713	0.00496		
573.79277	0.0058	573.79277	0.00448		
572.82841	0.00619	572.82841	0.00453		
571.86405	0.0072	571.86405	0.005		
570.8997	0.00816	570.8997	0.00541		
569.93534	0.00952	569.93534	0.00555		
568.97098	0.01036	568.97098	0.00547		
568.00662	0.00937	568.00662	0.00543		
567.04227	0.00749	567.04227	0.00562		
566.07791	0.00632	566.07791	0.006		
565.11355	0.00645	565.11355	0.0065		
564.14919	0.00711	564.14919	0.00675		
563.18483	0.00764	563.18483	0.00621		
562.22048	0.00867	562.22048	0.00467		
561.25612	0.00995	561.25612	0.00273		
560.29176	0.01019	560.29176	0.00169		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
559.3274	0.00955	559.3274	0.0021		
558.36305	0.009	558.36305	0.0033		
557.39869	0.0081	557.39869	0.00477		
556.43433	0.00681	556.43433	0.00636		
555.46997	0.00665	555.46997	0.00772		
554.50562	0.00718	554.50562	0.00846		
553.54126	0.00717	553.54126	0.00858		
552.5769	0.00676	552.5769	0.00831		
551.61254	0.006	551.61254	0.00798		
550.64819	0.00559	550.64819	0.00794		
549.68383	0.0062	549.68383	0.00829		
548.71947	0.00746	548.71947	0.00887		
547.75511	0.00864	547.75511	0.00939		
546.79076	0.00846	546.79076	0.00908		
545.8264	0.00722	545.8264	0.00716		
544.86204	0.0071	544.86204	0.00417		
543.89768	0.00833	543.89768	0.00188		
542.93333	0.00804	542.93333	0.00124		
541.96897	0.00537	541.96897	0.00187		
541.00461	0.00385	541.00461	0.00309		
540.04025	0.00408	540.04025	0.00419		
539.07589	0.0036	539.07589	0.00431		
538.11154	0.00339	538.11154	0.00345		
537.14718	0.00487	537.14718	0.00274		
536.18282	0.00644	536.18282	0.003		
535.21846	0.00607	535.21846	0.00394		
534.25411	0.00397	534.25411	0.00502		
533.28975	0.00269	533.28975	0.0058		
532.32539	0.00353	532.32539	0.00578		
531.36103	0.0049	531.36103	0.00479		
530.39668	0.00524	530.39668	0.00321		
529.43232	0.00466	529.43232	0.0016		
528.46796	0.0033	528.46796	5.00E-04		
527.5036	0.0019	527.5036	4.50E-04		
526.53925	0.00219	526.53925	0.0016		
525.57489	0.00376	525.57489	0.00327		
524.61053	0.00497	524.61053	0.00457		
523.64617	0.00518	523.64617	0.00507		
522.68182	0.00464	522.68182	0.0046		
521.71746	0.00441	521.71746	0.00324		
520.7531	0.004	520.7531	0.00173		

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Fouled by combined foulants (3:1:1:1, 100mg/L)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
519.78874	0.0027	519.78874	1.00E-03		
518.82439	0.00235	518.82439	0.00114		
517.86003	0.00349	517.86003	0.0017		
516.89567	0.00423	516.89567	0.0025		
515.93131	0.00422	515.93131	0.00347		
514.96696	0.00436	514.96696	0.00401		
514.0026	0.0042	514.0026	0.0036		
513.03824	0.00416	513.03824	0.00252		
512.07388	0.00503	512.07388	0.00137		
511.10952	0.00572	511.10952	4.50E-04		
510.14517	0.00579	510.14517	0		
509.18081	0.00605	509.18081	2.20E-04		
508.21645	0.00637	508.21645	8.30E-04		
507.25209	0.00604	507.25209	0.00127		
506.28774	0.00484	506.28774	0.00138		
505.32338	0.00325	505.32338	0.00133		
504.35902	0.00143	504.35902	9.60E-04		
503.39466	0	503.39466	1.30E-04		
502.43031	-5.30E-04	502.43031	1.00E-04		
501.46595	7.60E-04	501.46595	7.00E-05		
500.50159	0.00119	500.50159	3.00E-05		
499.53723	0	499.53723	0		

Figure 5.28

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3998.22658	3.70E-04	3998.22658	0	3998.22658	4.00E-05	3998.22658	1.00E-05
3997.26223	5.00E-04	3997.26223	0	3997.26223	4.00E-05	3997.26223	1.00E-05
3996.29787	4.60E-04	3996.29787	0	3996.29787	4.00E-05	3996.29787	1.00E-05
3995.33351	2.40E-04	3995.33351	0	3995.33351	4.00E-05	3995.33351	1.00E-05
3994.36915	4.00E-05	3994.36915	0	3994.36915	4.00E-05	3994.36915	1.00E-05
3993.4048	1.60E-04	3993.4048	1.00E-05	3993.4048	5.00E-05	3993.4048	3.00E-05
3992.44044	4.90E-04	3992.44044	2.00E-05	3992.44044	7.00E-05	3992.44044	5.00E-05
3991.47608	6.70E-04	3991.47608	3.00E-05	3991.47608	8.00E-05	3991.47608	6.00E-05
3990.51172	6.10E-04	3990.51172	4.00E-05	3990.51172	1.00E-04	3990.51172	7.00E-05
3989.54737	4.50E-04	3989.54737	5.00E-05	3989.54737	1.10E-04	3989.54737	6.00E-05
3988.58301	3.00E-04	3988.58301	5.00E-05	3988.58301	1.10E-04	3988.58301	5.00E-05
3987.61865	1.70E-04	3987.61865	4.00E-05	3987.61865	1.00E-04	3987.61865	4.00E-05
3986.65429	1.60E-04	3986.65429	3.00E-05	3986.65429	1.00E-04	3986.65429	2.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3985.68994	3.10E-04	3985.68994	2.00E-05	3985.68994	1.00E-04	3985.68994	1.00E-05
3984.72558	4.10E-04	3984.72558	1.00E-05	3984.72558	1.00E-04	3984.72558	1.00E-05
3983.76122	3.60E-04	3983.76122	1.00E-05	3983.76122	1.00E-04	3983.76122	2.00E-05
3982.79686	3.00E-04	3982.79686	3.00E-05	3982.79686	9.00E-05	3982.79686	3.00E-05
3981.8325	2.90E-04	3981.8325	4.00E-05	3981.8325	9.00E-05	3981.8325	4.00E-05
3980.86815	2.00E-04	3980.86815	5.00E-05	3980.86815	1.00E-04	3980.86815	4.00E-05
3979.90379	1.30E-04	3979.90379	5.00E-05	3979.90379	1.10E-04	3979.90379	4.00E-05
3978.93943	1.10E-04	3978.93943	5.00E-05	3978.93943	1.00E-04	3978.93943	3.00E-05
3977.97507	9.00E-05	3977.97507	4.00E-05	3977.97507	9.00E-05	3977.97507	2.00E-05
3977.01072	1.30E-04	3977.01072	4.00E-05	3977.01072	8.00E-05	3977.01072	1.00E-05
3976.04636	2.30E-04	3976.04636	4.00E-05	3976.04636	8.00E-05	3976.04636	1.00E-05
3975.082	2.80E-04	3975.082	5.00E-05	3975.082	8.00E-05	3975.082	1.00E-05
3974.11764	2.90E-04	3974.11764	6.00E-05	3974.11764	9.00E-05	3974.11764	1.00E-05
3973.15329	2.40E-04	3973.15329	7.00E-05	3973.15329	1.00E-04	3973.15329	2.00E-05
3972.18893	2.40E-04	3972.18893	7.00E-05	3972.18893	1.10E-04	3972.18893	4.00E-05
3971.22457	3.90E-04	3971.22457	8.00E-05	3971.22457	1.00E-04	3971.22457	6.00E-05
3970.26021	4.20E-04	3970.26021	9.00E-05	3970.26021	9.00E-05	3970.26021	8.00E-05
3969.29586	2.30E-04	3969.29586	9.00E-05	3969.29586	7.00E-05	3969.29586	9.00E-05
3968.3315	1.20E-04	3968.3315	9.00E-05	3968.3315	6.00E-05	3968.3315	8.00E-05
3967.36714	1.60E-04	3967.36714	8.00E-05	3967.36714	4.00E-05	3967.36714	8.00E-05
3966.40278	1.90E-04	3966.40278	8.00E-05	3966.40278	2.00E-05	3966.40278	7.00E-05
3965.43843	2.00E-04	3965.43843	9.00E-05	3965.43843	2.00E-05	3965.43843	7.00E-05
3964.47407	2.10E-04	3964.47407	1.00E-04	3964.47407	3.00E-05	3964.47407	7.00E-05
3963.50971	1.40E-04	3963.50971	1.10E-04	3963.50971	5.00E-05	3963.50971	8.00E-05
3962.54535	1.00E-05	3962.54535	1.20E-04	3962.54535	6.00E-05	3962.54535	9.00E-05
3961.581	2.00E-05	3961.581	1.10E-04	3961.581	7.00E-05	3961.581	1.00E-04
3960.61664	1.50E-04	3960.61664	9.00E-05	3960.61664	7.00E-05	3960.61664	1.00E-04
3959.65228	2.70E-04	3959.65228	7.00E-05	3959.65228	6.00E-05	3959.65228	1.00E-04
3958.68792	2.60E-04	3958.68792	7.00E-05	3958.68792	6.00E-05	3958.68792	1.00E-04
3957.72357	1.40E-04	3957.72357	8.00E-05	3957.72357	7.00E-05	3957.72357	1.00E-04
3956.75921	7.00E-05	3956.75921	9.00E-05	3956.75921	8.00E-05	3956.75921	9.00E-05
3955.79485	1.10E-04	3955.79485	1.10E-04	3955.79485	8.00E-05	3955.79485	9.00E-05
3954.83049	1.60E-04	3954.83049	1.30E-04	3954.83049	8.00E-05	3954.83049	9.00E-05
3953.86613	1.70E-04	3953.86613	1.30E-04	3953.86613	7.00E-05	3953.86613	8.00E-05
3952.90178	2.60E-04	3952.90178	1.40E-04	3952.90178	7.00E-05	3952.90178	8.00E-05
3951.93742	3.90E-04	3951.93742	1.40E-04	3951.93742	8.00E-05	3951.93742	8.00E-05
3950.97306	4.10E-04	3950.97306	1.40E-04	3950.97306	1.00E-04	3950.97306	9.00E-05
3950.0087	4.00E-04	3950.0087	1.40E-04	3950.0087	1.20E-04	3950.0087	1.00E-04
3949.04435	4.70E-04	3949.04435	1.30E-04	3949.04435	1.30E-04	3949.04435	1.00E-04
3948.07999	4.90E-04	3948.07999	1.40E-04	3948.07999	1.30E-04	3948.07999	1.00E-04
3947.11563	3.80E-04	3947.11563	1.40E-04	3947.11563	1.20E-04	3947.11563	1.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3946.15127	1.70E-04	3946.15127	1.50E-04	3946.15127	1.20E-04	3946.15127	1.10E-04
3945.18692	0	3945.18692	1.50E-04	3945.18692	1.30E-04	3945.18692	1.10E-04
3944.22256	1.00E-04	3944.22256	1.50E-04	3944.22256	1.30E-04	3944.22256	1.30E-04
3943.2582	2.60E-04	3943.2582	1.40E-04	3943.2582	1.30E-04	3943.2582	1.60E-04
3942.29384	2.70E-04	3942.29384	1.30E-04	3942.29384	1.10E-04	3942.29384	1.80E-04
3941.32949	3.80E-04	3941.32949	1.20E-04	3941.32949	1.00E-04	3941.32949	1.80E-04
3940.36513	5.80E-04	3940.36513	1.30E-04	3940.36513	8.00E-05	3940.36513	1.80E-04
3939.40077	5.70E-04	3939.40077	1.30E-04	3939.40077	8.00E-05	3939.40077	1.70E-04
3938.43641	4.00E-04	3938.43641	1.30E-04	3938.43641	8.00E-05	3938.43641	1.30E-04
3937.47206	2.50E-04	3937.47206	1.30E-04	3937.47206	8.00E-05	3937.47206	1.00E-04
3936.5077	1.80E-04	3936.5077	1.40E-04	3936.5077	8.00E-05	3936.5077	9.00E-05
3935.54334	1.40E-04	3935.54334	1.50E-04	3935.54334	9.00E-05	3935.54334	1.00E-04
3934.57898	2.40E-04	3934.57898	1.50E-04	3934.57898	1.00E-04	3934.57898	1.20E-04
3933.61463	4.30E-04	3933.61463	1.60E-04	3933.61463	1.10E-04	3933.61463	1.40E-04
3932.65027	5.40E-04	3932.65027	1.50E-04	3932.65027	1.20E-04	3932.65027	1.70E-04
3931.68591	6.30E-04	3931.68591	1.60E-04	3931.68591	1.30E-04	3931.68591	1.80E-04
3930.72155	6.50E-04	3930.72155	1.70E-04	3930.72155	1.30E-04	3930.72155	1.90E-04
3929.75719	4.40E-04	3929.75719	1.90E-04	3929.75719	1.30E-04	3929.75719	2.00E-04
3928.79284	1.80E-04	3928.79284	2.00E-04	3928.79284	1.20E-04	3928.79284	2.00E-04
3927.82848	1.50E-04	3927.82848	2.00E-04	3927.82848	1.20E-04	3927.82848	1.80E-04
3926.86412	2.90E-04	3926.86412	1.80E-04	3926.86412	1.20E-04	3926.86412	1.70E-04
3925.89976	3.50E-04	3925.89976	1.70E-04	3925.89976	1.10E-04	3925.89976	1.70E-04
3924.93541	2.10E-04	3924.93541	1.60E-04	3924.93541	1.10E-04	3924.93541	1.80E-04
3923.97105	1.10E-04	3923.97105	1.60E-04	3923.97105	1.20E-04	3923.97105	1.80E-04
3923.00669	2.40E-04	3923.00669	1.60E-04	3923.00669	1.30E-04	3923.00669	1.60E-04
3922.04233	3.60E-04	3922.04233	1.60E-04	3922.04233	1.20E-04	3922.04233	1.40E-04
3921.07798	2.80E-04	3921.07798	1.60E-04	3921.07798	1.10E-04	3921.07798	1.30E-04
3920.11362	1.80E-04	3920.11362	1.40E-04	3920.11362	1.10E-04	3920.11362	1.30E-04
3919.14926	4.00E-04	3919.14926	1.30E-04	3919.14926	1.00E-04	3919.14926	1.40E-04
3918.1849	6.60E-04	3918.1849	1.30E-04	3918.1849	9.00E-05	3918.1849	1.70E-04
3917.22055	4.50E-04	3917.22055	1.40E-04	3917.22055	8.00E-05	3917.22055	2.10E-04
3916.25619	1.40E-04	3916.25619	1.50E-04	3916.25619	8.00E-05	3916.25619	2.20E-04
3915.29183	1.70E-04	3915.29183	1.60E-04	3915.29183	7.00E-05	3915.29183	2.10E-04
3914.32747	3.30E-04	3914.32747	1.80E-04	3914.32747	6.00E-05	3914.32747	1.90E-04
3913.36312	4.40E-04	3913.36312	2.10E-04	3913.36312	6.00E-05	3913.36312	1.80E-04
3912.39876	5.30E-04	3912.39876	2.20E-04	3912.39876	5.00E-05	3912.39876	1.60E-04
3911.4344	6.00E-04	3911.4344	2.30E-04	3911.4344	5.00E-05	3911.4344	1.50E-04
3910.47004	5.70E-04	3910.47004	2.40E-04	3910.47004	5.00E-05	3910.47004	1.60E-04
3909.50569	3.80E-04	3909.50569	2.40E-04	3909.50569	6.00E-05	3909.50569	1.70E-04
3908.54133	2.00E-04	3908.54133	2.20E-04	3908.54133	8.00E-05	3908.54133	1.70E-04
3907.57697	2.90E-04	3907.57697	1.90E-04	3907.57697	1.00E-04	3907.57697	1.60E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3906.61261	5.30E-04	3906.61261	1.80E-04	3906.61261	1.30E-04	3906.61261	1.50E-04
3905.64825	7.10E-04	3905.64825	1.70E-04	3905.64825	1.50E-04	3905.64825	1.60E-04
3904.6839	6.50E-04	3904.6839	1.80E-04	3904.6839	1.50E-04	3904.6839	1.90E-04
3903.71954	6.00E-04	3903.71954	2.00E-04	3903.71954	1.50E-04	3903.71954	2.30E-04
3902.75518	6.70E-04	3902.75518	2.10E-04	3902.75518	1.50E-04	3902.75518	2.70E-04
3901.79082	5.80E-04	3901.79082	2.20E-04	3901.79082	1.50E-04	3901.79082	3.00E-04
3900.82647	5.80E-04	3900.82647	2.10E-04	3900.82647	1.40E-04	3900.82647	3.20E-04
3899.86211	6.60E-04	3899.86211	2.10E-04	3899.86211	1.30E-04	3899.86211	3.20E-04
3898.89775	4.30E-04	3898.89775	2.00E-04	3898.89775	1.10E-04	3898.89775	3.20E-04
3897.93339	2.10E-04	3897.93339	2.00E-04	3897.93339	9.00E-05	3897.93339	3.20E-04
3896.96904	1.50E-04	3896.96904	1.90E-04	3896.96904	7.00E-05	3896.96904	3.20E-04
3896.00468	1.70E-04	3896.00468	1.90E-04	3896.00468	8.00E-05	3896.00468	3.20E-04
3895.04032	2.50E-04	3895.04032	1.90E-04	3895.04032	1.20E-04	3895.04032	3.00E-04
3894.07596	3.80E-04	3894.07596	1.70E-04	3894.07596	1.60E-04	3894.07596	2.30E-04
3893.11161	6.40E-04	3893.11161	1.60E-04	3893.11161	1.80E-04	3893.11161	1.80E-04
3892.14725	8.10E-04	3892.14725	1.70E-04	3892.14725	1.70E-04	3892.14725	1.80E-04
3891.18289	6.30E-04	3891.18289	2.10E-04	3891.18289	1.60E-04	3891.18289	2.20E-04
3890.21853	4.40E-04	3890.21853	2.40E-04	3890.21853	1.50E-04	3890.21853	2.60E-04
3889.25418	4.20E-04	3889.25418	2.60E-04	3889.25418	1.60E-04	3889.25418	2.70E-04
3888.28982	4.70E-04	3888.28982	2.60E-04	3888.28982	1.90E-04	3888.28982	2.50E-04
3887.32546	6.10E-04	3887.32546	2.50E-04	3887.32546	2.00E-04	3887.32546	2.20E-04
3886.3611	6.60E-04	3886.3611	2.40E-04	3886.3611	2.00E-04	3886.3611	1.90E-04
3885.39675	6.90E-04	3885.39675	2.40E-04	3885.39675	1.70E-04	3885.39675	2.00E-04
3884.43239	9.90E-04	3884.43239	2.50E-04	3884.43239	1.40E-04	3884.43239	2.40E-04
3883.46803	0.0012	3883.46803	2.60E-04	3883.46803	1.40E-04	3883.46803	2.60E-04
3882.50367	0.00122	3882.50367	2.50E-04	3882.50367	1.50E-04	3882.50367	2.70E-04
3881.53932	0.00108	3881.53932	2.20E-04	3881.53932	1.70E-04	3881.53932	2.80E-04
3880.57496	5.60E-04	3880.57496	1.90E-04	3880.57496	1.60E-04	3880.57496	2.80E-04
3879.6106	1.90E-04	3879.6106	1.80E-04	3879.6106	1.40E-04	3879.6106	2.90E-04
3878.64624	3.70E-04	3878.64624	2.10E-04	3878.64624	1.10E-04	3878.64624	3.20E-04
3877.68188	5.60E-04	3877.68188	2.40E-04	3877.68188	1.10E-04	3877.68188	3.20E-04
3876.71753	5.80E-04	3876.71753	2.50E-04	3876.71753	1.30E-04	3876.71753	2.90E-04
3875.75317	5.70E-04	3875.75317	2.50E-04	3875.75317	1.50E-04	3875.75317	2.50E-04
3874.78881	3.40E-04	3874.78881	2.60E-04	3874.78881	1.60E-04	3874.78881	2.40E-04
3873.82445	7.00E-05	3873.82445	2.70E-04	3873.82445	1.90E-04	3873.82445	2.50E-04
3872.8601	2.80E-04	3872.8601	2.70E-04	3872.8601	2.10E-04	3872.8601	2.20E-04
3871.89574	6.80E-04	3871.89574	2.50E-04	3871.89574	2.10E-04	3871.89574	2.00E-04
3870.93138	7.50E-04	3870.93138	2.60E-04	3870.93138	1.80E-04	3870.93138	2.40E-04
3869.96702	3.50E-04	3869.96702	2.80E-04	3869.96702	1.60E-04	3869.96702	2.90E-04
3869.00267	1.80E-04	3869.00267	3.00E-04	3869.00267	1.60E-04	3869.00267	3.20E-04
3868.03831	5.10E-04	3868.03831	3.00E-04	3868.03831	1.60E-04	3868.03831	3.30E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3867.07395	8.60E-04	3867.07395	3.00E-04	3867.07395	1.60E-04	3867.07395	3.40E-04
3866.10959	8.40E-04	3866.10959	3.10E-04	3866.10959	1.70E-04	3866.10959	3.30E-04
3865.14524	3.70E-04	3865.14524	2.80E-04	3865.14524	1.80E-04	3865.14524	2.90E-04
3864.18088	1.90E-04	3864.18088	2.50E-04	3864.18088	1.60E-04	3864.18088	2.70E-04
3863.21652	4.40E-04	3863.21652	2.50E-04	3863.21652	1.10E-04	3863.21652	3.10E-04
3862.25216	4.10E-04	3862.25216	2.90E-04	3862.25216	9.00E-05	3862.25216	3.60E-04
3861.28781	2.20E-04	3861.28781	3.20E-04	3861.28781	1.00E-04	3861.28781	3.80E-04
3860.32345	3.30E-04	3860.32345	3.10E-04	3860.32345	1.20E-04	3860.32345	3.30E-04
3859.35909	4.70E-04	3859.35909	3.10E-04	3859.35909	1.10E-04	3859.35909	3.10E-04
3858.39473	4.50E-04	3858.39473	3.40E-04	3858.39473	1.30E-04	3858.39473	3.30E-04
3857.43038	4.00E-04	3857.43038	3.20E-04	3857.43038	2.20E-04	3857.43038	2.90E-04
3856.46602	5.50E-04	3856.46602	2.50E-04	3856.46602	3.10E-04	3856.46602	2.00E-04
3855.50166	7.70E-04	3855.50166	2.00E-04	3855.50166	3.60E-04	3855.50166	1.80E-04
3854.5373	5.20E-04	3854.5373	1.80E-04	3854.5373	3.40E-04	3854.5373	2.40E-04
3853.57294	2.50E-04	3853.57294	2.00E-04	3853.57294	2.80E-04	3853.57294	3.50E-04
3852.60859	6.00E-04	3852.60859	2.40E-04	3852.60859	1.90E-04	3852.60859	4.80E-04
3851.64423	8.30E-04	3851.64423	2.90E-04	3851.64423	9.00E-05	3851.64423	6.00E-04
3850.67987	9.20E-04	3850.67987	3.60E-04	3850.67987	3.00E-05	3850.67987	6.60E-04
3849.71551	7.20E-04	3849.71551	3.70E-04	3849.71551	3.00E-05	3849.71551	5.90E-04
3848.75116	3.00E-04	3848.75116	3.30E-04	3848.75116	5.00E-05	3848.75116	4.50E-04
3847.7868	1.50E-04	3847.7868	3.00E-04	3847.7868	8.00E-05	3847.7868	3.60E-04
3846.82244	2.50E-04	3846.82244	2.80E-04	3846.82244	1.00E-04	3846.82244	2.90E-04
3845.85808	3.00E-04	3845.85808	2.60E-04	3845.85808	1.20E-04	3845.85808	2.70E-04
3844.89373	2.70E-04	3844.89373	2.50E-04	3844.89373	1.30E-04	3844.89373	2.90E-04
3843.92937	2.40E-04	3843.92937	2.40E-04	3843.92937	1.50E-04	3843.92937	3.00E-04
3842.96501	4.30E-04	3842.96501	2.40E-04	3842.96501	1.70E-04	3842.96501	3.00E-04
3842.00065	7.80E-04	3842.00065	2.60E-04	3842.00065	1.80E-04	3842.00065	3.10E-04
3841.0363	9.00E-04	3841.0363	2.70E-04	3841.0363	2.00E-04	3841.0363	3.10E-04
3840.07194	8.10E-04	3840.07194	2.60E-04	3840.07194	2.10E-04	3840.07194	3.10E-04
3839.10758	7.80E-04	3839.10758	2.60E-04	3839.10758	2.00E-04	3839.10758	3.40E-04
3838.14322	5.40E-04	3838.14322	2.60E-04	3838.14322	1.80E-04	3838.14322	3.80E-04
3837.17887	4.60E-04	3837.17887	2.70E-04	3837.17887	1.60E-04	3837.17887	4.20E-04
3836.21451	7.60E-04	3836.21451	2.80E-04	3836.21451	1.30E-04	3836.21451	4.40E-04
3835.25015	6.80E-04	3835.25015	3.00E-04	3835.25015	1.20E-04	3835.25015	4.60E-04
3834.28579	4.00E-04	3834.28579	3.10E-04	3834.28579	1.30E-04	3834.28579	4.60E-04
3833.32144	5.40E-04	3833.32144	2.90E-04	3833.32144	1.30E-04	3833.32144	4.30E-04
3832.35708	7.50E-04	3832.35708	2.70E-04	3832.35708	1.20E-04	3832.35708	4.10E-04
3831.39272	7.10E-04	3831.39272	2.80E-04	3831.39272	1.10E-04	3831.39272	4.20E-04
3830.42836	7.10E-04	3830.42836	2.80E-04	3830.42836	1.30E-04	3830.42836	4.00E-04
3829.46401	7.60E-04	3829.46401	2.90E-04	3829.46401	1.50E-04	3829.46401	3.50E-04
3828.49965	7.00E-04	3828.49965	3.10E-04	3828.49965	1.50E-04	3828.49965	3.20E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3827.53529	6.30E-04	3827.53529	3.30E-04	3827.53529	1.60E-04	3827.53529	3.10E-04
3826.57093	6.20E-04	3826.57093	3.40E-04	3826.57093	1.70E-04	3826.57093	3.00E-04
3825.60657	5.90E-04	3825.60657	3.50E-04	3825.60657	1.80E-04	3825.60657	3.10E-04
3824.64222	4.50E-04	3824.64222	3.40E-04	3824.64222	2.30E-04	3824.64222	3.10E-04
3823.67786	3.80E-04	3823.67786	3.00E-04	3823.67786	2.80E-04	3823.67786	2.80E-04
3822.7135	5.50E-04	3822.7135	2.50E-04	3822.7135	3.00E-04	3822.7135	2.70E-04
3821.74914	6.80E-04	3821.74914	2.30E-04	3821.74914	2.60E-04	3821.74914	3.10E-04
3820.78479	5.50E-04	3820.78479	2.50E-04	3820.78479	2.10E-04	3820.78479	3.80E-04
3819.82043	5.70E-04	3819.82043	2.90E-04	3819.82043	1.80E-04	3819.82043	4.50E-04
3818.85607	7.20E-04	3818.85607	3.10E-04	3818.85607	1.70E-04	3818.85607	4.50E-04
3817.89171	8.40E-04	3817.89171	3.20E-04	3817.89171	1.60E-04	3817.89171	4.20E-04
3816.92736	7.80E-04	3816.92736	3.10E-04	3816.92736	1.70E-04	3816.92736	3.80E-04
3815.963	5.10E-04	3815.963	3.00E-04	3815.963	1.60E-04	3815.963	3.50E-04
3814.99864	4.90E-04	3814.99864	2.90E-04	3814.99864	1.30E-04	3814.99864	3.50E-04
3814.03428	6.20E-04	3814.03428	3.10E-04	3814.03428	8.00E-05	3814.03428	3.80E-04
3813.06993	6.60E-04	3813.06993	3.50E-04	3813.06993	6.00E-05	3813.06993	4.00E-04
3812.10557	7.40E-04	3812.10557	3.80E-04	3812.10557	7.00E-05	3812.10557	3.80E-04
3811.14121	7.30E-04	3811.14121	3.60E-04	3811.14121	1.10E-04	3811.14121	3.10E-04
3810.17685	6.40E-04	3810.17685	3.10E-04	3810.17685	1.50E-04	3810.17685	2.30E-04
3809.2125	7.10E-04	3809.2125	2.70E-04	3809.2125	1.80E-04	3809.2125	2.10E-04
3808.24814	8.70E-04	3808.24814	2.50E-04	3808.24814	1.90E-04	3808.24814	2.50E-04
3807.28378	7.70E-04	3807.28378	2.60E-04	3807.28378	1.80E-04	3807.28378	3.20E-04
3806.31942	6.30E-04	3806.31942	2.90E-04	3806.31942	1.70E-04	3806.31942	3.80E-04
3805.35507	7.90E-04	3805.35507	3.20E-04	3805.35507	1.70E-04	3805.35507	4.10E-04
3804.39071	9.30E-04	3804.39071	3.20E-04	3804.39071	1.70E-04	3804.39071	3.90E-04
3803.42635	9.50E-04	3803.42635	3.00E-04	3803.42635	1.70E-04	3803.42635	3.70E-04
3802.46199	9.50E-04	3802.46199	2.70E-04	3802.46199	1.70E-04	3802.46199	3.70E-04
3801.49763	7.50E-04	3801.49763	2.50E-04	3801.49763	1.60E-04	3801.49763	4.00E-04
3800.53328	6.20E-04	3800.53328	2.60E-04	3800.53328	1.40E-04	3800.53328	4.50E-04
3799.56892	7.00E-04	3799.56892	2.90E-04	3799.56892	1.20E-04	3799.56892	4.70E-04
3798.60456	7.10E-04	3798.60456	3.20E-04	3798.60456	1.20E-04	3798.60456	4.50E-04
3797.6402	6.50E-04	3797.6402	3.40E-04	3797.6402	1.20E-04	3797.6402	3.90E-04
3796.67585	6.40E-04	3796.67585	3.10E-04	3796.67585	1.30E-04	3796.67585	3.20E-04
3795.71149	6.60E-04	3795.71149	2.80E-04	3795.71149	1.10E-04	3795.71149	2.90E-04
3794.74713	7.10E-04	3794.74713	2.70E-04	3794.74713	8.00E-05	3794.74713	3.10E-04
3793.78277	7.20E-04	3793.78277	2.70E-04	3793.78277	7.00E-05	3793.78277	3.40E-04
3792.81842	7.10E-04	3792.81842	2.80E-04	3792.81842	8.00E-05	3792.81842	3.50E-04
3791.85406	5.70E-04	3791.85406	3.00E-04	3791.85406	9.00E-05	3791.85406	3.30E-04
3790.8897	3.20E-04	3790.8897	3.10E-04	3790.8897	1.00E-04	3790.8897	3.10E-04
3789.92534	2.10E-04	3789.92534	3.40E-04	3789.92534	1.00E-04	3789.92534	2.90E-04
3788.96099	2.60E-04	3788.96099	3.50E-04	3788.96099	1.00E-04	3788.96099	2.80E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3787.99663	3.50E-04	3787.99663	3.50E-04	3787.99663	1.20E-04	3787.99663	2.70E-04
3787.03227	4.60E-04	3787.03227	3.40E-04	3787.03227	1.30E-04	3787.03227	2.60E-04
3786.06791	4.80E-04	3786.06791	3.30E-04	3786.06791	1.40E-04	3786.06791	2.60E-04
3785.10356	4.20E-04	3785.10356	3.10E-04	3785.10356	1.30E-04	3785.10356	2.70E-04
3784.1392	4.60E-04	3784.1392	3.10E-04	3784.1392	1.30E-04	3784.1392	2.90E-04
3783.17484	5.40E-04	3783.17484	3.00E-04	3783.17484	1.30E-04	3783.17484	3.00E-04
3782.21048	5.30E-04	3782.21048	2.90E-04	3782.21048	1.40E-04	3782.21048	3.00E-04
3781.24613	4.80E-04	3781.24613	2.70E-04	3781.24613	1.40E-04	3781.24613	3.00E-04
3780.28177	4.10E-04	3780.28177	2.70E-04	3780.28177	1.30E-04	3780.28177	3.10E-04
3779.31741	3.00E-04	3779.31741	2.80E-04	3779.31741	1.30E-04	3779.31741	3.20E-04
3778.35305	3.20E-04	3778.35305	2.90E-04	3778.35305	1.20E-04	3778.35305	3.30E-04
3777.38869	3.80E-04	3777.38869	3.10E-04	3777.38869	1.00E-04	3777.38869	3.30E-04
3776.42434	4.30E-04	3776.42434	3.30E-04	3776.42434	8.00E-05	3776.42434	3.10E-04
3775.45998	5.00E-04	3775.45998	3.40E-04	3775.45998	8.00E-05	3775.45998	2.90E-04
3774.49562	4.80E-04	3774.49562	3.40E-04	3774.49562	9.00E-05	3774.49562	2.60E-04
3773.53126	4.10E-04	3773.53126	3.30E-04	3773.53126	1.10E-04	3773.53126	2.40E-04
3772.56691	4.50E-04	3772.56691	3.20E-04	3772.56691	1.40E-04	3772.56691	2.20E-04
3771.60255	5.40E-04	3771.60255	3.20E-04	3771.60255	1.50E-04	3771.60255	2.30E-04
3770.63819	4.90E-04	3770.63819	3.30E-04	3770.63819	1.50E-04	3770.63819	2.80E-04
3769.67383	3.80E-04	3769.67383	3.50E-04	3769.67383	1.50E-04	3769.67383	3.30E-04
3768.70948	5.20E-04	3768.70948	3.60E-04	3768.70948	1.50E-04	3768.70948	3.50E-04
3767.74512	7.50E-04	3767.74512	3.70E-04	3767.74512	1.40E-04	3767.74512	3.60E-04
3766.78076	8.10E-04	3766.78076	3.80E-04	3766.78076	1.30E-04	3766.78076	3.70E-04
3765.8164	6.60E-04	3765.8164	3.80E-04	3765.8164	1.30E-04	3765.8164	3.50E-04
3764.85205	6.70E-04	3764.85205	3.70E-04	3764.85205	1.30E-04	3764.85205	3.20E-04
3763.88769	8.20E-04	3763.88769	3.70E-04	3763.88769	1.30E-04	3763.88769	3.10E-04
3762.92333	7.60E-04	3762.92333	3.70E-04	3762.92333	1.50E-04	3762.92333	3.20E-04
3761.95897	6.80E-04	3761.95897	3.60E-04	3761.95897	1.80E-04	3761.95897	3.10E-04
3760.99462	7.30E-04	3760.99462	3.40E-04	3760.99462	1.90E-04	3760.99462	3.00E-04
3760.03026	7.20E-04	3760.03026	3.20E-04	3760.03026	1.90E-04	3760.03026	3.00E-04
3759.0659	7.60E-04	3759.0659	3.00E-04	3759.0659	1.80E-04	3759.0659	3.20E-04
3758.10154	8.50E-04	3758.10154	2.90E-04	3758.10154	1.50E-04	3758.10154	3.40E-04
3757.13719	7.60E-04	3757.13719	3.00E-04	3757.13719	1.30E-04	3757.13719	3.90E-04
3756.17283	6.60E-04	3756.17283	3.30E-04	3756.17283	1.50E-04	3756.17283	4.10E-04
3755.20847	6.80E-04	3755.20847	3.20E-04	3755.20847	2.00E-04	3755.20847	3.50E-04
3754.24411	6.70E-04	3754.24411	3.00E-04	3754.24411	2.30E-04	3754.24411	3.20E-04
3753.27976	6.20E-04	3753.27976	3.00E-04	3753.27976	2.60E-04	3753.27976	3.40E-04
3752.3154	5.70E-04	3752.3154	2.80E-04	3752.3154	2.90E-04	3752.3154	3.60E-04
3751.35104	8.20E-04	3751.35104	2.50E-04	3751.35104	2.70E-04	3751.35104	3.80E-04
3750.38668	9.70E-04	3750.38668	2.50E-04	3750.38668	2.00E-04	3750.38668	4.60E-04
3749.42232	4.60E-04	3749.42232	3.00E-04	3749.42232	1.30E-04	3749.42232	5.70E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3748.45797	2.90E-04	3748.45797	3.60E-04	3748.45797	1.50E-04	3748.45797	6.00E-04
3747.49361	7.70E-04	3747.49361	3.30E-04	3747.49361	2.40E-04	3747.49361	4.70E-04
3746.52925	0.00113	3746.52925	2.80E-04	3746.52925	2.90E-04	3746.52925	3.80E-04
3745.56489	9.10E-04	3745.56489	2.80E-04	3745.56489	3.00E-04	3745.56489	3.90E-04
3744.60054	0	3744.60054	2.80E-04	3744.60054	2.90E-04	3744.60054	4.20E-04
3743.63618	5.00E-05	3743.63618	2.90E-04	3743.63618	2.30E-04	3743.63618	4.50E-04
3742.67182	7.60E-04	3742.67182	3.20E-04	3742.67182	1.40E-04	3742.67182	5.30E-04
3741.70746	9.80E-04	3741.70746	3.80E-04	3741.70746	7.00E-05	3741.70746	6.10E-04
3740.74311	8.80E-04	3740.74311	4.10E-04	3740.74311	1.00E-04	3740.74311	5.90E-04
3739.77875	8.50E-04	3739.77875	3.70E-04	3739.77875	1.80E-04	3739.77875	4.50E-04
3738.81439	9.00E-04	3738.81439	3.10E-04	3738.81439	2.20E-04	3738.81439	3.40E-04
3737.85003	9.80E-04	3737.85003	2.80E-04	3737.85003	2.20E-04	3737.85003	3.30E-04
3736.88568	9.90E-04	3736.88568	2.70E-04	3736.88568	2.20E-04	3736.88568	3.70E-04
3735.92132	8.10E-04	3735.92132	2.90E-04	3735.92132	2.10E-04	3735.92132	4.30E-04
3734.95696	6.00E-04	3734.95696	3.10E-04	3734.95696	2.10E-04	3734.95696	4.80E-04
3733.9926	8.40E-04	3733.9926	3.30E-04	3733.9926	1.90E-04	3733.9926	5.20E-04
3733.02825	0.00106	3733.02825	3.60E-04	3733.02825	1.60E-04	3733.02825	5.60E-04
3732.06389	7.50E-04	3732.06389	3.80E-04	3732.06389	1.40E-04	3732.06389	5.70E-04
3731.09953	6.10E-04	3731.09953	3.90E-04	3731.09953	1.30E-04	3731.09953	5.50E-04
3730.13517	7.90E-04	3730.13517	3.70E-04	3730.13517	1.10E-04	3730.13517	5.20E-04
3729.17082	8.80E-04	3729.17082	3.50E-04	3729.17082	1.10E-04	3729.17082	4.90E-04
3728.20646	8.90E-04	3728.20646	3.40E-04	3728.20646	1.20E-04	3728.20646	4.70E-04
3727.2421	8.20E-04	3727.2421	3.30E-04	3727.2421	1.30E-04	3727.2421	4.30E-04
3726.27774	6.70E-04	3726.27774	3.30E-04	3726.27774	1.30E-04	3726.27774	4.20E-04
3725.31338	7.20E-04	3725.31338	3.30E-04	3725.31338	1.30E-04	3725.31338	4.30E-04
3724.34903	9.20E-04	3724.34903	3.20E-04	3724.34903	1.30E-04	3724.34903	4.30E-04
3723.38467	9.50E-04	3723.38467	3.20E-04	3723.38467	1.20E-04	3723.38467	4.40E-04
3722.42031	7.40E-04	3722.42031	3.20E-04	3722.42031	1.10E-04	3722.42031	4.40E-04
3721.45595	6.40E-04	3721.45595	3.10E-04	3721.45595	1.10E-04	3721.45595	4.30E-04
3720.4916	7.30E-04	3720.4916	3.10E-04	3720.4916	9.00E-05	3720.4916	4.20E-04
3719.52724	6.80E-04	3719.52724	3.20E-04	3719.52724	8.00E-05	3719.52724	4.20E-04
3718.56288	4.80E-04	3718.56288	3.40E-04	3718.56288	7.00E-05	3718.56288	4.20E-04
3717.59852	3.40E-04	3717.59852	3.50E-04	3717.59852	7.00E-05	3717.59852	3.90E-04
3716.63417	2.80E-04	3716.63417	3.60E-04	3716.63417	9.00E-05	3716.63417	3.70E-04
3715.66981	2.80E-04	3715.66981	3.60E-04	3715.66981	1.30E-04	3715.66981	3.50E-04
3714.70545	4.10E-04	3714.70545	3.20E-04	3714.70545	1.80E-04	3714.70545	3.10E-04
3713.74109	6.10E-04	3713.74109	2.90E-04	3713.74109	2.10E-04	3713.74109	3.10E-04
3712.77674	6.00E-04	3712.77674	2.80E-04	3712.77674	2.20E-04	3712.77674	3.50E-04
3711.81238	4.40E-04	3711.81238	2.80E-04	3711.81238	2.20E-04	3711.81238	4.10E-04
3710.84802	5.80E-04	3710.84802	2.90E-04	3710.84802	1.80E-04	3710.84802	4.80E-04
3709.88366	6.10E-04	3709.88366	3.20E-04	3709.88366	1.30E-04	3709.88366	5.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3708.91931	4.40E-04	3708.91931	3.60E-04	3708.91931	1.00E-04	3708.91931	5.80E-04
3707.95495	5.60E-04	3707.95495	3.70E-04	3707.95495	1.10E-04	3707.95495	5.60E-04
3706.99059	8.10E-04	3706.99059	3.60E-04	3706.99059	1.20E-04	3706.99059	5.00E-04
3706.02623	8.90E-04	3706.02623	3.60E-04	3706.02623	1.30E-04	3706.02623	4.50E-04
3705.06188	8.60E-04	3705.06188	3.50E-04	3705.06188	1.50E-04	3705.06188	4.00E-04
3704.09752	8.80E-04	3704.09752	3.20E-04	3704.09752	1.70E-04	3704.09752	3.50E-04
3703.13316	9.50E-04	3703.13316	3.10E-04	3703.13316	1.60E-04	3703.13316	3.40E-04
3702.1688	8.40E-04	3702.1688	3.20E-04	3702.1688	1.30E-04	3702.1688	3.70E-04
3701.20445	6.40E-04	3701.20445	3.30E-04	3701.20445	1.00E-04	3701.20445	4.10E-04
3700.24009	6.60E-04	3700.24009	3.40E-04	3700.24009	7.00E-05	3700.24009	4.30E-04
3699.27573	6.70E-04	3699.27573	3.40E-04	3699.27573	6.00E-05	3699.27573	4.50E-04
3698.31137	5.50E-04	3698.31137	3.50E-04	3698.31137	7.00E-05	3698.31137	4.50E-04
3697.34701	5.30E-04	3697.34701	3.50E-04	3697.34701	9.00E-05	3697.34701	4.20E-04
3696.38266	6.60E-04	3696.38266	3.50E-04	3696.38266	1.10E-04	3696.38266	3.90E-04
3695.4183	6.90E-04	3695.4183	3.50E-04	3695.4183	1.10E-04	3695.4183	3.90E-04
3694.45394	6.10E-04	3694.45394	3.50E-04	3694.45394	1.20E-04	3694.45394	3.80E-04
3693.48958	5.60E-04	3693.48958	3.50E-04	3693.48958	1.40E-04	3693.48958	3.80E-04
3692.52523	6.20E-04	3692.52523	3.50E-04	3692.52523	1.70E-04	3692.52523	4.00E-04
3691.56087	7.10E-04	3691.56087	3.50E-04	3691.56087	2.20E-04	3691.56087	4.10E-04
3690.59651	8.10E-04	3690.59651	3.30E-04	3690.59651	2.50E-04	3690.59651	4.20E-04
3689.63215	8.40E-04	3689.63215	3.40E-04	3689.63215	2.30E-04	3689.63215	4.70E-04
3688.6678	5.00E-04	3688.6678	3.70E-04	3688.6678	1.90E-04	3688.6678	5.30E-04
3687.70344	2.50E-04	3687.70344	4.00E-04	3687.70344	1.40E-04	3687.70344	5.60E-04
3686.73908	4.60E-04	3686.73908	4.10E-04	3686.73908	1.00E-04	3686.73908	5.40E-04
3685.77472	6.20E-04	3685.77472	4.20E-04	3685.77472	7.00E-05	3685.77472	4.90E-04
3684.81037	7.30E-04	3684.81037	4.40E-04	3684.81037	8.00E-05	3684.81037	4.50E-04
3683.84601	9.40E-04	3683.84601	4.30E-04	3683.84601	1.20E-04	3683.84601	3.80E-04
3682.88165	0.00104	3682.88165	4.10E-04	3682.88165	1.50E-04	3682.88165	3.20E-04
3681.91729	9.90E-04	3681.91729	4.10E-04	3681.91729	1.60E-04	3681.91729	3.20E-04
3680.95294	9.90E-04	3680.95294	4.40E-04	3680.95294	1.70E-04	3680.95294	3.50E-04
3679.98858	0.00102	3679.98858	4.60E-04	3679.98858	2.00E-04	3679.98858	3.90E-04
3679.02422	9.70E-04	3679.02422	4.60E-04	3679.02422	2.70E-04	3679.02422	3.80E-04
3678.05986	9.60E-04	3678.05986	4.30E-04	3678.05986	3.40E-04	3678.05986	3.40E-04
3677.09551	8.90E-04	3677.09551	4.00E-04	3677.09551	3.50E-04	3677.09551	3.50E-04
3676.13115	6.20E-04	3676.13115	3.90E-04	3676.13115	3.30E-04	3676.13115	4.20E-04
3675.16679	5.00E-04	3675.16679	4.20E-04	3675.16679	3.00E-04	3675.16679	5.10E-04
3674.20243	7.20E-04	3674.20243	4.40E-04	3674.20243	2.80E-04	3674.20243	5.50E-04
3673.23807	9.50E-04	3673.23807	4.50E-04	3673.23807	2.50E-04	3673.23807	5.60E-04
3672.27372	0.00106	3672.27372	4.60E-04	3672.27372	2.40E-04	3672.27372	5.50E-04
3671.30936	9.00E-04	3671.30936	4.50E-04	3671.30936	2.60E-04	3671.30936	5.00E-04
3670.345	8.40E-04	3670.345	4.40E-04	3670.345	2.50E-04	3670.345	4.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3669.38064	0.00114	3669.38064	4.50E-04	3669.38064	2.00E-04	3669.38064	4.70E-04
3668.41629	0.00114	3668.41629	5.00E-04	3668.41629	1.40E-04	3668.41629	5.20E-04
3667.45193	8.80E-04	3667.45193	5.60E-04	3667.45193	1.00E-04	3667.45193	5.70E-04
3666.48757	8.10E-04	3666.48757	6.00E-04	3666.48757	1.00E-04	3666.48757	5.50E-04
3665.52321	9.40E-04	3665.52321	6.10E-04	3665.52321	1.10E-04	3665.52321	4.90E-04
3664.55886	0.00107	3664.55886	6.10E-04	3664.55886	1.30E-04	3664.55886	4.30E-04
3663.5945	0.00102	3663.5945	6.00E-04	3663.5945	1.40E-04	3663.5945	4.00E-04
3662.63014	8.80E-04	3662.63014	6.00E-04	3662.63014	1.50E-04	3662.63014	3.80E-04
3661.66578	8.60E-04	3661.66578	6.00E-04	3661.66578	1.60E-04	3661.66578	3.90E-04
3660.70143	9.60E-04	3660.70143	6.10E-04	3660.70143	1.90E-04	3660.70143	4.10E-04
3659.73707	0.00108	3659.73707	6.20E-04	3659.73707	2.40E-04	3659.73707	4.00E-04
3658.77271	0.00115	3658.77271	6.10E-04	3658.77271	2.70E-04	3658.77271	3.70E-04
3657.80835	0.00124	3657.80835	6.00E-04	3657.80835	2.80E-04	3657.80835	3.70E-04
3656.844	0.00113	3656.844	6.00E-04	3656.844	2.60E-04	3656.844	4.00E-04
3655.87964	9.20E-04	3655.87964	6.10E-04	3655.87964	2.30E-04	3655.87964	4.40E-04
3654.91528	0.00101	3654.91528	6.20E-04	3654.91528	2.20E-04	3654.91528	4.70E-04
3653.95092	0.00119	3653.95092	6.40E-04	3653.95092	2.30E-04	3653.95092	4.80E-04
3652.98657	0.00129	3652.98657	6.40E-04	3652.98657	2.70E-04	3652.98657	4.80E-04
3652.02221	0.00145	3652.02221	6.20E-04	3652.02221	3.40E-04	3652.02221	4.70E-04
3651.05785	0.00174	3651.05785	5.90E-04	3651.05785	4.00E-04	3651.05785	4.80E-04
3650.09349	0.00198	3650.09349	5.80E-04	3650.09349	4.20E-04	3650.09349	5.40E-04
3649.12913	0.00201	3649.12913	6.10E-04	3649.12913	3.90E-04	3649.12913	6.30E-04
3648.16478	0.00194	3648.16478	6.50E-04	3648.16478	3.30E-04	3648.16478	7.10E-04
3647.20042	0.00168	3647.20042	7.10E-04	3647.20042	2.70E-04	3647.20042	7.50E-04
3646.23606	0.00143	3646.23606	7.60E-04	3646.23606	2.20E-04	3646.23606	7.20E-04
3645.2717	0.00144	3645.2717	7.80E-04	3645.2717	1.90E-04	3645.2717	6.50E-04
3644.30735	0.0015	3644.30735	7.90E-04	3644.30735	1.80E-04	3644.30735	5.70E-04
3643.34299	0.00148	3643.34299	8.00E-04	3643.34299	2.10E-04	3643.34299	5.10E-04
3642.37863	0.00144	3642.37863	8.00E-04	3642.37863	2.60E-04	3642.37863	4.60E-04
3641.41427	0.00142	3641.41427	7.90E-04	3641.41427	2.90E-04	3641.41427	4.40E-04
3640.44992	0.00139	3640.44992	8.00E-04	3640.44992	3.00E-04	3640.44992	4.40E-04
3639.48556	0.00138	3639.48556	8.10E-04	3639.48556	2.90E-04	3639.48556	4.60E-04
3638.5212	0.0014	3638.5212	8.30E-04	3638.5212	2.70E-04	3638.5212	4.70E-04
3637.55684	0.00141	3637.55684	8.60E-04	3637.55684	2.70E-04	3637.55684	4.70E-04
3636.59249	0.00146	3636.59249	8.70E-04	3636.59249	2.90E-04	3636.59249	4.60E-04
3635.62813	0.00157	3635.62813	8.90E-04	3635.62813	3.00E-04	3635.62813	4.70E-04
3634.66377	0.00162	3634.66377	9.10E-04	3634.66377	3.20E-04	3634.66377	4.90E-04
3633.69941	0.00151	3633.69941	9.40E-04	3633.69941	3.50E-04	3633.69941	5.10E-04
3632.73506	0.00147	3632.73506	9.60E-04	3632.73506	4.10E-04	3632.73506	5.10E-04
3631.7707	0.00163	3631.7707	9.30E-04	3631.7707	4.60E-04	3631.7707	4.90E-04
3630.80634	0.00175	3630.80634	9.00E-04	3630.80634	4.70E-04	3630.80634	5.00E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3629.84198	0.00154	3629.84198	8.80E-04	3629.84198	4.50E-04	3629.84198	5.60E-04
3628.87763	0.00122	3628.87763	8.90E-04	3628.87763	4.10E-04	3628.87763	6.40E-04
3627.91327	0.00136	3627.91327	9.10E-04	3627.91327	3.50E-04	3627.91327	7.10E-04
3626.94891	0.00154	3626.94891	9.50E-04	3626.94891	2.90E-04	3626.94891	7.80E-04
3625.98455	0.00146	3625.98455	1.00E-03	3625.98455	2.70E-04	3625.98455	8.10E-04
3625.0202	0.00144	3625.0202	0.00104	3625.0202	3.10E-04	3625.0202	7.70E-04
3624.05584	0.00165	3624.05584	0.00103	3624.05584	3.60E-04	3624.05584	6.80E-04
3623.09148	0.00187	3623.09148	0.00102	3623.09148	3.90E-04	3623.09148	6.10E-04
3622.12712	0.00199	3622.12712	0.00102	3622.12712	4.20E-04	3622.12712	5.70E-04
3621.16276	0.002	3621.16276	0.00103	3621.16276	4.50E-04	3621.16276	5.50E-04
3620.19841	0.00185	3620.19841	0.00105	3620.19841	4.70E-04	3620.19841	5.50E-04
3619.23405	0.00165	3619.23405	0.00108	3619.23405	4.80E-04	3619.23405	5.70E-04
3618.26969	0.00155	3618.26969	0.00112	3618.26969	4.70E-04	3618.26969	6.00E-04
3617.30533	0.00153	3617.30533	0.00116	3617.30533	4.60E-04	3617.30533	6.30E-04
3616.34098	0.0016	3616.34098	0.00119	3616.34098	4.60E-04	3616.34098	6.40E-04
3615.37662	0.00174	3615.37662	0.00119	3615.37662	4.70E-04	3615.37662	6.20E-04
3614.41226	0.00198	3614.41226	0.00119	3614.41226	4.70E-04	3614.41226	6.00E-04
3613.4479	0.00214	3613.4479	0.00121	3613.4479	4.50E-04	3613.4479	6.10E-04
3612.48355	0.00193	3612.48355	0.00123	3612.48355	4.50E-04	3612.48355	6.20E-04
3611.51919	0.00186	3611.51919	0.00124	3611.51919	4.50E-04	3611.51919	6.20E-04
3610.55483	0.00211	3610.55483	0.00126	3610.55483	4.60E-04	3610.55483	6.40E-04
3609.59047	0.00208	3609.59047	0.00127	3609.59047	4.90E-04	3609.59047	6.50E-04
3608.62612	0.00188	3608.62612	0.00129	3608.62612	5.10E-04	3608.62612	6.60E-04
3607.66176	0.00196	3607.66176	0.0013	3607.66176	5.20E-04	3607.66176	6.60E-04
3606.6974	0.00207	3606.6974	0.00132	3606.6974	5.00E-04	3606.6974	6.70E-04
3605.73304	0.00203	3605.73304	0.00136	3605.73304	4.80E-04	3605.73304	6.70E-04
3604.76869	0.00198	3604.76869	0.00138	3604.76869	4.80E-04	3604.76869	6.40E-04
3603.80433	0.00201	3603.80433	0.00138	3603.80433	4.90E-04	3603.80433	6.00E-04
3602.83997	0.00218	3602.83997	0.0014	3602.83997	5.10E-04	3602.83997	5.90E-04
3601.87561	0.0024	3601.87561	0.00141	3601.87561	5.20E-04	3601.87561	5.90E-04
3600.91126	0.00243	3600.91126	0.00143	3600.91126	5.20E-04	3600.91126	6.00E-04
3599.9469	0.00231	3599.9469	0.00145	3599.9469	5.10E-04	3599.9469	6.30E-04
3598.98254	0.00224	3598.98254	0.00147	3598.98254	5.00E-04	3598.98254	6.40E-04
3598.01818	0.00233	3598.01818	0.00149	3598.01818	4.90E-04	3598.01818	6.50E-04
3597.05382	0.00256	3597.05382	0.0015	3597.05382	5.10E-04	3597.05382	6.60E-04
3596.08947	0.00261	3596.08947	0.00151	3596.08947	5.40E-04	3596.08947	6.70E-04
3595.12511	0.00243	3595.12511	0.00152	3595.12511	5.60E-04	3595.12511	6.80E-04
3594.16075	0.0023	3594.16075	0.00154	3594.16075	5.60E-04	3594.16075	6.90E-04
3593.19639	0.00226	3593.19639	0.00156	3593.19639	5.50E-04	3593.19639	7.00E-04
3592.23204	0.00233	3592.23204	0.0016	3592.23204	5.50E-04	3592.23204	6.90E-04
3591.26768	0.00247	3591.26768	0.00162	3591.26768	5.80E-04	3591.26768	6.60E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3590.30332	0.00252	3590.30332	0.00164	3590.30332	6.20E-04	3590.30332	6.30E-04
3589.33896	0.00245	3589.33896	0.00164	3589.33896	6.50E-04	3589.33896	6.20E-04
3588.37461	0.00244	3588.37461	0.00165	3588.37461	6.80E-04	3588.37461	6.40E-04
3587.41025	0.00246	3587.41025	0.00167	3587.41025	6.70E-04	3587.41025	6.80E-04
3586.44589	0.00218	3586.44589	0.0017	3586.44589	6.50E-04	3586.44589	7.20E-04
3585.48153	0.00193	3585.48153	0.00174	3585.48153	6.20E-04	3585.48153	7.40E-04
3584.51718	0.00203	3584.51718	0.00178	3584.51718	5.90E-04	3584.51718	7.40E-04
3583.55282	0.00216	3583.55282	0.00181	3583.55282	5.80E-04	3583.55282	7.10E-04
3582.58846	0.00204	3582.58846	0.00183	3582.58846	5.70E-04	3582.58846	6.70E-04
3581.6241	0.00188	3581.6241	0.00186	3581.6241	5.80E-04	3581.6241	6.40E-04
3580.65975	0.002	3580.65975	0.00188	3580.65975	5.90E-04	3580.65975	6.20E-04
3579.69539	0.00231	3579.69539	0.0019	3579.69539	6.10E-04	3579.69539	6.30E-04
3578.73103	0.00257	3578.73103	0.00192	3578.73103	6.30E-04	3578.73103	6.30E-04
3577.76667	0.00263	3577.76667	0.00193	3577.76667	6.60E-04	3577.76667	6.40E-04
3576.80232	0.00252	3576.80232	0.00195	3576.80232	6.80E-04	3576.80232	6.40E-04
3575.83796	0.00241	3575.83796	0.00196	3575.83796	6.90E-04	3575.83796	6.50E-04
3574.8736	0.00238	3574.8736	0.00198	3574.8736	6.90E-04	3574.8736	6.40E-04
3573.90924	0.00234	3573.90924	0.002	3573.90924	6.80E-04	3573.90924	6.30E-04
3572.94489	0.00228	3572.94489	0.00202	3572.94489	6.70E-04	3572.94489	6.20E-04
3571.98053	0.00225	3571.98053	0.00204	3571.98053	6.80E-04	3571.98053	6.20E-04
3571.01617	0.00231	3571.01617	0.00204	3571.01617	7.20E-04	3571.01617	6.20E-04
3570.05181	0.00248	3570.05181	0.00204	3570.05181	7.70E-04	3570.05181	6.30E-04
3569.08745	0.00272	3569.08745	0.00205	3569.08745	8.20E-04	3569.08745	6.70E-04
3568.1231	0.00292	3568.1231	0.00207	3568.1231	8.50E-04	3568.1231	7.20E-04
3567.15874	0.00303	3567.15874	0.0021	3567.15874	8.50E-04	3567.15874	7.70E-04
3566.19438	0.00299	3566.19438	0.00213	3566.19438	8.30E-04	3566.19438	8.10E-04
3565.23002	0.00292	3565.23002	0.00217	3565.23002	8.00E-04	3565.23002	8.30E-04
3564.26567	0.00288	3564.26567	0.00221	3564.26567	7.70E-04	3564.26567	8.20E-04
3563.30131	0.00274	3563.30131	0.00225	3563.30131	7.60E-04	3563.30131	7.80E-04
3562.33695	0.00256	3562.33695	0.00229	3562.33695	7.60E-04	3562.33695	7.40E-04
3561.37259	0.00255	3561.37259	0.00231	3561.37259	7.60E-04	3561.37259	7.20E-04
3560.40824	0.00265	3560.40824	0.00232	3560.40824	7.60E-04	3560.40824	7.20E-04
3559.44388	0.00269	3559.44388	0.00232	3559.44388	7.70E-04	3559.44388	7.20E-04
3558.47952	0.00259	3558.47952	0.00232	3558.47952	7.80E-04	3558.47952	7.30E-04
3557.51516	0.00242	3557.51516	0.00233	3557.51516	8.00E-04	3557.51516	7.30E-04
3556.55081	0.00235	3556.55081	0.00236	3556.55081	8.30E-04	3556.55081	7.40E-04
3555.58645	0.00243	3555.58645	0.0024	3555.58645	8.50E-04	3555.58645	7.30E-04
3554.62209	0.0026	3554.62209	0.00243	3554.62209	8.50E-04	3554.62209	7.30E-04
3553.65773	0.00283	3553.65773	0.00247	3553.65773	8.50E-04	3553.65773	7.40E-04
3552.69338	0.00301	3552.69338	0.00251	3552.69338	8.50E-04	3552.69338	7.40E-04
3551.72902	0.00303	3551.72902	0.00254	3551.72902	8.50E-04	3551.72902	7.40E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3550.76466	0.00303	3550.76466	0.00256	3550.76466	8.50E-04	3550.76466	7.50E-04
3549.8003	0.00308	3549.8003	0.00257	3549.8003	8.70E-04	3549.8003	7.60E-04
3548.83595	0.00313	3548.83595	0.00257	3548.83595	9.00E-04	3548.83595	7.90E-04
3547.87159	0.00327	3547.87159	0.00258	3547.87159	9.20E-04	3547.87159	8.10E-04
3546.90723	0.0035	3546.90723	0.00258	3546.90723	9.40E-04	3546.90723	8.20E-04
3545.94287	0.00359	3545.94287	0.0026	3545.94287	9.50E-04	3545.94287	8.30E-04
3544.97851	0.00341	3544.97851	0.00263	3544.97851	9.50E-04	3544.97851	8.30E-04
3544.01416	0.00311	3544.01416	0.00268	3544.01416	9.40E-04	3544.01416	8.20E-04
3543.0498	0.00293	3543.0498	0.00272	3543.0498	9.40E-04	3543.0498	7.90E-04
3542.08544	0.00296	3542.08544	0.00276	3542.08544	9.40E-04	3542.08544	7.70E-04
3541.12108	0.00308	3541.12108	0.00279	3541.12108	9.50E-04	3541.12108	7.60E-04
3540.15673	0.00309	3540.15673	0.00281	3540.15673	9.50E-04	3540.15673	7.60E-04
3539.19237	0.00305	3539.19237	0.00283	3539.19237	9.70E-04	3539.19237	7.50E-04
3538.22801	0.00317	3538.22801	0.00283	3538.22801	9.90E-04	3538.22801	7.50E-04
3537.26365	0.00345	3537.26365	0.00284	3537.26365	1.00E-03	3537.26365	7.70E-04
3536.2993	0.00368	3536.2993	0.00285	3536.2993	0.00101	3536.2993	7.80E-04
3535.33494	0.00366	3535.33494	0.00285	3535.33494	1.00E-03	3535.33494	7.90E-04
3534.37058	0.00349	3534.37058	0.00286	3534.37058	9.90E-04	3534.37058	7.90E-04
3533.40622	0.00344	3533.40622	0.00289	3533.40622	9.90E-04	3533.40622	8.00E-04
3532.44187	0.00352	3532.44187	0.00293	3532.44187	1.00E-03	3532.44187	8.00E-04
3531.47751	0.00354	3531.47751	0.00297	3531.47751	0.00101	3531.47751	8.10E-04
3530.51315	0.00355	3530.51315	0.003	3530.51315	0.00103	3530.51315	8.20E-04
3529.54879	0.00357	3529.54879	0.00303	3529.54879	0.00104	3529.54879	8.40E-04
3528.58444	0.0035	3528.58444	0.00303	3528.58444	0.00106	3528.58444	8.50E-04
3527.62008	0.00339	3527.62008	0.00304	3527.62008	0.00107	3527.62008	8.60E-04
3526.65572	0.0034	3526.65572	0.00304	3526.65572	0.00108	3526.65572	8.60E-04
3525.69136	0.00358	3525.69136	0.00304	3525.69136	0.00109	3525.69136	8.70E-04
3524.72701	0.00377	3524.72701	0.00306	3524.72701	0.0011	3524.72701	8.80E-04
3523.76265	0.00382	3523.76265	0.00309	3523.76265	0.00111	3523.76265	8.90E-04
3522.79829	0.00386	3522.79829	0.00313	3522.79829	0.00111	3522.79829	8.90E-04
3521.83393	0.004	3521.83393	0.00317	3521.83393	0.00112	3521.83393	9.00E-04
3520.86958	0.00404	3520.86958	0.0032	3520.86958	0.00114	3520.86958	9.00E-04
3519.90522	0.00383	3519.90522	0.00322	3519.90522	0.00116	3519.90522	9.10E-04
3518.94086	0.00366	3518.94086	0.00325	3518.94086	0.00118	3518.94086	9.10E-04
3517.9765	0.00373	3517.9765	0.00327	3517.9765	0.0012	3517.9765	9.00E-04
3517.01214	0.00391	3517.01214	0.00329	3517.01214	0.00121	3517.01214	8.90E-04
3516.04779	0.00406	3516.04779	0.00332	3516.04779	0.00121	3516.04779	8.80E-04
3515.08343	0.00414	3515.08343	0.00334	3515.08343	0.0012	3515.08343	8.70E-04
3514.11907	0.00412	3514.11907	0.00336	3514.11907	0.00118	3514.11907	8.70E-04
3513.15471	0.00399	3513.15471	0.00338	3513.15471	0.00118	3513.15471	8.60E-04
3512.19036	0.00393	3512.19036	0.00339	3512.19036	0.00118	3512.19036	8.70E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3511.226	0.00415	3511.226	0.00343	3511.226	0.00118	3511.226	8.80E-04
3510.26164	0.00442	3510.26164	0.00347	3510.26164	0.00119	3510.26164	9.00E-04
3509.29728	0.00439	3509.29728	0.0035	3509.29728	0.0012	3509.29728	9.20E-04
3508.33293	0.00425	3508.33293	0.00352	3508.33293	0.0012	3508.33293	9.50E-04
3507.36857	0.00423	3507.36857	0.00352	3507.36857	0.0012	3507.36857	9.70E-04
3506.40421	0.00424	3506.40421	0.00352	3506.40421	0.0012	3506.40421	9.80E-04
3505.43985	0.00427	3505.43985	0.00352	3505.43985	0.00123	3505.43985	9.90E-04
3504.4755	0.00427	3504.4755	0.00352	3504.4755	0.00126	3504.4755	9.80E-04
3503.51114	0.00415	3503.51114	0.00353	3503.51114	0.00128	3503.51114	9.80E-04
3502.54678	0.00416	3502.54678	0.00355	3502.54678	0.00128	3502.54678	9.80E-04
3501.58242	0.00435	3501.58242	0.00358	3501.58242	0.00129	3501.58242	9.80E-04
3500.61807	0.00446	3500.61807	0.0036	3500.61807	0.00129	3500.61807	9.90E-04
3499.65371	0.00436	3499.65371	0.00362	3499.65371	0.00128	3499.65371	0.00101
3498.68935	0.00416	3498.68935	0.00364	3498.68935	0.00129	3498.68935	0.00102
3497.72499	0.00409	3497.72499	0.00366	3497.72499	0.00129	3497.72499	0.00104
3496.76064	0.00418	3496.76064	0.00368	3496.76064	0.00129	3496.76064	0.00105
3495.79628	0.00429	3495.79628	0.0037	3495.79628	0.00128	3495.79628	0.00106
3494.83192	0.00435	3494.83192	0.00372	3494.83192	0.00127	3494.83192	0.00106
3493.86756	0.00439	3493.86756	0.00374	3493.86756	0.00128	3493.86756	0.00105
3492.9032	0.00434	3492.9032	0.00376	3492.9032	0.00129	3492.9032	0.00105
3491.93885	0.00424	3491.93885	0.00378	3491.93885	0.0013	3491.93885	0.00105
3490.97449	0.00431	3490.97449	0.00379	3490.97449	0.00131	3490.97449	0.00104
3490.01013	0.00451	3490.01013	0.00381	3490.01013	0.00132	3490.01013	0.00103
3489.04577	0.00458	3489.04577	0.00382	3489.04577	0.00133	3489.04577	0.00103
3488.08142	0.00452	3488.08142	0.00383	3488.08142	0.00135	3488.08142	0.00104
3487.11706	0.00445	3487.11706	0.00385	3487.11706	0.00137	3487.11706	0.00104
3486.1527	0.00439	3486.1527	0.00386	3486.1527	0.00138	3486.1527	0.00105
3485.18834	0.00444	3485.18834	0.00387	3485.18834	0.00138	3485.18834	0.00106
3484.22399	0.00462	3484.22399	0.00389	3484.22399	0.00139	3484.22399	0.00108
3483.25963	0.00468	3483.25963	0.00392	3483.25963	0.0014	3483.25963	0.00108
3482.29527	0.00466	3482.29527	0.00395	3482.29527	0.00141	3482.29527	0.00109
3481.33091	0.00478	3481.33091	0.00398	3481.33091	0.00142	3481.33091	0.00109
3480.36656	0.0049	3480.36656	0.004	3480.36656	0.00143	3480.36656	0.00109
3479.4022	0.0048	3479.4022	0.00401	3479.4022	0.00144	3479.4022	0.0011
3478.43784	0.0047	3478.43784	0.00402	3478.43784	0.00145	3478.43784	0.00109
3477.47348	0.00477	3477.47348	0.00403	3477.47348	0.00145	3477.47348	0.00109
3476.50913	0.00481	3476.50913	0.00405	3476.50913	0.00145	3476.50913	0.00109
3475.54477	0.00474	3475.54477	0.00408	3475.54477	0.00146	3475.54477	0.00109
3474.58041	0.00476	3474.58041	0.0041	3474.58041	0.00146	3474.58041	0.00109
3473.61605	0.00494	3473.61605	0.00412	3473.61605	0.00147	3473.61605	0.0011
3472.6517	0.00511	3472.6517	0.00413	3472.6517	0.00148	3472.6517	0.00111

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3471.68734	0.00519	3471.68734	0.00414	3471.68734	0.0015	3471.68734	0.00112
3470.72298	0.00522	3470.72298	0.00415	3470.72298	0.00151	3470.72298	0.00112
3469.75862	0.00522	3469.75862	0.00416	3469.75862	0.00151	3469.75862	0.00112
3468.79426	0.0052	3468.79426	0.00417	3468.79426	0.00151	3468.79426	0.00113
3467.82991	0.0051	3467.82991	0.00419	3467.82991	0.00151	3467.82991	0.00115
3466.86555	0.00506	3466.86555	0.0042	3466.86555	0.00151	3466.86555	0.00117
3465.90119	0.00515	3465.90119	0.00422	3465.90119	0.00151	3465.90119	0.00119
3464.93683	0.00517	3464.93683	0.00423	3464.93683	0.00151	3464.93683	0.0012
3463.97248	0.00514	3463.97248	0.00425	3463.97248	0.00151	3463.97248	0.00121
3463.00812	0.00524	3463.00812	0.00427	3463.00812	0.00152	3463.00812	0.00121
3462.04376	0.0054	3462.04376	0.00429	3462.04376	0.00153	3462.04376	0.00122
3461.0794	0.00542	3461.0794	0.00431	3461.0794	0.00154	3461.0794	0.00123
3460.11505	0.00531	3460.11505	0.00432	3460.11505	0.00155	3460.11505	0.00123
3459.15069	0.0052	3459.15069	0.00433	3459.15069	0.00157	3459.15069	0.00123
3458.18633	0.0051	3458.18633	0.00435	3458.18633	0.00158	3458.18633	0.00123
3457.22197	0.00509	3457.22197	0.00437	3457.22197	0.00158	3457.22197	0.00123
3456.25762	0.00521	3456.25762	0.0044	3456.25762	0.00159	3456.25762	0.00124
3455.29326	0.0054	3455.29326	0.00442	3455.29326	0.00159	3455.29326	0.00125
3454.3289	0.0056	3454.3289	0.00445	3454.3289	0.00159	3454.3289	0.00125
3453.36454	0.00572	3453.36454	0.00447	3453.36454	0.00159	3453.36454	0.00124
3452.40019	0.00564	3452.40019	0.00448	3452.40019	0.00159	3452.40019	0.00123
3451.43583	0.00543	3451.43583	0.00448	3451.43583	0.0016	3451.43583	0.00123
3450.47147	0.00537	3450.47147	0.00448	3450.47147	0.00162	3450.47147	0.00123
3449.50711	0.00557	3449.50711	0.00449	3449.50711	0.00164	3449.50711	0.00124
3448.54276	0.00584	3448.54276	0.0045	3448.54276	0.00166	3448.54276	0.00126
3447.5784	0.00594	3447.5784	0.00453	3447.5784	0.00167	3447.5784	0.00129
3446.61404	0.00592	3446.61404	0.00456	3446.61404	0.00168	3446.61404	0.0013
3445.64968	0.00587	3445.64968	0.00459	3445.64968	0.00169	3445.64968	0.0013
3444.68533	0.00578	3444.68533	0.0046	3444.68533	0.00168	3444.68533	0.0013
3443.72097	0.00571	3443.72097	0.00462	3443.72097	0.00167	3443.72097	0.00129
3442.75661	0.00569	3442.75661	0.00462	3442.75661	0.00166	3442.75661	0.00129
3441.79225	0.00564	3441.79225	0.00463	3441.79225	0.00166	3441.79225	0.0013
3440.82789	0.00572	3440.82789	0.00464	3440.82789	0.00166	3440.82789	0.0013
3439.86354	0.00605	3439.86354	0.00466	3439.86354	0.00167	3439.86354	0.00131
3438.89918	0.00627	3438.89918	0.00468	3438.89918	0.00169	3438.89918	0.00132
3437.93482	0.00632	3437.93482	0.0047	3437.93482	0.00172	3437.93482	0.00132
3436.97046	0.00636	3436.97046	0.00471	3436.97046	0.00175	3436.97046	0.00133
3436.00611	0.00625	3436.00611	0.00472	3436.00611	0.00177	3436.00611	0.00133
3435.04175	0.00605	3435.04175	0.00473	3435.04175	0.00178	3435.04175	0.00133
3434.07739	0.00598	3434.07739	0.00474	3434.07739	0.00179	3434.07739	0.00133
3433.11303	0.00599	3433.11303	0.00477	3433.11303	0.00179	3433.11303	0.00133

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3432.14868	0.00608	3432.14868	0.0048	3432.14868	0.00179	3432.14868	0.00133
3431.18432	0.00626	3431.18432	0.00483	3431.18432	0.00179	3431.18432	0.00134
3430.21996	0.00631	3430.21996	0.00486	3430.21996	0.00179	3430.21996	0.00136
3429.2556	0.00617	3429.2556	0.00487	3429.2556	0.00178	3429.2556	0.00138
3428.29125	0.0061	3428.29125	0.00488	3428.29125	0.00178	3428.29125	0.00139
3427.32689	0.00617	3427.32689	0.00489	3427.32689	0.00179	3427.32689	0.00139
3426.36253	0.00632	3426.36253	0.00489	3426.36253	0.0018	3426.36253	0.00139
3425.39817	0.00648	3425.39817	0.00489	3425.39817	0.00182	3425.39817	0.00139
3424.43382	0.00657	3424.43382	0.0049	3424.43382	0.00185	3424.43382	0.00139
3423.46946	0.00653	3423.46946	0.00492	3423.46946	0.00187	3423.46946	0.00139
3422.5051	0.00647	3422.5051	0.00494	3422.5051	0.00189	3422.5051	0.00141
3421.54074	0.00643	3421.54074	0.00495	3421.54074	0.00189	3421.54074	0.00143
3420.57639	0.00638	3420.57639	0.00497	3420.57639	0.00188	3420.57639	0.00144
3419.61203	0.00638	3419.61203	0.00498	3419.61203	0.00186	3419.61203	0.00145
3418.64767	0.00641	3418.64767	0.005	3418.64767	0.00186	3418.64767	0.00145
3417.68331	0.0065	3417.68331	0.005	3417.68331	0.00187	3417.68331	0.00144
3416.71895	0.0067	3416.71895	0.00502	3416.71895	0.00188	3416.71895	0.00144
3415.7546	0.00682	3415.7546	0.00503	3415.7546	0.00189	3415.7546	0.00145
3414.79024	0.00673	3414.79024	0.00505	3414.79024	0.00191	3414.79024	0.00146
3413.82588	0.00662	3413.82588	0.00506	3413.82588	0.00192	3413.82588	0.00147
3412.86152	0.00665	3412.86152	0.00509	3412.86152	0.00192	3412.86152	0.00146
3411.89717	0.00674	3411.89717	0.00511	3411.89717	0.00193	3411.89717	0.00144
3410.93281	0.00676	3410.93281	0.00513	3410.93281	0.00193	3410.93281	0.00142
3409.96845	0.00677	3409.96845	0.00515	3409.96845	0.00193	3409.96845	0.00142
3409.00409	0.00691	3409.00409	0.00516	3409.00409	0.00194	3409.00409	0.00142
3408.03974	0.00708	3408.03974	0.00518	3408.03974	0.00195	3408.03974	0.00143
3407.07538	0.00708	3407.07538	0.00518	3407.07538	0.00197	3407.07538	0.00144
3406.11102	0.00686	3406.11102	0.00519	3406.11102	0.00199	3406.11102	0.00146
3405.14666	0.00673	3405.14666	0.0052	3405.14666	0.00201	3405.14666	0.00147
3404.18231	0.00685	3404.18231	0.00522	3404.18231	0.00202	3404.18231	0.00148
3403.21795	0.007	3403.21795	0.00524	3403.21795	0.00203	3403.21795	0.00148
3402.25359	0.00704	3402.25359	0.00527	3402.25359	0.00203	3402.25359	0.0015
3401.28923	0.00711	3401.28923	0.00529	3401.28923	0.00204	3401.28923	0.0015
3400.32488	0.00722	3400.32488	0.00531	3400.32488	0.00205	3400.32488	0.00151
3399.36052	0.00719	3399.36052	0.00531	3399.36052	0.00206	3399.36052	0.00151
3398.39616	0.00709	3398.39616	0.0053	3398.39616	0.00207	3398.39616	0.00152
3397.4318	0.00709	3397.4318	0.0053	3397.4318	0.00207	3397.4318	0.00153
3396.46745	0.00714	3396.46745	0.0053	3396.46745	0.00206	3396.46745	0.00155
3395.50309	0.00715	3395.50309	0.00532	3395.50309	0.00205	3395.50309	0.00156
3394.53873	0.00716	3394.53873	0.00534	3394.53873	0.00205	3394.53873	0.00157
3393.57437	0.00719	3393.57437	0.00537	3393.57437	0.00206	3393.57437	0.00156

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3392.61002	0.00718	3392.61002	0.00541	3392.61002	0.00209	3392.61002	0.00155
3391.64566	0.00715	3391.64566	0.00543	3391.64566	0.00211	3391.64566	0.00154
3390.6813	0.00723	3390.6813	0.00545	3390.6813	0.00211	3390.6813	0.00153
3389.71694	0.00733	3389.71694	0.00545	3389.71694	0.00212	3389.71694	0.00155
3388.75258	0.00737	3388.75258	0.00545	3388.75258	0.00212	3388.75258	0.00157
3387.78823	0.00745	3387.78823	0.00546	3387.78823	0.00214	3387.78823	0.00161
3386.82387	0.00752	3386.82387	0.00546	3386.82387	0.00216	3386.82387	0.00164
3385.85951	0.00749	3385.85951	0.00547	3385.85951	0.00218	3385.85951	0.00166
3384.89515	0.00743	3384.89515	0.00547	3384.89515	0.00219	3384.89515	0.00167
3383.9308	0.00744	3383.9308	0.00549	3383.9308	0.00219	3383.9308	0.00167
3382.96644	0.00756	3382.96644	0.00551	3382.96644	0.00217	3382.96644	0.00165
3382.00208	0.00773	3382.00208	0.00553	3382.00208	0.00217	3382.00208	0.00163
3381.03772	0.00783	3381.03772	0.00556	3381.03772	0.00218	3381.03772	0.00161
3380.07337	0.00779	3380.07337	0.00558	3380.07337	0.0022	3380.07337	0.00161
3379.10901	0.00767	3379.10901	0.0056	3379.10901	0.00223	3379.10901	0.00161
3378.14465	0.00758	3378.14465	0.00561	3378.14465	0.00226	3378.14465	0.00163
3377.18029	0.00749	3377.18029	0.00563	3377.18029	0.00228	3377.18029	0.00165
3376.21594	0.00734	3376.21594	0.00564	3376.21594	0.00229	3376.21594	0.00166
3375.25158	0.0073	3375.25158	0.00566	3375.25158	0.00229	3375.25158	0.00167
3374.28722	0.00755	3374.28722	0.00569	3374.28722	0.00229	3374.28722	0.00168
3373.32286	0.00779	3373.32286	0.00572	3373.32286	0.0023	3373.32286	0.00169
3372.35851	0.00781	3372.35851	0.00574	3372.35851	0.00231	3372.35851	0.0017
3371.39415	0.00775	3371.39415	0.00576	3371.39415	0.00232	3371.39415	0.0017
3370.42979	0.00768	3370.42979	0.00578	3370.42979	0.00235	3370.42979	0.0017
3369.46543	0.0076	3369.46543	0.0058	3369.46543	0.00237	3369.46543	0.0017
3368.50108	0.00753	3368.50108	0.00581	3368.50108	0.00239	3368.50108	0.0017
3367.53672	0.00757	3367.53672	0.0058	3367.53672	0.0024	3367.53672	0.00171
3366.57236	0.0077	3366.57236	0.0058	3366.57236	0.0024	3366.57236	0.00171
3365.608	0.0078	3365.608	0.0058	3365.608	0.0024	3365.608	0.00172
3364.64364	0.00784	3364.64364	0.00581	3364.64364	0.00241	3364.64364	0.00171
3363.67929	0.00789	3363.67929	0.00582	3363.67929	0.00241	3363.67929	0.0017
3362.71493	0.00786	3362.71493	0.00585	3362.71493	0.00243	3362.71493	0.0017
3361.75057	0.00777	3361.75057	0.00588	3361.75057	0.00245	3361.75057	0.0017
3360.78621	0.00774	3360.78621	0.00591	3360.78621	0.00246	3360.78621	0.00172
3359.82186	0.0078	3359.82186	0.00593	3359.82186	0.00247	3359.82186	0.00173
3358.8575	0.0079	3358.8575	0.00594	3358.8575	0.00248	3358.8575	0.00174
3357.89314	0.00804	3357.89314	0.00595	3357.89314	0.00248	3357.89314	0.00175
3356.92878	0.00811	3356.92878	0.00596	3356.92878	0.00248	3356.92878	0.00177
3355.96443	0.00803	3355.96443	0.00597	3355.96443	0.00249	3355.96443	0.00178
3355.00007	0.00796	3355.00007	0.00598	3355.00007	0.00249	3355.00007	0.0018
3354.03571	0.00798	3354.03571	0.00599	3354.03571	0.0025	3354.03571	0.0018

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3353.07135	0.008	3353.07135	0.006	3353.07135	0.00252	3353.07135	0.0018
3352.107	0.00788	3352.107	0.00601	3352.107	0.00253	3352.107	0.00179
3351.14264	0.00778	3351.14264	0.00602	3351.14264	0.00254	3351.14264	0.00178
3350.17828	0.00789	3350.17828	0.00603	3350.17828	0.00255	3350.17828	0.00178
3349.21392	0.00806	3349.21392	0.00603	3349.21392	0.00255	3349.21392	0.00179
3348.24957	0.00813	3348.24957	0.00603	3348.24957	0.00255	3348.24957	0.00179
3347.28521	0.00814	3347.28521	0.00604	3347.28521	0.00256	3347.28521	0.00179
3346.32085	0.00814	3346.32085	0.00605	3346.32085	0.00258	3346.32085	0.0018
3345.35649	0.00815	3345.35649	0.00607	3345.35649	0.00261	3345.35649	0.00181
3344.39214	0.00817	3344.39214	0.00608	3344.39214	0.00263	3344.39214	0.00182
3343.42778	0.00814	3343.42778	0.00609	3343.42778	0.00264	3343.42778	0.00182
3342.46342	0.00811	3342.46342	0.00609	3342.46342	0.00264	3342.46342	0.00182
3341.49906	0.00815	3341.49906	0.0061	3341.49906	0.00264	3341.49906	0.00181
3340.5347	0.00823	3340.5347	0.00611	3340.5347	0.00265	3340.5347	0.0018
3339.57035	0.0082	3339.57035	0.00613	3339.57035	0.00267	3339.57035	0.00179
3338.60599	0.00817	3338.60599	0.00615	3338.60599	0.00269	3338.60599	0.00179
3337.64163	0.0082	3337.64163	0.00617	3337.64163	0.00271	3337.64163	0.0018
3336.67727	0.0082	3336.67727	0.00618	3336.67727	0.00272	3336.67727	0.0018
3335.71292	0.00813	3335.71292	0.00619	3335.71292	0.00272	3335.71292	0.00181
3334.74856	0.00805	3334.74856	0.00619	3334.74856	0.00272	3334.74856	0.00182
3333.7842	0.008	3333.7842	0.0062	3333.7842	0.00272	3333.7842	0.00183
3332.81984	0.00807	3332.81984	0.0062	3332.81984	0.00273	3332.81984	0.00184
3331.85549	0.00816	3331.85549	0.00621	3331.85549	0.00275	3331.85549	0.00185
3330.89113	0.00819	3330.89113	0.00621	3330.89113	0.00277	3330.89113	0.00185
3329.92677	0.00822	3329.92677	0.00623	3329.92677	0.00279	3329.92677	0.00185
3328.96241	0.00829	3328.96241	0.00626	3328.96241	0.0028	3328.96241	0.00185
3327.99806	0.00828	3327.99806	0.00629	3327.99806	0.0028	3327.99806	0.00184
3327.0337	0.00823	3327.0337	0.00631	3327.0337	0.0028	3327.0337	0.00184
3326.06934	0.00819	3326.06934	0.00632	3326.06934	0.0028	3326.06934	0.00185
3325.10498	0.00809	3325.10498	0.00632	3325.10498	0.00281	3325.10498	0.00185
3324.14063	0.00799	3324.14063	0.00632	3324.14063	0.00283	3324.14063	0.00185
3323.17627	0.008	3323.17627	0.00631	3323.17627	0.00285	3323.17627	0.00185
3322.21191	0.00803	3322.21191	0.00631	3322.21191	0.00287	3322.21191	0.00185
3321.24755	0.008	3321.24755	0.00632	3321.24755	0.00287	3321.24755	0.00185
3320.2832	0.00804	3320.2832	0.00634	3320.2832	0.00288	3320.2832	0.00185
3319.31884	0.0082	3319.31884	0.00634	3319.31884	0.00288	3319.31884	0.00184
3318.35448	0.00827	3318.35448	0.00635	3318.35448	0.00288	3318.35448	0.00184
3317.39012	0.0082	3317.39012	0.00636	3317.39012	0.00289	3317.39012	0.00184
3316.42577	0.00814	3316.42577	0.00639	3316.42577	0.00291	3316.42577	0.00184
3315.46141	0.00819	3315.46141	0.0064	3315.46141	0.00292	3315.46141	0.00184
3314.49705	0.00832	3314.49705	0.00642	3314.49705	0.00294	3314.49705	0.00184

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3313.53269	0.00836	3313.53269	0.00643	3313.53269	0.00295	3313.53269	0.00185
3312.56833	0.00827	3312.56833	0.00643	3312.56833	0.00297	3312.56833	0.00185
3311.60398	0.00814	3311.60398	0.00643	3311.60398	0.00299	3311.60398	0.00184
3310.63962	0.00814	3310.63962	0.00642	3310.63962	0.003	3310.63962	0.00183
3309.67526	0.00826	3309.67526	0.00643	3309.67526	0.00301	3309.67526	0.00184
3308.7109	0.00831	3308.7109	0.00646	3308.7109	0.00302	3308.7109	0.00185
3307.74655	0.0083	3307.74655	0.00649	3307.74655	0.00304	3307.74655	0.00186
3306.78219	0.0083	3306.78219	0.00652	3306.78219	0.00305	3306.78219	0.00187
3305.81783	0.00831	3305.81783	0.00654	3305.81783	0.00306	3305.81783	0.00189
3304.85347	0.00823	3304.85347	0.00654	3304.85347	0.00306	3304.85347	0.0019
3303.88912	0.0081	3303.88912	0.00653	3303.88912	0.00305	3303.88912	0.0019
3302.92476	0.00806	3302.92476	0.00651	3302.92476	0.00303	3302.92476	0.0019
3301.9604	0.0081	3301.9604	0.00649	3301.9604	0.00301	3301.9604	0.00189
3300.99604	0.00806	3300.99604	0.00648	3300.99604	0.003	3300.99604	0.00189
3300.03169	0.00794	3300.03169	0.00647	3300.03169	0.003	3300.03169	0.00187
3299.06733	0.00789	3299.06733	0.00647	3299.06733	0.00301	3299.06733	0.00186
3298.10297	0.00789	3298.10297	0.00647	3298.10297	0.00303	3298.10297	0.00185
3297.13861	0.00773	3297.13861	0.00648	3297.13861	0.00305	3297.13861	0.00185
3296.17426	0.00755	3296.17426	0.0065	3296.17426	0.00307	3296.17426	0.00186
3295.2099	0.00761	3295.2099	0.00651	3295.2099	0.00308	3295.2099	0.00186
3294.24554	0.00783	3294.24554	0.00653	3294.24554	0.00308	3294.24554	0.00187
3293.28118	0.008	3293.28118	0.00653	3293.28118	0.00307	3293.28118	0.00187
3292.31683	0.00802	3292.31683	0.00653	3292.31683	0.00305	3292.31683	0.00187
3291.35247	0.00791	3291.35247	0.00653	3291.35247	0.00303	3291.35247	0.00187
3290.38811	0.00783	3290.38811	0.00652	3290.38811	0.00301	3290.38811	0.00186
3289.42375	0.00785	3289.42375	0.00651	3289.42375	0.00299	3289.42375	0.00186
3288.45939	0.00794	3288.45939	0.0065	3288.45939	0.00298	3288.45939	0.00186
3287.49504	0.00803	3287.49504	0.00649	3287.49504	0.00298	3287.49504	0.00185
3286.53068	0.00799	3286.53068	0.00648	3286.53068	0.00298	3286.53068	0.00184
3285.56632	0.00778	3285.56632	0.00646	3285.56632	0.00299	3285.56632	0.00184
3284.60196	0.00751	3284.60196	0.00645	3284.60196	0.00299	3284.60196	0.00184
3283.63761	0.00745	3283.63761	0.00643	3283.63761	0.00298	3283.63761	0.00185
3282.67325	0.00759	3282.67325	0.00643	3282.67325	0.00298	3282.67325	0.00185
3281.70889	0.0077	3281.70889	0.00643	3281.70889	0.00297	3281.70889	0.00185
3280.74453	0.00774	3280.74453	0.00643	3280.74453	0.00297	3280.74453	0.00184
3279.78018	0.00777	3279.78018	0.00643	3279.78018	0.00298	3279.78018	0.00184
3278.81582	0.00775	3278.81582	0.00642	3278.81582	0.00297	3278.81582	0.00183
3277.85146	0.00765	3277.85146	0.0064	3277.85146	0.00295	3277.85146	0.00183
3276.8871	0.00754	3276.8871	0.00638	3276.8871	0.00292	3276.8871	0.00183
3275.92275	0.00757	3275.92275	0.00637	3275.92275	0.00289	3275.92275	0.00183
3274.95839	0.00766	3274.95839	0.00635	3274.95839	0.00288	3274.95839	0.00183

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3273.99403	0.00767	3273.99403	0.00635	3273.99403	0.00289	3273.99403	0.00183
3273.02967	0.00768	3273.02967	0.00635	3273.02967	0.00291	3273.02967	0.00184
3272.06532	0.00773	3272.06532	0.00634	3272.06532	0.00293	3272.06532	0.00184
3271.10096	0.00764	3271.10096	0.00632	3271.10096	0.00293	3271.10096	0.00185
3270.1366	0.00741	3270.1366	0.0063	3270.1366	0.00291	3270.1366	0.00185
3269.17224	0.00727	3269.17224	0.00626	3269.17224	0.00287	3269.17224	0.00185
3268.20789	0.00726	3268.20789	0.00622	3268.20789	0.00283	3268.20789	0.00184
3267.24353	0.00729	3267.24353	0.00619	3267.24353	0.00279	3267.24353	0.00183
3266.27917	0.00735	3266.27917	0.00618	3266.27917	0.00277	3266.27917	0.00183
3265.31481	0.00734	3265.31481	0.00617	3265.31481	0.00275	3265.31481	0.00183
3264.35046	0.00721	3264.35046	0.00616	3264.35046	0.00274	3264.35046	0.00184
3263.3861	0.0071	3263.3861	0.00615	3263.3861	0.00274	3263.3861	0.00185
3262.42174	0.0071	3262.42174	0.00613	3262.42174	0.00274	3262.42174	0.00185
3261.45738	0.00713	3261.45738	0.00611	3261.45738	0.00273	3261.45738	0.00185
3260.49302	0.00716	3260.49302	0.00607	3260.49302	0.00272	3260.49302	0.00185
3259.52867	0.00716	3259.52867	0.00604	3259.52867	0.0027	3259.52867	0.00185
3258.56431	0.00714	3258.56431	0.00602	3258.56431	0.00267	3258.56431	0.00184
3257.59995	0.00713	3257.59995	0.006	3257.59995	0.00265	3257.59995	0.00183
3256.63559	0.0071	3256.63559	0.00599	3256.63559	0.00263	3256.63559	0.00181
3255.67124	0.00707	3255.67124	0.00599	3255.67124	0.00261	3255.67124	0.00178
3254.70688	0.00705	3254.70688	0.00599	3254.70688	0.0026	3254.70688	0.00176
3253.74252	0.00703	3253.74252	0.00598	3253.74252	0.00259	3253.74252	0.00176
3252.77816	0.00697	3252.77816	0.00596	3252.77816	0.00258	3252.77816	0.00176
3251.81381	0.00686	3251.81381	0.00594	3251.81381	0.00257	3251.81381	0.00176
3250.84945	0.00678	3250.84945	0.00591	3250.84945	0.00256	3250.84945	0.00177
3249.88509	0.00684	3249.88509	0.00589	3249.88509	0.00256	3249.88509	0.00178
3248.92073	0.0069	3248.92073	0.00587	3248.92073	0.00255	3248.92073	0.00177
3247.95638	0.00685	3247.95638	0.00585	3247.95638	0.00255	3247.95638	0.00176
3246.99202	0.00677	3246.99202	0.00583	3246.99202	0.00255	3246.99202	0.00174
3246.02766	0.00669	3246.02766	0.00581	3246.02766	0.00254	3246.02766	0.00173
3245.0633	0.0066	3245.0633	0.00579	3245.0633	0.00252	3245.0633	0.00173
3244.09895	0.00659	3244.09895	0.00577	3244.09895	0.00249	3244.09895	0.00173
3243.13459	0.00661	3243.13459	0.00576	3243.13459	0.00246	3243.13459	0.00174
3242.17023	0.00652	3242.17023	0.00575	3242.17023	0.00243	3242.17023	0.00175
3241.20587	0.00634	3241.20587	0.00574	3241.20587	0.0024	3241.20587	0.00175
3240.24152	0.00623	3240.24152	0.00573	3240.24152	0.00239	3240.24152	0.00175
3239.27716	0.00633	3239.27716	0.00572	3239.27716	0.00239	3239.27716	0.00173
3238.3128	0.00652	3238.3128	0.00571	3238.3128	0.00238	3238.3128	0.00171
3237.34844	0.00652	3237.34844	0.00569	3237.34844	0.00239	3237.34844	0.00169
3236.38408	0.00645	3236.38408	0.00569	3236.38408	0.0024	3236.38408	0.00167
3235.41973	0.00645	3235.41973	0.00568	3235.41973	0.00241	3235.41973	0.00167



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3234.45537	0.00633	3234.45537	0.00566	3234.45537	0.0024	3234.45537	0.00167
3233.49101	0.0061	3233.49101	0.00564	3233.49101	0.00238	3233.49101	0.00168
3232.52665	0.00601	3232.52665	0.00562	3232.52665	0.00235	3232.52665	0.00169
3231.5623	0.00611	3231.5623	0.0056	3231.5623	0.00233	3231.5623	0.0017
3230.59794	0.00621	3230.59794	0.00558	3230.59794	0.00231	3230.59794	0.00171
3229.63358	0.00622	3229.63358	0.00556	3229.63358	0.0023	3229.63358	0.00171
3228.66922	0.00614	3228.66922	0.00555	3228.66922	0.00231	3228.66922	0.00172
3227.70487	0.00603	3227.70487	0.00554	3227.70487	0.00231	3227.70487	0.00172
3226.74051	0.00594	3226.74051	0.00554	3226.74051	0.0023	3226.74051	0.00171
3225.77615	0.00589	3225.77615	0.00553	3225.77615	0.00228	3225.77615	0.0017
3224.81179	0.00585	3224.81179	0.00552	3224.81179	0.00226	3224.81179	0.00168
3223.84744	0.00585	3223.84744	0.0055	3223.84744	0.00224	3223.84744	0.00165
3222.88308	0.00587	3222.88308	0.0055	3222.88308	0.00224	3222.88308	0.00164
3221.91872	0.00589	3221.91872	0.00549	3221.91872	0.00223	3221.91872	0.00163
3220.95436	0.00586	3220.95436	0.00548	3220.95436	0.00224	3220.95436	0.00164
3219.99001	0.0058	3219.99001	0.00546	3219.99001	0.00224	3219.99001	0.00166
3219.02565	0.00579	3219.02565	0.00544	3219.02565	0.00224	3219.02565	0.00167
3218.06129	0.00585	3218.06129	0.00542	3218.06129	0.00223	3218.06129	0.00166
3217.09693	0.00584	3217.09693	0.00541	3217.09693	0.00223	3217.09693	0.00164
3216.13258	0.00578	3216.13258	0.0054	3216.13258	0.00222	3216.13258	0.00162
3215.16822	0.00575	3215.16822	0.00539	3215.16822	0.00222	3215.16822	0.00161
3214.20386	0.00571	3214.20386	0.00538	3214.20386	0.00221	3214.20386	0.00161
3213.2395	0.00566	3213.2395	0.00537	3213.2395	0.00221	3213.2395	0.00161
3212.27514	0.00563	3212.27514	0.00534	3212.27514	0.00219	3212.27514	0.00162
3211.31079	0.0056	3211.31079	0.00533	3211.31079	0.00217	3211.31079	0.00162
3210.34643	0.00558	3210.34643	0.00532	3210.34643	0.00216	3210.34643	0.00161
3209.38207	0.00556	3209.38207	0.00533	3209.38207	0.00215	3209.38207	0.0016
3208.41771	0.00551	3208.41771	0.00532	3208.41771	0.00214	3208.41771	0.00159
3207.45336	0.00543	3207.45336	0.00531	3207.45336	0.00214	3207.45336	0.00158
3206.489	0.00537	3206.489	0.0053	3206.489	0.00214	3206.489	0.00157
3205.52464	0.00533	3205.52464	0.00528	3205.52464	0.00215	3205.52464	0.00155
3204.56028	0.00532	3204.56028	0.00527	3204.56028	0.00215	3204.56028	0.00153
3203.59593	0.00536	3203.59593	0.00525	3203.59593	0.00215	3203.59593	0.00152
3202.63157	0.00537	3202.63157	0.00524	3202.63157	0.00214	3202.63157	0.00152
3201.66721	0.0053	3201.66721	0.00523	3201.66721	0.00213	3201.66721	0.00152
3200.70285	0.00521	3200.70285	0.00522	3200.70285	0.00211	3200.70285	0.00151
3199.7385	0.00519	3199.7385	0.0052	3199.7385	0.00209	3199.7385	0.00151
3198.77414	0.00522	3198.77414	0.00517	3198.77414	0.00208	3198.77414	0.00151
3197.80978	0.00521	3197.80978	0.00516	3197.80978	0.00209	3197.80978	0.00152
3196.84542	0.00521	3196.84542	0.00514	3196.84542	0.00209	3196.84542	0.00153
3195.88107	0.00522	3195.88107	0.00513	3195.88107	0.00211	3195.88107	0.00153

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3194.91671	0.00517	3194.91671	0.00512	3194.91671	0.00212	3194.91671	0.00153
3193.95235	0.00515	3193.95235	0.00512	3193.95235	0.00212	3193.95235	0.00152
3192.98799	0.00517	3192.98799	0.00512	3192.98799	0.00212	3192.98799	0.0015
3192.02364	0.00515	3192.02364	0.00511	3192.02364	0.00211	3192.02364	0.00148
3191.05928	0.0051	3191.05928	0.00511	3191.05928	0.00209	3191.05928	0.00147
3190.09492	0.00505	3190.09492	0.0051	3190.09492	0.00208	3190.09492	0.00145
3189.13056	0.00497	3189.13056	0.00508	3189.13056	0.00207	3189.13056	0.00145
3188.16621	0.00485	3188.16621	0.00506	3188.16621	0.00206	3188.16621	0.00145
3187.20185	0.00479	3187.20185	0.00504	3187.20185	0.00204	3187.20185	0.00145
3186.23749	0.00485	3186.23749	0.00502	3186.23749	0.00202	3186.23749	0.00144
3185.27313	0.00483	3185.27313	0.005	3185.27313	0.00202	3185.27313	0.00143
3184.30877	0.00466	3184.30877	0.00498	3184.30877	0.00203	3184.30877	0.00142
3183.34442	0.00454	3183.34442	0.00496	3183.34442	0.00203	3183.34442	0.00141
3182.38006	0.00451	3182.38006	0.00493	3182.38006	0.00202	3182.38006	0.00141
3181.4157	0.00451	3181.4157	0.00492	3181.4157	0.00202	3181.4157	0.00142
3180.45134	0.0045	3180.45134	0.00491	3180.45134	0.00201	3180.45134	0.00142
3179.48699	0.00446	3179.48699	0.0049	3179.48699	0.00198	3179.48699	0.00141
3178.52263	0.00437	3178.52263	0.00489	3178.52263	0.00196	3178.52263	0.0014
3177.55827	0.00427	3177.55827	0.00488	3177.55827	0.00195	3177.55827	0.00139
3176.59391	0.00423	3176.59391	0.00487	3176.59391	0.00194	3176.59391	0.00138
3175.62956	0.00424	3175.62956	0.00484	3175.62956	0.00193	3175.62956	0.00138
3174.6652	0.00424	3174.6652	0.00482	3174.6652	0.00194	3174.6652	0.00139
3173.70084	0.00426	3173.70084	0.0048	3173.70084	0.00194	3173.70084	0.00138
3172.73648	0.00427	3172.73648	0.00478	3172.73648	0.00195	3172.73648	0.00137
3171.77213	0.0042	3171.77213	0.00477	3171.77213	0.00194	3171.77213	0.00137
3170.80777	0.00411	3170.80777	0.00475	3170.80777	0.00193	3170.80777	0.00137
3169.84341	0.00406	3169.84341	0.00474	3169.84341	0.00192	3169.84341	0.00137
3168.87905	0.00402	3168.87905	0.00472	3168.87905	0.0019	3168.87905	0.00138
3167.9147	0.00399	3167.9147	0.00471	3167.9147	0.00189	3167.9147	0.00138
3166.95034	0.00404	3166.95034	0.0047	3166.95034	0.00189	3166.95034	0.00137
3165.98598	0.00409	3165.98598	0.00468	3165.98598	0.00189	3165.98598	0.00137
3165.02162	0.00408	3165.02162	0.00467	3165.02162	0.00189	3165.02162	0.00136
3164.05727	0.00404	3164.05727	0.00466	3164.05727	0.00189	3164.05727	0.00136
3163.09291	0.00395	3163.09291	0.00465	3163.09291	0.00189	3163.09291	0.00136
3162.12855	0.00388	3162.12855	0.00465	3162.12855	0.0019	3162.12855	0.00136
3161.16419	0.00389	3161.16419	0.00465	3161.16419	0.0019	3161.16419	0.00136
3160.19983	0.00399	3160.19983	0.00465	3160.19983	0.0019	3160.19983	0.00136
3159.23548	0.00418	3159.23548	0.00464	3159.23548	0.00188	3159.23548	0.00136
3158.27112	0.00438	3158.27112	0.00462	3158.27112	0.00186	3158.27112	0.00136
3157.30676	0.00445	3157.30676	0.00459	3157.30676	0.00184	3157.30676	0.00137
3156.3424	0.00432	3156.3424	0.00456	3156.3424	0.00182	3156.3424	0.00137

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3155.37805	0.00414	3155.37805	0.00454	3155.37805	0.0018	3155.37805	0.00137
3154.41369	0.00411	3154.41369	0.00451	3154.41369	0.00179	3154.41369	0.00137
3153.44933	0.00422	3153.44933	0.0045	3153.44933	0.00179	3153.44933	0.00136
3152.48497	0.00425	3152.48497	0.00449	3152.48497	0.00179	3152.48497	0.00135
3151.52062	0.00412	3151.52062	0.00449	3151.52062	0.00178	3151.52062	0.00134
3150.55626	0.00398	3150.55626	0.00448	3150.55626	0.00178	3150.55626	0.00133
3149.5919	0.00386	3149.5919	0.00447	3149.5919	0.00178	3149.5919	0.00132
3148.62754	0.00378	3148.62754	0.00445	3148.62754	0.00178	3148.62754	0.00132
3147.66319	0.00381	3147.66319	0.00442	3147.66319	0.00178	3147.66319	0.00132
3146.69883	0.00385	3146.69883	0.0044	3146.69883	0.00177	3146.69883	0.00132
3145.73447	0.00381	3145.73447	0.00438	3145.73447	0.00177	3145.73447	0.00133
3144.77011	0.00381	3144.77011	0.00436	3144.77011	0.00176	3144.77011	0.00134
3143.80576	0.00387	3143.80576	0.00435	3143.80576	0.00176	3143.80576	0.00134
3142.8414	0.00386	3142.8414	0.00433	3142.8414	0.00176	3142.8414	0.00133
3141.87704	0.00379	3141.87704	0.00432	3141.87704	0.00175	3141.87704	0.00133
3140.91268	0.00371	3140.91268	0.0043	3140.91268	0.00175	3140.91268	0.00132
3139.94833	0.00368	3139.94833	0.00429	3139.94833	0.00173	3139.94833	0.00131
3138.98397	0.00372	3138.98397	0.00428	3138.98397	0.00171	3138.98397	0.00129
3138.01961	0.00377	3138.01961	0.00427	3138.01961	0.00169	3138.01961	0.00128
3137.05525	0.00381	3137.05525	0.00425	3137.05525	0.00168	3137.05525	0.00128
3136.0909	0.00377	3136.0909	0.00423	3136.0909	0.00167	3136.0909	0.00129
3135.12654	0.00362	3135.12654	0.00421	3135.12654	0.00167	3135.12654	0.00129
3134.16218	0.00352	3134.16218	0.00419	3134.16218	0.00168	3134.16218	0.0013
3133.19782	0.00352	3133.19782	0.00419	3133.19782	0.00168	3133.19782	0.0013
3132.23346	0.00356	3132.23346	0.00418	3132.23346	0.00168	3132.23346	0.0013
3131.26911	0.00361	3131.26911	0.00418	3131.26911	0.00167	3131.26911	0.0013
3130.30475	0.00359	3130.30475	0.00417	3130.30475	0.00166	3130.30475	0.00129
3129.34039	0.00349	3129.34039	0.00416	3129.34039	0.00165	3129.34039	0.00129
3128.37603	0.00343	3128.37603	0.00415	3128.37603	0.00165	3128.37603	0.00129
3127.41168	0.00345	3127.41168	0.00412	3127.41168	0.00165	3127.41168	0.00129
3126.44732	0.00342	3126.44732	0.00409	3126.44732	0.00165	3126.44732	0.00128
3125.48296	0.00326	3125.48296	0.00406	3125.48296	0.00165	3125.48296	0.00127
3124.5186	0.00311	3124.5186	0.00403	3124.5186	0.00164	3124.5186	0.00126
3123.55425	0.00312	3123.55425	0.00402	3123.55425	0.00164	3123.55425	0.00126
3122.58989	0.00325	3122.58989	0.00402	3122.58989	0.00163	3122.58989	0.00126
3121.62553	0.00337	3121.62553	0.00403	3121.62553	0.00163	3121.62553	0.00126
3120.66117	0.00347	3120.66117	0.00404	3120.66117	0.00162	3120.66117	0.00126
3119.69682	0.00354	3119.69682	0.00404	3119.69682	0.00162	3119.69682	0.00126
3118.73246	0.0035	3118.73246	0.00403	3118.73246	0.00162	3118.73246	0.00126
3117.7681	0.00345	3117.7681	0.004	3117.7681	0.00162	3117.7681	0.00126
3116.80374	0.00346	3116.80374	0.00398	3116.80374	0.00162	3116.80374	0.00126

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3115.83939	0.00343	3115.83939	0.00396	3115.83939	0.00161	3115.83939	0.00126
3114.87503	0.00338	3114.87503	0.00395	3114.87503	0.0016	3114.87503	0.00126
3113.91067	0.00342	3113.91067	0.00394	3113.91067	0.00159	3113.91067	0.00125
3112.94631	0.00349	3112.94631	0.00393	3112.94631	0.00158	3112.94631	0.00125
3111.98196	0.00346	3111.98196	0.00392	3111.98196	0.00158	3111.98196	0.00126
3111.0176	0.00336	3111.0176	0.00391	3111.0176	0.00159	3111.0176	0.00126
3110.05324	0.00329	3110.05324	0.0039	3110.05324	0.0016	3110.05324	0.00126
3109.08888	0.00323	3109.08888	0.0039	3109.08888	0.00162	3109.08888	0.00126
3108.12452	0.00314	3108.12452	0.0039	3108.12452	0.00162	3108.12452	0.00125
3107.16017	0.00301	3107.16017	0.00389	3107.16017	0.00161	3107.16017	0.00124
3106.19581	0.00297	3106.19581	0.00387	3106.19581	0.00159	3106.19581	0.00124
3105.23145	0.00309	3105.23145	0.00385	3105.23145	0.00157	3105.23145	0.00123
3104.26709	0.00323	3104.26709	0.00383	3104.26709	0.00156	3104.26709	0.00123
3103.30274	0.00322	3103.30274	0.00382	3103.30274	0.00157	3103.30274	0.00122
3102.33838	0.00316	3102.33838	0.00382	3102.33838	0.00158	3102.33838	0.00121
3101.37402	0.00317	3101.37402	0.00381	3101.37402	0.0016	3101.37402	0.00121
3100.40966	0.00322	3100.40966	0.00381	3100.40966	0.0016	3100.40966	0.00122
3099.44531	0.00328	3099.44531	0.0038	3099.44531	0.0016	3099.44531	0.00123
3098.48095	0.00333	3098.48095	0.00379	3098.48095	0.00159	3098.48095	0.00123
3097.51659	0.00334	3097.51659	0.00378	3097.51659	0.00157	3097.51659	0.00123
3096.55223	0.00335	3096.55223	0.00377	3096.55223	0.00156	3096.55223	0.00123
3095.58788	0.00339	3095.58788	0.00376	3095.58788	0.00156	3095.58788	0.00124
3094.62352	0.00334	3094.62352	0.00375	3094.62352	0.00157	3094.62352	0.00125
3093.65916	0.00324	3093.65916	0.00374	3093.65916	0.00158	3093.65916	0.00126
3092.6948	0.0032	3092.6948	0.00372	3092.6948	0.00158	3092.6948	0.00126
3091.73045	0.0032	3091.73045	0.00371	3091.73045	0.00158	3091.73045	0.00126
3090.76609	0.0032	3090.76609	0.0037	3090.76609	0.00157	3090.76609	0.00125
3089.80173	0.00325	3089.80173	0.0037	3089.80173	0.00156	3089.80173	0.00125
3088.83737	0.00332	3088.83737	0.00371	3088.83737	0.00155	3088.83737	0.00125
3087.87302	0.00327	3087.87302	0.00371	3087.87302	0.00155	3087.87302	0.00125
3086.90866	0.00319	3086.90866	0.00371	3086.90866	0.00156	3086.90866	0.00126
3085.9443	0.00324	3085.9443	0.00371	3085.9443	0.00156	3085.9443	0.00126
3084.97994	0.0033	3084.97994	0.00371	3084.97994	0.00156	3084.97994	0.00125
3084.01559	0.00331	3084.01559	0.00371	3084.01559	0.00156	3084.01559	0.00125
3083.05123	0.00332	3083.05123	0.0037	3083.05123	0.00156	3083.05123	0.00125
3082.08687	0.00335	3082.08687	0.00369	3082.08687	0.00156	3082.08687	0.00125
3081.12251	0.00333	3081.12251	0.00368	3081.12251	0.00158	3081.12251	0.00125
3080.15815	0.00327	3080.15815	0.00367	3080.15815	0.00159	3080.15815	0.00126
3079.1938	0.00322	3079.1938	0.00365	3079.1938	0.0016	3079.1938	0.00126
3078.22944	0.00319	3078.22944	0.00363	3078.22944	0.00161	3078.22944	0.00126
3077.26508	0.0032	3077.26508	0.00361	3077.26508	0.0016	3077.26508	0.00126

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3076.30072	0.00321	3076.30072	0.00359	3076.30072	0.00158	3076.30072	0.00125
3075.33637	0.00317	3075.33637	0.00357	3075.33637	0.00157	3075.33637	0.00125
3074.37201	0.00316	3074.37201	0.00356	3074.37201	0.00156	3074.37201	0.00125
3073.40765	0.0032	3073.40765	0.00357	3073.40765	0.00155	3073.40765	0.00125
3072.44329	0.00323	3072.44329	0.00357	3072.44329	0.00155	3072.44329	0.00126
3071.47894	0.00321	3071.47894	0.00358	3071.47894	0.00155	3071.47894	0.00126
3070.51458	0.00315	3070.51458	0.00358	3070.51458	0.00156	3070.51458	0.00127
3069.55022	0.00306	3069.55022	0.00358	3069.55022	0.00157	3069.55022	0.00127
3068.58586	0.00302	3068.58586	0.00358	3068.58586	0.00159	3068.58586	0.00127
3067.62151	0.00305	3067.62151	0.00358	3067.62151	0.0016	3067.62151	0.00126
3066.65715	0.00316	3066.65715	0.00358	3066.65715	0.0016	3066.65715	0.00125
3065.69279	0.00328	3065.69279	0.00357	3065.69279	0.0016	3065.69279	0.00124
3064.72843	0.00327	3064.72843	0.00354	3064.72843	0.0016	3064.72843	0.00123
3063.76408	0.00315	3063.76408	0.00352	3063.76408	0.00159	3063.76408	0.00122
3062.79972	0.00298	3062.79972	0.0035	3062.79972	0.00158	3062.79972	0.00122
3061.83536	0.00285	3061.83536	0.00349	3061.83536	0.00158	3061.83536	0.00122
3060.871	0.0028	3060.871	0.00348	3060.871	0.00158	3060.871	0.00123
3059.90665	0.00278	3059.90665	0.00348	3059.90665	0.00157	3059.90665	0.00124
3058.94229	0.00274	3058.94229	0.00348	3058.94229	0.00156	3058.94229	0.00124
3057.97793	0.00266	3057.97793	0.00347	3057.97793	0.00155	3057.97793	0.00123
3057.01357	0.00264	3057.01357	0.00347	3057.01357	0.00154	3057.01357	0.00123
3056.04921	0.00276	3056.04921	0.00346	3056.04921	0.00155	3056.04921	0.00121
3055.08486	0.00285	3055.08486	0.00345	3055.08486	0.00156	3055.08486	0.00119
3054.1205	0.00281	3054.1205	0.00345	3054.1205	0.00157	3054.1205	0.00117
3053.15614	0.00272	3053.15614	0.00345	3053.15614	0.00158	3053.15614	0.00115
3052.19178	0.00266	3052.19178	0.00344	3052.19178	0.00158	3052.19178	0.00115
3051.22743	0.00265	3051.22743	0.00342	3051.22743	0.00156	3051.22743	0.00115
3050.26307	0.00269	3050.26307	0.0034	3050.26307	0.00154	3050.26307	0.00115
3049.29871	0.00269	3049.29871	0.00338	3049.29871	0.00152	3049.29871	0.00115
3048.33435	0.00265	3048.33435	0.00336	3048.33435	0.00151	3048.33435	0.00116
3047.37	0.00263	3047.37	0.00334	3047.37	0.0015	3047.37	0.00116
3046.40564	0.00264	3046.40564	0.00333	3046.40564	0.00151	3046.40564	0.00115
3045.44128	0.00263	3045.44128	0.00333	3045.44128	0.00152	3045.44128	0.00115
3044.47692	0.00262	3044.47692	0.00332	3044.47692	0.00153	3044.47692	0.00114
3043.51257	0.00263	3043.51257	0.0033	3043.51257	0.00153	3043.51257	0.00114
3042.54821	0.00263	3042.54821	0.00329	3042.54821	0.00152	3042.54821	0.00112
3041.58385	0.0026	3041.58385	0.00327	3041.58385	0.0015	3041.58385	0.00111
3040.61949	0.00257	3040.61949	0.00326	3040.61949	0.00147	3040.61949	0.00109
3039.65514	0.00257	3039.65514	0.00323	3039.65514	0.00145	3039.65514	0.00107
3038.69078	0.0026	3038.69078	0.00321	3038.69078	0.00144	3038.69078	0.00105
3037.72642	0.0026	3037.72642	0.00318	3037.72642	0.00143	3037.72642	0.00103

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3036.76206	0.00261	3036.76206	0.00316	3036.76206	0.00143	3036.76206	0.00102
3035.79771	0.00265	3035.79771	0.00314	3035.79771	0.00142	3035.79771	0.00102
3034.83335	0.00258	3034.83335	0.00312	3034.83335	0.00142	3034.83335	0.00102
3033.86899	0.00246	3033.86899	0.00311	3033.86899	0.0014	3033.86899	0.00102
3032.90463	0.00247	3032.90463	0.0031	3032.90463	0.00139	3032.90463	1.00E-03
3031.94027	0.00253	3031.94027	0.0031	3031.94027	0.00138	3031.94027	9.90E-04
3030.97592	0.0025	3030.97592	0.00309	3030.97592	0.00137	3030.97592	9.70E-04
3030.01156	0.00245	3030.01156	0.00308	3030.01156	0.00136	3030.01156	9.60E-04
3029.0472	0.00249	3029.0472	0.00307	3029.0472	0.00136	3029.0472	9.60E-04
3028.08284	0.00256	3028.08284	0.00306	3028.08284	0.00136	3028.08284	9.50E-04
3027.11849	0.00254	3027.11849	0.00304	3027.11849	0.00136	3027.11849	9.50E-04
3026.15413	0.00239	3026.15413	0.00302	3026.15413	0.00136	3026.15413	9.40E-04
3025.18977	0.00225	3025.18977	0.00301	3025.18977	0.00136	3025.18977	9.30E-04
3024.22541	0.00222	3024.22541	0.003	3024.22541	0.00135	3024.22541	9.20E-04
3023.26106	0.00225	3023.26106	0.003	3023.26106	0.00134	3023.26106	9.40E-04
3022.2967	0.00225	3022.2967	0.003	3022.2967	0.00133	3022.2967	9.60E-04
3021.33234	0.00224	3021.33234	0.00299	3021.33234	0.00133	3021.33234	9.80E-04
3020.36798	0.00226	3020.36798	0.00299	3020.36798	0.00134	3020.36798	9.90E-04
3019.40363	0.00225	3019.40363	0.00294	3019.40363	0.00132	3019.40363	9.50E-04
3018.43927	0.00217	3018.43927	0.00286	3018.43927	0.00125	3018.43927	8.10E-04
3017.47491	0.00211	3017.47491	0.00275	3017.47491	0.00114	3017.47491	6.20E-04
3016.51055	0.00216	3016.51055	0.00265	3016.51055	0.00103	3016.51055	4.70E-04
3015.5462	0.00218	3015.5462	0.0026	3015.5462	9.50E-04	3015.5462	4.00E-04
3014.58184	0.0021	3014.58184	0.00261	3014.58184	9.40E-04	3014.58184	4.40E-04
3013.61748	0.00201	3013.61748	0.00268	3013.61748	1.00E-03	3013.61748	5.60E-04
3012.65312	0.00197	3012.65312	0.00277	3012.65312	0.00109	3012.65312	7.40E-04
3011.68877	0.00201	3011.68877	0.00284	3011.68877	0.00119	3011.68877	8.80E-04
3010.72441	0.00206	3010.72441	0.00287	3010.72441	0.00125	3010.72441	9.30E-04
3009.76005	0.00208	3009.76005	0.00285	3009.76005	0.00125	3009.76005	9.20E-04
3008.79569	0.00208	3008.79569	0.00281	3008.79569	0.00123	3008.79569	8.90E-04
3007.83134	0.00208	3007.83134	0.00279	3007.83134	0.0012	3007.83134	8.60E-04
3006.86698	0.0021	3006.86698	0.00276	3006.86698	0.00117	3006.86698	8.30E-04
3005.90262	0.00209	3005.90262	0.00275	3005.90262	0.00116	3005.90262	8.10E-04
3004.93826	0.00204	3004.93826	0.00275	3004.93826	0.00115	3004.93826	8.00E-04
3003.9739	0.00202	3003.9739	0.00274	3003.9739	0.00115	3003.9739	7.90E-04
3003.00955	0.00203	3003.00955	0.00273	3003.00955	0.00115	3003.00955	7.70E-04
3002.04519	0.00205	3002.04519	0.00271	3002.04519	0.00114	3002.04519	7.70E-04
3001.08083	0.00205	3001.08083	0.00269	3001.08083	0.00114	3001.08083	7.60E-04
3000.11647	0.00203	3000.11647	0.00268	3000.11647	0.00113	3000.11647	7.70E-04
2999.15212	0.00196	2999.15212	0.00266	2999.15212	0.00113	2999.15212	7.70E-04
2998.18776	0.00191	2998.18776	0.00265	2998.18776	0.00114	2998.18776	7.70E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2997.2234	0.00197	2997.2234	0.00265	2997.2234	0.00116	2997.2234	7.70E-04
2996.25904	0.0021	2996.25904	0.00265	2996.25904	0.00117	2996.25904	7.60E-04
2995.29469	0.00219	2995.29469	0.00265	2995.29469	0.00118	2995.29469	7.60E-04
2994.33033	0.00222	2994.33033	0.00266	2994.33033	0.00118	2994.33033	7.70E-04
2993.36597	0.00222	2993.36597	0.00268	2993.36597	0.00118	2993.36597	7.80E-04
2992.40161	0.00222	2992.40161	0.00269	2992.40161	0.00118	2992.40161	8.00E-04
2991.43726	0.0022	2991.43726	0.00271	2991.43726	0.00118	2991.43726	8.10E-04
2990.4729	0.00216	2990.4729	0.00272	2990.4729	0.00119	2990.4729	8.10E-04
2989.50854	0.00212	2989.50854	0.00273	2989.50854	0.00121	2989.50854	8.20E-04
2988.54418	0.00212	2988.54418	0.00273	2988.54418	0.00124	2988.54418	8.30E-04
2987.57983	0.00214	2987.57983	0.00274	2987.57983	0.00127	2987.57983	8.40E-04
2986.61547	0.00219	2986.61547	0.00275	2986.61547	0.0013	2986.61547	8.60E-04
2985.65111	0.00226	2985.65111	0.00277	2985.65111	0.00132	2985.65111	8.80E-04
2984.68675	0.00228	2984.68675	0.0028	2984.68675	0.00135	2984.68675	9.10E-04
2983.7224	0.00227	2983.7224	0.00282	2983.7224	0.00136	2983.7224	9.30E-04
2982.75804	0.00232	2982.75804	0.00284	2982.75804	0.00138	2982.75804	9.60E-04
2981.79368	0.0024	2981.79368	0.00285	2981.79368	0.0014	2981.79368	9.90E-04
2980.82932	0.00247	2980.82932	0.00285	2980.82932	0.00142	2980.82932	1.00E-03
2979.86496	0.00254	2979.86496	0.00284	2979.86496	0.00145	2979.86496	1.00E-03
2978.90061	0.00259	2978.90061	0.0028	2978.90061	0.00144	2978.90061	9.10E-04
2977.93625	0.00263	2977.93625	0.00271	2977.93625	0.00136	2977.93625	7.10E-04
2976.97189	0.00272	2976.97189	0.0026	2976.97189	0.00123	2976.97189	4.70E-04
2976.00753	0.00285	2976.00753	0.00253	2976.00753	0.00111	2976.00753	3.00E-04
2975.04318	0.00295	2975.04318	0.00252	2975.04318	0.00106	2975.04318	2.60E-04
2974.07882	0.00299	2974.07882	0.00258	2974.07882	0.00109	2974.07882	3.50E-04
2973.11446	0.00306	2973.11446	0.0027	2973.11446	0.0012	2973.11446	5.50E-04
2972.1501	0.0032	2972.1501	0.00284	2972.1501	0.00136	2972.1501	8.00E-04
2971.18575	0.00333	2971.18575	0.00296	2971.18575	0.00151	2971.18575	9.90E-04
2970.22139	0.00338	2970.22139	0.00303	2970.22139	0.00159	2970.22139	0.00106
2969.25703	0.00343	2969.25703	0.00306	2969.25703	0.00163	2969.25703	0.00106
2968.29267	0.00348	2968.29267	0.00307	2968.29267	0.00165	2968.29267	0.00105
2967.32832	0.00353	2967.32832	0.00308	2967.32832	0.00167	2967.32832	0.00104
2966.36396	0.00363	2966.36396	0.00308	2966.36396	0.00169	2966.36396	0.00103
2965.3996	0.00379	2965.3996	0.00309	2965.3996	0.00169	2965.3996	0.00102
2964.43524	0.00397	2964.43524	0.0031	2964.43524	0.00167	2964.43524	0.00101
2963.47089	0.0041	2963.47089	0.00311	2963.47089	0.00166	2963.47089	0.00101
2962.50653	0.00419	2962.50653	0.00312	2962.50653	0.00166	2962.50653	0.00101
2961.54217	0.00425	2961.54217	0.00312	2961.54217	0.00167	2961.54217	0.00101
2960.57781	0.00429	2960.57781	0.00313	2960.57781	0.00169	2960.57781	0.00101
2959.61346	0.00435	2959.61346	0.00313	2959.61346	0.0017	2959.61346	0.00101
2958.6491	0.00446	2958.6491	0.00315	2958.6491	0.00171	2958.6491	0.00102

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2957.68474	0.00462	2957.68474	0.00317	2957.68474	0.00171	2957.68474	0.00103
2956.72038	0.00474	2956.72038	0.00318	2956.72038	0.0017	2956.72038	0.00105
2955.75603	0.0048	2955.75603	0.00319	2955.75603	0.00169	2955.75603	0.00106
2954.79167	0.00491	2954.79167	0.00318	2954.79167	0.00168	2954.79167	0.00108
2953.82731	0.00507	2953.82731	0.00316	2953.82731	0.00167	2953.82731	0.0011
2952.86295	0.00517	2952.86295	0.00314	2952.86295	0.00166	2952.86295	0.00112
2951.89859	0.0052	2951.89859	0.00312	2951.89859	0.00167	2951.89859	0.00114
2950.93424	0.00523	2950.93424	0.00312	2950.93424	0.00168	2950.93424	0.00117
2949.96988	0.00528	2949.96988	0.00312	2949.96988	0.0017	2949.96988	0.00119
2949.00552	0.00527	2949.00552	0.00313	2949.00552	0.00171	2949.00552	0.00122
2948.04116	0.00524	2948.04116	0.00314	2948.04116	0.00172	2948.04116	0.00124
2947.07681	0.00525	2947.07681	0.00315	2947.07681	0.00172	2947.07681	0.00127
2946.11245	0.00531	2946.11245	0.00315	2946.11245	0.00172	2946.11245	0.00129
2945.14809	0.00542	2945.14809	0.00315	2945.14809	0.00173	2945.14809	0.0013
2944.18373	0.00552	2944.18373	0.00315	2944.18373	0.00173	2944.18373	0.00131
2943.21938	0.00556	2943.21938	0.00315	2943.21938	0.00174	2943.21938	0.00131
2942.25502	0.00553	2942.25502	0.00317	2942.25502	0.00175	2942.25502	0.00131
2941.29066	0.00545	2941.29066	0.00318	2941.29066	0.00177	2941.29066	0.00131
2940.3263	0.00541	2940.3263	0.0032	2940.3263	0.00178	2940.3263	0.00131
2939.36195	0.00549	2939.36195	0.00322	2939.36195	0.00179	2939.36195	0.00132
2938.39759	0.00563	2938.39759	0.00323	2938.39759	0.0018	2938.39759	0.00132
2937.43323	0.00574	2937.43323	0.00324	2937.43323	0.00181	2937.43323	0.00133
2936.46887	0.00581	2936.46887	0.00325	2936.46887	0.00181	2936.46887	0.00134
2935.50452	0.00585	2935.50452	0.00325	2935.50452	0.00181	2935.50452	0.00134
2934.54016	0.00594	2934.54016	0.00325	2934.54016	0.00181	2934.54016	0.00135
2933.5758	0.0061	2933.5758	0.00326	2933.5758	0.00181	2933.5758	0.00135
2932.61144	0.0063	2932.61144	0.00327	2932.61144	0.00181	2932.61144	0.00135
2931.64709	0.00645	2931.64709	0.00328	2931.64709	0.0018	2931.64709	0.00134
2930.68273	0.00654	2930.68273	0.00328	2930.68273	0.0018	2930.68273	0.00133
2929.71837	0.00663	2929.71837	0.00328	2929.71837	0.00179	2929.71837	0.00132
2928.75401	0.00675	2928.75401	0.00327	2928.75401	0.00178	2928.75401	0.00132
2927.78965	0.00682	2927.78965	0.00325	2927.78965	0.00177	2927.78965	0.00132
2926.8253	0.00682	2926.8253	0.00322	2926.8253	0.00176	2926.8253	0.00133
2925.86094	0.00686	2925.86094	0.0032	2925.86094	0.00175	2925.86094	0.00132
2924.89658	0.00693	2924.89658	0.00319	2924.89658	0.00174	2924.89658	0.00131
2923.93222	0.00692	2923.93222	0.00317	2923.93222	0.00173	2923.93222	0.00131
2922.96787	0.00689	2922.96787	0.00315	2922.96787	0.00172	2922.96787	0.0013
2922.00351	0.00685	2922.00351	0.00313	2922.00351	0.00171	2922.00351	0.00131
2921.03915	0.00672	2921.03915	0.00311	2921.03915	0.00169	2921.03915	0.00132
2920.07479	0.00658	2920.07479	0.00309	2920.07479	0.00168	2920.07479	0.00133
2919.11044	0.00653	2919.11044	0.00307	2919.11044	0.00167	2919.11044	0.00134



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2918.14608	0.00645	2918.14608	0.00305	2918.14608	0.00166	2918.14608	0.00133
2917.18172	0.00631	2917.18172	0.00303	2917.18172	0.00166	2917.18172	0.00131
2916.21736	0.00619	2916.21736	0.00301	2916.21736	0.00165	2916.21736	0.0013
2915.25301	0.0061	2915.25301	0.003	2915.25301	0.00164	2915.25301	0.00129
2914.28865	0.00595	2914.28865	0.00298	2914.28865	0.00162	2914.28865	0.00129
2913.32429	0.00579	2913.32429	0.00295	2913.32429	0.00161	2913.32429	0.0013
2912.35993	0.00566	2912.35993	0.00294	2912.35993	0.00159	2912.35993	0.0013
2911.39558	0.00555	2911.39558	0.00292	2911.39558	0.00157	2911.39558	0.00131
2910.43122	0.00544	2910.43122	0.0029	2910.43122	0.00156	2910.43122	0.0013
2909.46686	0.0054	2909.46686	0.00289	2909.46686	0.00154	2909.46686	0.0013
2908.5025	0.0054	2908.5025	0.00288	2908.5025	0.00153	2908.5025	0.0013
2907.53815	0.00532	2907.53815	0.00286	2907.53815	0.00152	2907.53815	0.0013
2906.57379	0.00519	2906.57379	0.00284	2906.57379	0.00151	2906.57379	0.0013
2905.60943	0.0051	2905.60943	0.00281	2905.60943	0.0015	2905.60943	0.00129
2904.64507	0.00505	2904.64507	0.00278	2904.64507	0.0015	2904.64507	0.00128
2903.68071	0.00492	2903.68071	0.00275	2903.68071	0.00148	2903.68071	0.00126
2902.71636	0.00473	2902.71636	0.00273	2902.71636	0.00147	2902.71636	0.00125
2901.752	0.00459	2901.752	0.00271	2901.752	0.00145	2901.752	0.00124
2900.78764	0.00453	2900.78764	0.0027	2900.78764	0.00143	2900.78764	0.00124
2899.82328	0.0045	2899.82328	0.00269	2899.82328	0.00141	2899.82328	0.00124
2898.85893	0.00441	2898.85893	0.00268	2898.85893	0.0014	2898.85893	0.00123
2897.89457	0.00427	2897.89457	0.00267	2897.89457	0.00139	2897.89457	0.00121
2896.93021	0.00422	2896.93021	0.00266	2896.93021	0.00138	2896.93021	0.0012
2895.96585	0.00425	2895.96585	0.00266	2895.96585	0.00137	2895.96585	0.00117
2895.0015	0.00421	2895.0015	0.00265	2895.0015	0.00136	2895.0015	0.00115
2894.03714	0.00407	2894.03714	0.00265	2894.03714	0.00135	2894.03714	0.00114
2893.07278	0.00391	2893.07278	0.00264	2893.07278	0.00134	2893.07278	0.00113
2892.10842	0.00381	2892.10842	0.00263	2892.10842	0.00134	2892.10842	0.00112
2891.14407	0.00375	2891.14407	0.00262	2891.14407	0.00134	2891.14407	0.0011
2890.17971	0.00367	2890.17971	0.00261	2890.17971	0.00134	2890.17971	0.00109
2889.21535	0.00359	2889.21535	0.0026	2889.21535	0.00134	2889.21535	0.00108
2888.25099	0.00355	2888.25099	0.00259	2888.25099	0.00134	2888.25099	0.00107
2887.28664	0.00352	2887.28664	0.00259	2887.28664	0.00134	2887.28664	0.00106
2886.32228	0.00348	2886.32228	0.00258	2886.32228	0.00134	2886.32228	0.00105
2885.35792	0.00345	2885.35792	0.00257	2885.35792	0.00133	2885.35792	0.00105
2884.39356	0.00334	2884.39356	0.00257	2884.39356	0.00134	2884.39356	0.00105
2883.42921	0.0032	2883.42921	0.00257	2883.42921	0.00134	2883.42921	0.00106
2882.46485	0.00314	2882.46485	0.00257	2882.46485	0.00135	2882.46485	0.00106
2881.50049	0.00317	2881.50049	0.00258	2881.50049	0.00136	2881.50049	0.00106
2880.53613	0.00322	2880.53613	0.00259	2880.53613	0.00137	2880.53613	0.00105
2879.57178	0.00329	2879.57178	0.00259	2879.57178	0.00138	2879.57178	0.00105

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2878.60742	0.00336	2878.60742	0.0026	2878.60742	0.00139	2878.60742	0.00104
2877.64306	0.00339	2877.64306	0.0026	2877.64306	0.00139	2877.64306	0.00104
2876.6787	0.00341	2876.6787	0.00261	2876.6787	0.00139	2876.6787	0.00104
2875.71434	0.00342	2875.71434	0.0026	2875.71434	0.00139	2875.71434	0.00104
2874.74999	0.0034	2874.74999	0.0026	2874.74999	0.00138	2874.74999	0.00104
2873.78563	0.0033	2873.78563	0.0026	2873.78563	0.00136	2873.78563	0.00104
2872.82127	0.00321	2872.82127	0.00261	2872.82127	0.00135	2872.82127	0.00104
2871.85691	0.00323	2871.85691	0.0026	2871.85691	0.00134	2871.85691	0.00103
2870.89256	0.00333	2870.89256	0.00259	2870.89256	0.00133	2870.89256	0.00103
2869.9282	0.00338	2869.9282	0.00258	2869.9282	0.00132	2869.9282	0.00102
2868.96384	0.00339	2868.96384	0.00256	2868.96384	0.00132	2868.96384	0.00101
2867.99948	0.00346	2867.99948	0.00253	2867.99948	0.00132	2867.99948	0.00101
2867.03513	0.0035	2867.03513	0.00251	2867.03513	0.00131	2867.03513	0.00101
2866.07077	0.00343	2866.07077	0.00247	2866.07077	0.00129	2866.07077	0.00101
2865.10641	0.00334	2865.10641	0.00244	2865.10641	0.00128	2865.10641	0.00101
2864.14205	0.00335	2864.14205	0.0024	2864.14205	0.00126	2864.14205	0.00101
2863.1777	0.00345	2863.1777	0.00238	2863.1777	0.00123	2863.1777	0.00101
2862.21334	0.00353	2862.21334	0.00236	2862.21334	0.00121	2862.21334	0.00101
2861.24898	0.00356	2861.24898	0.00235	2861.24898	0.00119	2861.24898	1.00E-03
2860.28462	0.00357	2860.28462	0.00234	2860.28462	0.00118	2860.28462	1.00E-03
2859.32027	0.00357	2859.32027	0.00234	2859.32027	0.00118	2859.32027	9.90E-04
2858.35591	0.00359	2858.35591	0.00232	2858.35591	0.00118	2858.35591	9.80E-04
2857.39155	0.00364	2857.39155	0.0023	2857.39155	0.00117	2857.39155	9.80E-04
2856.42719	0.00371	2856.42719	0.00228	2856.42719	0.00116	2856.42719	9.80E-04
2855.46284	0.0038	2855.46284	0.00226	2855.46284	0.00115	2855.46284	9.80E-04
2854.49848	0.00384	2854.49848	0.00224	2854.49848	0.00114	2854.49848	9.80E-04
2853.53412	0.00376	2853.53412	0.00223	2853.53412	0.00112	2853.53412	9.70E-04
2852.56976	0.00364	2852.56976	0.00221	2852.56976	0.00111	2852.56976	9.70E-04
2851.6054	0.0036	2851.6054	0.0022	2851.6054	0.0011	2851.6054	9.60E-04
2850.64105	0.00359	2850.64105	0.00218	2850.64105	0.00108	2850.64105	9.60E-04
2849.67669	0.00355	2849.67669	0.00217	2849.67669	0.00106	2849.67669	9.60E-04
2848.71233	0.00349	2848.71233	0.00215	2848.71233	0.00104	2848.71233	9.70E-04
2847.74797	0.00343	2847.74797	0.00213	2847.74797	0.00103	2847.74797	9.70E-04
2846.78362	0.00331	2846.78362	0.00212	2846.78362	0.00102	2846.78362	9.70E-04
2845.81926	0.00315	2845.81926	0.00211	2845.81926	0.00101	2845.81926	9.60E-04
2844.8549	0.00302	2844.8549	0.00211	2844.8549	0.00101	2844.8549	9.60E-04
2843.89054	0.00295	2843.89054	0.0021	2843.89054	0.00101	2843.89054	9.50E-04
2842.92619	0.00289	2842.92619	0.00209	2842.92619	0.00101	2842.92619	9.40E-04
2841.96183	0.00282	2841.96183	0.00208	2841.96183	0.00101	2841.96183	9.40E-04
2840.99747	0.00274	2840.99747	0.00206	2840.99747	0.00101	2840.99747	9.40E-04
2840.03311	0.00261	2840.03311	0.00203	2840.03311	9.90E-04	2840.03311	9.40E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2839.06876	0.00241	2839.06876	0.00202	2839.06876	9.80E-04	2839.06876	9.30E-04
2838.1044	0.00225	2838.1044	0.00201	2838.1044	9.60E-04	2838.1044	9.20E-04
2837.14004	0.00216	2837.14004	0.002	2837.14004	9.50E-04	2837.14004	9.20E-04
2836.17568	0.00214	2836.17568	0.002	2836.17568	9.50E-04	2836.17568	9.10E-04
2835.21133	0.00215	2835.21133	0.00199	2835.21133	9.50E-04	2835.21133	8.90E-04
2834.24697	0.00214	2834.24697	0.00199	2834.24697	9.50E-04	2834.24697	8.90E-04
2833.28261	0.00205	2833.28261	0.00197	2833.28261	9.40E-04	2833.28261	8.90E-04
2832.31825	0.00191	2832.31825	0.00196	2832.31825	9.30E-04	2832.31825	8.80E-04
2831.3539	0.0018	2831.3539	0.00194	2831.3539	9.20E-04	2831.3539	8.80E-04
2830.38954	0.00178	2830.38954	0.00192	2830.38954	9.20E-04	2830.38954	8.80E-04
2829.42518	0.00181	2829.42518	0.00191	2829.42518	9.10E-04	2829.42518	8.80E-04
2828.46082	0.00181	2828.46082	0.00191	2828.46082	9.10E-04	2828.46082	8.80E-04
2827.49647	0.00176	2827.49647	0.0019	2827.49647	9.10E-04	2827.49647	8.70E-04
2826.53211	0.00171	2826.53211	0.00189	2826.53211	9.10E-04	2826.53211	8.70E-04
2825.56775	0.00168	2825.56775	0.00188	2825.56775	9.00E-04	2825.56775	8.60E-04
2824.60339	0.00167	2824.60339	0.00187	2824.60339	8.90E-04	2824.60339	8.60E-04
2823.63903	0.00171	2823.63903	0.00187	2823.63903	8.80E-04	2823.63903	8.50E-04
2822.67468	0.00174	2822.67468	0.00186	2822.67468	8.80E-04	2822.67468	8.40E-04
2821.71032	0.00174	2821.71032	0.00186	2821.71032	8.70E-04	2821.71032	8.30E-04
2820.74596	0.00174	2820.74596	0.00186	2820.74596	8.70E-04	2820.74596	8.30E-04
2819.7816	0.00175	2819.7816	0.00186	2819.7816	8.70E-04	2819.7816	8.20E-04
2818.81725	0.00174	2818.81725	0.00186	2818.81725	8.70E-04	2818.81725	8.10E-04
2817.85289	0.00167	2817.85289	0.00185	2817.85289	8.70E-04	2817.85289	8.10E-04
2816.88853	0.0016	2816.88853	0.00184	2816.88853	8.70E-04	2816.88853	8.20E-04
2815.92417	0.0016	2815.92417	0.00182	2815.92417	8.70E-04	2815.92417	8.30E-04
2814.95982	0.00164	2814.95982	0.00182	2814.95982	8.80E-04	2814.95982	8.30E-04
2813.99546	0.00163	2813.99546	0.00181	2813.99546	8.80E-04	2813.99546	8.40E-04
2813.0311	0.00153	2813.0311	0.00182	2813.0311	8.80E-04	2813.0311	8.40E-04
2812.06674	0.00144	2812.06674	0.00182	2812.06674	8.70E-04	2812.06674	8.30E-04
2811.10239	0.00144	2811.10239	0.00181	2811.10239	8.60E-04	2811.10239	8.30E-04
2810.13803	0.00154	2810.13803	0.0018	2810.13803	8.50E-04	2810.13803	8.30E-04
2809.17367	0.00159	2809.17367	0.00179	2809.17367	8.40E-04	2809.17367	8.20E-04
2808.20931	0.00154	2808.20931	0.00177	2808.20931	8.30E-04	2808.20931	8.10E-04
2807.24496	0.00148	2807.24496	0.00176	2807.24496	8.20E-04	2807.24496	8.10E-04
2806.2806	0.00146	2806.2806	0.00176	2806.2806	8.20E-04	2806.2806	8.10E-04
2805.31624	0.00144	2805.31624	0.00176	2805.31624	8.20E-04	2805.31624	8.10E-04
2804.35188	0.00141	2804.35188	0.00176	2804.35188	8.20E-04	2804.35188	8.10E-04
2803.38753	0.00143	2803.38753	0.00176	2803.38753	8.20E-04	2803.38753	8.10E-04
2802.42317	0.00147	2802.42317	0.00177	2802.42317	8.10E-04	2802.42317	8.10E-04
2801.45881	0.00148	2801.45881	0.00177	2801.45881	8.10E-04	2801.45881	8.10E-04
2800.49445	0.00146	2800.49445	0.00176	2800.49445	8.10E-04	2800.49445	8.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2799.53009	0.00144	2799.53009	0.00176	2799.53009	8.10E-04	2799.53009	8.00E-04
2798.56574	0.00145	2798.56574	0.00175	2798.56574	8.10E-04	2798.56574	7.90E-04
2797.60138	0.00149	2797.60138	0.00174	2797.60138	8.10E-04	2797.60138	7.80E-04
2796.63702	0.00148	2796.63702	0.00173	2796.63702	8.00E-04	2796.63702	7.70E-04
2795.67266	0.00142	2795.67266	0.00173	2795.67266	8.00E-04	2795.67266	7.60E-04
2794.70831	0.00138	2794.70831	0.00173	2794.70831	8.00E-04	2794.70831	7.60E-04
2793.74395	0.00138	2793.74395	0.00172	2793.74395	8.00E-04	2793.74395	7.60E-04
2792.77959	0.00135	2792.77959	0.00173	2792.77959	8.00E-04	2792.77959	7.60E-04
2791.81523	0.00132	2791.81523	0.00173	2791.81523	8.00E-04	2791.81523	7.70E-04
2790.85088	0.0013	2790.85088	0.00173	2790.85088	8.00E-04	2790.85088	7.70E-04
2789.88652	0.00127	2789.88652	0.00172	2789.88652	8.00E-04	2789.88652	7.60E-04
2788.92216	0.00121	2788.92216	0.00172	2788.92216	8.00E-04	2788.92216	7.60E-04
2787.9578	0.00116	2787.9578	0.00171	2787.9578	8.00E-04	2787.9578	7.50E-04
2786.99345	0.00118	2786.99345	0.00171	2786.99345	7.90E-04	2786.99345	7.50E-04
2786.02909	0.00122	2786.02909	0.0017	2786.02909	7.80E-04	2786.02909	7.40E-04
2785.06473	0.00125	2785.06473	0.0017	2785.06473	7.70E-04	2785.06473	7.30E-04
2784.10037	0.00128	2784.10037	0.00169	2784.10037	7.70E-04	2784.10037	7.30E-04
2783.13602	0.00126	2783.13602	0.00168	2783.13602	7.70E-04	2783.13602	7.30E-04
2782.17166	0.00117	2782.17166	0.00167	2782.17166	7.70E-04	2782.17166	7.40E-04
2781.2073	0.00107	2781.2073	0.00167	2781.2073	7.70E-04	2781.2073	7.40E-04
2780.24294	0.00105	2780.24294	0.00166	2780.24294	7.70E-04	2780.24294	7.40E-04
2779.27859	0.0011	2779.27859	0.00166	2779.27859	7.70E-04	2779.27859	7.40E-04
2778.31423	0.00113	2778.31423	0.00167	2778.31423	7.70E-04	2778.31423	7.40E-04
2777.34987	0.00109	2777.34987	0.00167	2777.34987	7.70E-04	2777.34987	7.30E-04
2776.38551	0.00109	2776.38551	0.00167	2776.38551	7.70E-04	2776.38551	7.20E-04
2775.42115	0.00114	2775.42115	0.00167	2775.42115	7.70E-04	2775.42115	7.10E-04
2774.4568	0.00122	2774.4568	0.00167	2774.4568	7.60E-04	2774.4568	7.10E-04
2773.49244	0.00125	2773.49244	0.00166	2773.49244	7.50E-04	2773.49244	7.10E-04
2772.52808	0.0012	2772.52808	0.00165	2772.52808	7.40E-04	2772.52808	7.10E-04
2771.56372	0.00115	2771.56372	0.00165	2771.56372	7.30E-04	2771.56372	7.30E-04
2770.59937	0.00113	2770.59937	0.00164	2770.59937	7.30E-04	2770.59937	7.40E-04
2769.63501	0.00112	2769.63501	0.00164	2769.63501	7.40E-04	2769.63501	7.40E-04
2768.67065	0.00108	2768.67065	0.00163	2768.67065	7.40E-04	2768.67065	7.40E-04
2767.70629	0.00106	2767.70629	0.00163	2767.70629	7.40E-04	2767.70629	7.20E-04
2766.74194	0.00108	2766.74194	0.00163	2766.74194	7.40E-04	2766.74194	7.10E-04
2765.77758	0.00112	2765.77758	0.00162	2765.77758	7.30E-04	2765.77758	7.00E-04
2764.81322	0.00114	2764.81322	0.00162	2764.81322	7.30E-04	2764.81322	7.00E-04
2763.84886	0.00111	2763.84886	0.00162	2763.84886	7.20E-04	2763.84886	7.00E-04
2762.88451	0.00104	2762.88451	0.00162	2762.88451	7.20E-04	2762.88451	7.10E-04
2761.92015	1.00E-03	2761.92015	0.00163	2761.92015	7.20E-04	2761.92015	7.10E-04
2760.95579	0.00102	2760.95579	0.00163	2760.95579	7.20E-04	2760.95579	7.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2759.99143	0.00105	2759.99143	0.00163	2759.99143	7.20E-04	2759.99143	7.10E-04
2759.02708	0.00105	2759.02708	0.00162	2759.02708	7.10E-04	2759.02708	7.00E-04
2758.06272	0.00103	2758.06272	0.00161	2758.06272	7.10E-04	2758.06272	7.00E-04
2757.09836	0.00103	2757.09836	0.00161	2757.09836	7.10E-04	2757.09836	7.00E-04
2756.134	0.00105	2756.134	0.0016	2756.134	7.00E-04	2756.134	6.90E-04
2755.16965	0.00103	2755.16965	0.0016	2755.16965	7.00E-04	2755.16965	6.80E-04
2754.20529	0.00104	2754.20529	0.00159	2754.20529	6.90E-04	2754.20529	6.70E-04
2753.24093	0.0011	2753.24093	0.00159	2753.24093	6.90E-04	2753.24093	6.70E-04
2752.27657	0.00113	2752.27657	0.00158	2752.27657	6.90E-04	2752.27657	6.60E-04
2751.31222	0.00111	2751.31222	0.00158	2751.31222	6.90E-04	2751.31222	6.70E-04
2750.34786	0.00112	2750.34786	0.00159	2750.34786	6.90E-04	2750.34786	6.70E-04
2749.3835	0.00113	2749.3835	0.00159	2749.3835	6.90E-04	2749.3835	6.80E-04
2748.41914	0.00111	2748.41914	0.00159	2748.41914	7.00E-04	2748.41914	6.70E-04
2747.45478	0.00113	2747.45478	0.00158	2747.45478	7.00E-04	2747.45478	6.70E-04
2746.49043	0.00118	2746.49043	0.00157	2746.49043	6.90E-04	2746.49043	6.70E-04
2745.52607	0.0012	2745.52607	0.00156	2745.52607	6.90E-04	2745.52607	6.70E-04
2744.56171	0.00115	2744.56171	0.00155	2744.56171	6.80E-04	2744.56171	6.80E-04
2743.59735	0.00107	2743.59735	0.00155	2743.59735	6.70E-04	2743.59735	6.90E-04
2742.633	0.00104	2742.633	0.00155	2742.633	6.70E-04	2742.633	6.90E-04
2741.66864	0.00103	2741.66864	0.00156	2741.66864	6.70E-04	2741.66864	6.90E-04
2740.70428	0.00103	2740.70428	0.00156	2740.70428	6.70E-04	2740.70428	6.90E-04
2739.73992	0.00104	2739.73992	0.00157	2739.73992	6.70E-04	2739.73992	6.80E-04
2738.77557	0.00101	2738.77557	0.00157	2738.77557	6.70E-04	2738.77557	6.90E-04
2737.81121	9.90E-04	2737.81121	0.00156	2737.81121	6.70E-04	2737.81121	6.90E-04
2736.84685	0.00101	2736.84685	0.00155	2736.84685	6.70E-04	2736.84685	7.00E-04
2735.88249	0.00106	2735.88249	0.00153	2735.88249	6.70E-04	2735.88249	6.90E-04
2734.91814	0.0011	2734.91814	0.00153	2734.91814	6.60E-04	2734.91814	6.80E-04
2733.95378	0.0011	2733.95378	0.00153	2733.95378	6.60E-04	2733.95378	6.70E-04
2732.98942	0.00109	2732.98942	0.00153	2732.98942	6.60E-04	2732.98942	6.60E-04
2732.02506	0.00112	2732.02506	0.00153	2732.02506	6.60E-04	2732.02506	6.60E-04
2731.06071	0.0011	2731.06071	0.00154	2731.06071	6.60E-04	2731.06071	6.60E-04
2730.09635	0.00103	2730.09635	0.00154	2730.09635	6.50E-04	2730.09635	6.60E-04
2729.13199	0.00101	2729.13199	0.00153	2729.13199	6.40E-04	2729.13199	6.60E-04
2728.16763	0.00103	2728.16763	0.00153	2728.16763	6.40E-04	2728.16763	6.60E-04
2727.20328	0.00101	2727.20328	0.00153	2727.20328	6.40E-04	2727.20328	6.60E-04
2726.23892	9.80E-04	2726.23892	0.00152	2726.23892	6.30E-04	2726.23892	6.50E-04
2725.27456	1.00E-03	2725.27456	0.00152	2725.27456	6.40E-04	2725.27456	6.40E-04
2724.3102	0.00103	2724.3102	0.00153	2724.3102	6.40E-04	2724.3102	6.40E-04
2723.34584	0.00104	2723.34584	0.00153	2723.34584	6.40E-04	2723.34584	6.40E-04
2722.38149	0.00103	2722.38149	0.00153	2722.38149	6.40E-04	2722.38149	6.40E-04
2721.41713	0.00101	2721.41713	0.00153	2721.41713	6.40E-04	2721.41713	6.40E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2720.45277	9.80E-04	2720.45277	0.00152	2720.45277	6.30E-04	2720.45277	6.30E-04
2719.48841	9.20E-04	2719.48841	0.00151	2719.48841	6.30E-04	2719.48841	6.30E-04
2718.52406	8.50E-04	2718.52406	0.0015	2718.52406	6.20E-04	2718.52406	6.30E-04
2717.5597	8.10E-04	2717.5597	0.00149	2717.5597	6.10E-04	2717.5597	6.30E-04
2716.59534	8.20E-04	2716.59534	0.00149	2716.59534	6.00E-04	2716.59534	6.30E-04
2715.63098	8.70E-04	2715.63098	0.00148	2715.63098	5.90E-04	2715.63098	6.30E-04
2714.66663	9.10E-04	2714.66663	0.00148	2714.66663	5.90E-04	2714.66663	6.30E-04
2713.70227	8.90E-04	2713.70227	0.00148	2713.70227	6.00E-04	2713.70227	6.30E-04
2712.73791	8.50E-04	2712.73791	0.00149	2712.73791	6.10E-04	2712.73791	6.30E-04
2711.77355	8.20E-04	2711.77355	0.00149	2711.77355	6.10E-04	2711.77355	6.30E-04
2710.8092	7.80E-04	2710.8092	0.00149	2710.8092	6.20E-04	2710.8092	6.40E-04
2709.84484	7.40E-04	2709.84484	0.00148	2709.84484	6.20E-04	2709.84484	6.40E-04
2708.88048	7.40E-04	2708.88048	0.00147	2708.88048	6.30E-04	2708.88048	6.50E-04
2707.91612	8.10E-04	2707.91612	0.00147	2707.91612	6.20E-04	2707.91612	6.50E-04
2706.95177	8.80E-04	2706.95177	0.00146	2706.95177	6.20E-04	2706.95177	6.50E-04
2705.98741	9.10E-04	2705.98741	0.00146	2705.98741	6.20E-04	2705.98741	6.50E-04
2705.02305	9.10E-04	2705.02305	0.00146	2705.02305	6.10E-04	2705.02305	6.50E-04
2704.05869	9.00E-04	2704.05869	0.00146	2704.05869	6.10E-04	2704.05869	6.40E-04
2703.09434	8.90E-04	2703.09434	0.00146	2703.09434	6.10E-04	2703.09434	6.40E-04
2702.12998	8.60E-04	2702.12998	0.00145	2702.12998	6.10E-04	2702.12998	6.40E-04
2701.16562	8.40E-04	2701.16562	0.00145	2701.16562	6.10E-04	2701.16562	6.30E-04
2700.20126	8.40E-04	2700.20126	0.00145	2700.20126	6.10E-04	2700.20126	6.20E-04
2699.23691	8.40E-04	2699.23691	0.00144	2699.23691	6.10E-04	2699.23691	6.10E-04
2698.27255	8.20E-04	2698.27255	0.00143	2698.27255	6.10E-04	2698.27255	6.10E-04
2697.30819	7.90E-04	2697.30819	0.00142	2697.30819	6.00E-04	2697.30819	6.10E-04
2696.34383	7.50E-04	2696.34383	0.00141	2696.34383	5.90E-04	2696.34383	6.20E-04
2695.37947	7.20E-04	2695.37947	0.0014	2695.37947	5.80E-04	2695.37947	6.30E-04
2694.41512	7.70E-04	2694.41512	0.0014	2694.41512	5.70E-04	2694.41512	6.20E-04
2693.45076	8.30E-04	2693.45076	0.00139	2693.45076	5.60E-04	2693.45076	6.10E-04
2692.4864	8.50E-04	2692.4864	0.00139	2692.4864	5.60E-04	2692.4864	6.10E-04
2691.52204	8.70E-04	2691.52204	0.00139	2691.52204	5.60E-04	2691.52204	6.10E-04
2690.55769	8.80E-04	2690.55769	0.00138	2690.55769	5.60E-04	2690.55769	6.10E-04
2689.59333	8.40E-04	2689.59333	0.00138	2689.59333	5.60E-04	2689.59333	6.20E-04
2688.62897	8.00E-04	2688.62897	0.00139	2688.62897	5.60E-04	2688.62897	6.30E-04
2687.66461	8.10E-04	2687.66461	0.00139	2687.66461	5.60E-04	2687.66461	6.30E-04
2686.70026	8.30E-04	2686.70026	0.00139	2686.70026	5.60E-04	2686.70026	6.20E-04
2685.7359	8.40E-04	2685.7359	0.00139	2685.7359	5.70E-04	2685.7359	6.20E-04
2684.77154	8.60E-04	2684.77154	0.0014	2684.77154	5.80E-04	2684.77154	6.20E-04
2683.80718	8.90E-04	2683.80718	0.0014	2683.80718	5.80E-04	2683.80718	6.20E-04
2682.84283	8.90E-04	2682.84283	0.00139	2682.84283	5.90E-04	2682.84283	6.20E-04
2681.87847	8.90E-04	2681.87847	0.00139	2681.87847	6.00E-04	2681.87847	6.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2680.91411	9.00E-04	2680.91411	0.00138	2680.91411	6.00E-04	2680.91411	6.10E-04
2679.94975	9.20E-04	2679.94975	0.00138	2679.94975	5.90E-04	2679.94975	6.10E-04
2678.9854	9.10E-04	2678.9854	0.00137	2678.9854	5.80E-04	2678.9854	6.00E-04
2678.02104	8.60E-04	2678.02104	0.00137	2678.02104	5.70E-04	2678.02104	6.00E-04
2677.05668	8.40E-04	2677.05668	0.00136	2677.05668	5.60E-04	2677.05668	6.00E-04
2676.09232	8.10E-04	2676.09232	0.00136	2676.09232	5.50E-04	2676.09232	5.90E-04
2675.12797	8.00E-04	2675.12797	0.00135	2675.12797	5.50E-04	2675.12797	5.80E-04
2674.16361	8.40E-04	2674.16361	0.00135	2674.16361	5.60E-04	2674.16361	5.80E-04
2673.19925	8.80E-04	2673.19925	0.00136	2673.19925	5.70E-04	2673.19925	5.80E-04
2672.23489	8.70E-04	2672.23489	0.00136	2672.23489	5.70E-04	2672.23489	5.90E-04
2671.27053	8.10E-04	2671.27053	0.00135	2671.27053	5.70E-04	2671.27053	6.00E-04
2670.30618	7.80E-04	2670.30618	0.00134	2670.30618	5.60E-04	2670.30618	6.00E-04
2669.34182	8.00E-04	2669.34182	0.00133	2669.34182	5.50E-04	2669.34182	6.00E-04
2668.37746	8.30E-04	2668.37746	0.00132	2668.37746	5.50E-04	2668.37746	6.00E-04
2667.4131	8.30E-04	2667.4131	0.00131	2667.4131	5.50E-04	2667.4131	6.00E-04
2666.44875	8.30E-04	2666.44875	0.00131	2666.44875	5.50E-04	2666.44875	5.90E-04
2665.48439	8.20E-04	2665.48439	0.00131	2665.48439	5.50E-04	2665.48439	5.90E-04
2664.52003	8.20E-04	2664.52003	0.00131	2664.52003	5.60E-04	2664.52003	6.00E-04
2663.55567	8.30E-04	2663.55567	0.00131	2663.55567	5.70E-04	2663.55567	6.00E-04
2662.59132	8.30E-04	2662.59132	0.00131	2662.59132	5.80E-04	2662.59132	5.90E-04
2661.62696	8.10E-04	2661.62696	0.0013	2661.62696	5.80E-04	2661.62696	5.90E-04
2660.6626	7.90E-04	2660.6626	0.0013	2660.6626	5.80E-04	2660.6626	5.90E-04
2659.69824	7.80E-04	2659.69824	0.00129	2659.69824	5.70E-04	2659.69824	5.90E-04
2658.73389	7.70E-04	2658.73389	0.00128	2658.73389	5.60E-04	2658.73389	5.90E-04
2657.76953	7.70E-04	2657.76953	0.00127	2657.76953	5.50E-04	2657.76953	5.90E-04
2656.80517	7.80E-04	2656.80517	0.00126	2656.80517	5.50E-04	2656.80517	5.90E-04
2655.84081	7.80E-04	2655.84081	0.00125	2655.84081	5.50E-04	2655.84081	5.90E-04
2654.87646	8.00E-04	2654.87646	0.00126	2654.87646	5.40E-04	2654.87646	5.80E-04
2653.9121	8.10E-04	2653.9121	0.00126	2653.9121	5.40E-04	2653.9121	5.80E-04
2652.94774	7.70E-04	2652.94774	0.00126	2652.94774	5.40E-04	2652.94774	5.70E-04
2651.98338	7.10E-04	2651.98338	0.00126	2651.98338	5.40E-04	2651.98338	5.70E-04
2651.01903	6.60E-04	2651.01903	0.00126	2651.01903	5.40E-04	2651.01903	5.60E-04
2650.05467	6.40E-04	2650.05467	0.00125	2650.05467	5.40E-04	2650.05467	5.50E-04
2649.09031	6.70E-04	2649.09031	0.00124	2649.09031	5.40E-04	2649.09031	5.40E-04
2648.12595	7.50E-04	2648.12595	0.00124	2648.12595	5.40E-04	2648.12595	5.50E-04
2647.1616	8.40E-04	2647.1616	0.00124	2647.1616	5.40E-04	2647.1616	5.60E-04
2646.19724	8.60E-04	2646.19724	0.00124	2646.19724	5.50E-04	2646.19724	5.70E-04
2645.23288	7.70E-04	2645.23288	0.00124	2645.23288	5.50E-04	2645.23288	5.60E-04
2644.26852	7.00E-04	2644.26852	0.00125	2644.26852	5.40E-04	2644.26852	5.60E-04
2643.30416	6.90E-04	2643.30416	0.00125	2643.30416	5.40E-04	2643.30416	5.50E-04
2642.33981	6.80E-04	2642.33981	0.00125	2642.33981	5.30E-04	2642.33981	5.40E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2641.37545	6.80E-04	2641.37545	0.00125	2641.37545	5.30E-04	2641.37545	5.40E-04
2640.41109	7.00E-04	2640.41109	0.00124	2640.41109	5.20E-04	2640.41109	5.50E-04
2639.44673	7.50E-04	2639.44673	0.00123	2639.44673	5.20E-04	2639.44673	5.50E-04
2638.48238	7.70E-04	2638.48238	0.00122	2638.48238	5.30E-04	2638.48238	5.50E-04
2637.51802	7.60E-04	2637.51802	0.00121	2637.51802	5.40E-04	2637.51802	5.50E-04
2636.55366	7.70E-04	2636.55366	0.00121	2636.55366	5.40E-04	2636.55366	5.40E-04
2635.5893	7.90E-04	2635.5893	0.00121	2635.5893	5.40E-04	2635.5893	5.40E-04
2634.62495	8.10E-04	2634.62495	0.00121	2634.62495	5.40E-04	2634.62495	5.40E-04
2633.66059	8.30E-04	2633.66059	0.00121	2633.66059	5.40E-04	2633.66059	5.50E-04
2632.69623	8.10E-04	2632.69623	0.00121	2632.69623	5.40E-04	2632.69623	5.50E-04
2631.73187	7.40E-04	2631.73187	0.00121	2631.73187	5.40E-04	2631.73187	5.60E-04
2630.76752	6.90E-04	2630.76752	0.00121	2630.76752	5.40E-04	2630.76752	5.60E-04
2629.80316	7.00E-04	2629.80316	0.00121	2629.80316	5.30E-04	2629.80316	5.60E-04
2628.8388	6.90E-04	2628.8388	0.0012	2628.8388	5.30E-04	2628.8388	5.60E-04
2627.87444	6.80E-04	2627.87444	0.0012	2627.87444	5.20E-04	2627.87444	5.50E-04
2626.91009	7.20E-04	2626.91009	0.00119	2626.91009	5.20E-04	2626.91009	5.50E-04
2625.94573	8.10E-04	2625.94573	0.00118	2625.94573	5.10E-04	2625.94573	5.50E-04
2624.98137	8.50E-04	2624.98137	0.00117	2624.98137	5.10E-04	2624.98137	5.40E-04
2624.01701	8.30E-04	2624.01701	0.00117	2624.01701	5.20E-04	2624.01701	5.40E-04
2623.05266	8.00E-04	2623.05266	0.00117	2623.05266	5.20E-04	2623.05266	5.50E-04
2622.0883	8.00E-04	2622.0883	0.00117	2622.0883	5.30E-04	2622.0883	5.50E-04
2621.12394	8.00E-04	2621.12394	0.00117	2621.12394	5.40E-04	2621.12394	5.50E-04
2620.15958	7.90E-04	2620.15958	0.00117	2620.15958	5.40E-04	2620.15958	5.60E-04
2619.19522	7.70E-04	2619.19522	0.00117	2619.19522	5.40E-04	2619.19522	5.60E-04
2618.23087	7.90E-04	2618.23087	0.00117	2618.23087	5.30E-04	2618.23087	5.60E-04
2617.26651	7.80E-04	2617.26651	0.00117	2617.26651	5.20E-04	2617.26651	5.60E-04
2616.30215	7.50E-04	2616.30215	0.00117	2616.30215	5.10E-04	2616.30215	5.60E-04
2615.33779	7.70E-04	2615.33779	0.00117	2615.33779	5.00E-04	2615.33779	5.60E-04
2614.37344	8.00E-04	2614.37344	0.00116	2614.37344	4.90E-04	2614.37344	5.50E-04
2613.40908	8.40E-04	2613.40908	0.00116	2613.40908	4.90E-04	2613.40908	5.50E-04
2612.44472	8.60E-04	2612.44472	0.00115	2612.44472	4.80E-04	2612.44472	5.50E-04
2611.48036	8.40E-04	2611.48036	0.00115	2611.48036	4.80E-04	2611.48036	5.50E-04
2610.51601	7.50E-04	2610.51601	0.00114	2610.51601	4.90E-04	2610.51601	5.50E-04
2609.55165	6.70E-04	2609.55165	0.00114	2609.55165	4.90E-04	2609.55165	5.50E-04
2608.58729	6.30E-04	2608.58729	0.00113	2608.58729	4.90E-04	2608.58729	5.40E-04
2607.62293	6.40E-04	2607.62293	0.00112	2607.62293	5.00E-04	2607.62293	5.40E-04
2606.65858	6.90E-04	2606.65858	0.00112	2606.65858	5.00E-04	2606.65858	5.30E-04
2605.69422	7.40E-04	2605.69422	0.00112	2605.69422	4.90E-04	2605.69422	5.30E-04
2604.72986	7.70E-04	2604.72986	0.00112	2604.72986	4.90E-04	2604.72986	5.30E-04
2603.7655	7.60E-04	2603.7655	0.00113	2603.7655	4.80E-04	2603.7655	5.30E-04
2602.80115	7.20E-04	2602.80115	0.00113	2602.80115	4.70E-04	2602.80115	5.30E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2601.83679	6.90E-04	2601.83679	0.00112	2601.83679	4.80E-04	2601.83679	5.30E-04
2600.87243	6.90E-04	2600.87243	0.00111	2600.87243	4.80E-04	2600.87243	5.30E-04
2599.90807	7.20E-04	2599.90807	0.0011	2599.90807	4.90E-04	2599.90807	5.30E-04
2598.94372	7.40E-04	2598.94372	0.0011	2598.94372	4.80E-04	2598.94372	5.20E-04
2597.97936	7.20E-04	2597.97936	0.00109	2597.97936	4.70E-04	2597.97936	5.10E-04
2597.015	7.10E-04	2597.015	0.00109	2597.015	4.60E-04	2597.015	5.00E-04
2596.05064	7.50E-04	2596.05064	0.00109	2596.05064	4.50E-04	2596.05064	5.00E-04
2595.08628	7.60E-04	2595.08628	0.00109	2595.08628	4.50E-04	2595.08628	4.90E-04
2594.12193	7.50E-04	2594.12193	0.00109	2594.12193	4.60E-04	2594.12193	4.90E-04
2593.15757	7.50E-04	2593.15757	0.00109	2593.15757	4.60E-04	2593.15757	4.90E-04
2592.19321	7.20E-04	2592.19321	0.00109	2592.19321	4.60E-04	2592.19321	4.90E-04
2591.22885	6.70E-04	2591.22885	0.00109	2591.22885	4.50E-04	2591.22885	5.00E-04
2590.2645	6.60E-04	2590.2645	0.00109	2590.2645	4.50E-04	2590.2645	4.90E-04
2589.30014	6.80E-04	2589.30014	0.00109	2589.30014	4.40E-04	2589.30014	4.90E-04
2588.33578	6.80E-04	2588.33578	0.00109	2588.33578	4.40E-04	2588.33578	4.90E-04
2587.37142	6.50E-04	2587.37142	0.00109	2587.37142	4.50E-04	2587.37142	4.90E-04
2586.40707	6.30E-04	2586.40707	0.00108	2586.40707	4.50E-04	2586.40707	4.90E-04
2585.44271	6.70E-04	2585.44271	0.00108	2585.44271	4.60E-04	2585.44271	5.00E-04
2584.47835	7.20E-04	2584.47835	0.00107	2584.47835	4.50E-04	2584.47835	5.00E-04
2583.51399	7.00E-04	2583.51399	0.00106	2583.51399	4.50E-04	2583.51399	5.00E-04
2582.54964	6.40E-04	2582.54964	0.00105	2582.54964	4.40E-04	2582.54964	4.90E-04
2581.58528	5.80E-04	2581.58528	0.00104	2581.58528	4.40E-04	2581.58528	4.80E-04
2580.62092	5.80E-04	2580.62092	0.00103	2580.62092	4.40E-04	2580.62092	4.70E-04
2579.65656	6.00E-04	2579.65656	0.00103	2579.65656	4.50E-04	2579.65656	4.60E-04
2578.69221	6.10E-04	2578.69221	0.00103	2578.69221	4.50E-04	2578.69221	4.70E-04
2577.72785	6.00E-04	2577.72785	0.00103	2577.72785	4.60E-04	2577.72785	4.80E-04
2576.76349	6.20E-04	2576.76349	0.00103	2576.76349	4.50E-04	2576.76349	4.80E-04
2575.79913	6.80E-04	2575.79913	0.00103	2575.79913	4.40E-04	2575.79913	4.80E-04
2574.83478	7.20E-04	2574.83478	0.00103	2574.83478	4.40E-04	2574.83478	4.70E-04
2573.87042	6.80E-04	2573.87042	0.00102	2573.87042	4.30E-04	2573.87042	4.70E-04
2572.90606	6.20E-04	2572.90606	0.00102	2572.90606	4.30E-04	2572.90606	4.70E-04
2571.9417	6.00E-04	2571.9417	0.00103	2571.9417	4.30E-04	2571.9417	4.70E-04
2570.97735	6.20E-04	2570.97735	0.00103	2570.97735	4.30E-04	2570.97735	4.80E-04
2570.01299	6.20E-04	2570.01299	0.00103	2570.01299	4.40E-04	2570.01299	4.80E-04
2569.04863	5.90E-04	2569.04863	0.00103	2569.04863	4.40E-04	2569.04863	4.70E-04
2568.08427	5.50E-04	2568.08427	0.00103	2568.08427	4.40E-04	2568.08427	4.60E-04
2567.11991	5.50E-04	2567.11991	0.00103	2567.11991	4.40E-04	2567.11991	4.40E-04
2566.15556	5.90E-04	2566.15556	0.00103	2566.15556	4.40E-04	2566.15556	4.30E-04
2565.1912	6.20E-04	2565.1912	0.00103	2565.1912	4.40E-04	2565.1912	4.30E-04
2564.22684	6.50E-04	2564.22684	0.00103	2564.22684	4.40E-04	2564.22684	4.20E-04
2563.26248	6.80E-04	2563.26248	0.00103	2563.26248	4.40E-04	2563.26248	4.20E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2562.29813	7.00E-04	2562.29813	0.00103	2562.29813	4.40E-04	2562.29813	4.20E-04
2561.33377	7.20E-04	2561.33377	0.00103	2561.33377	4.30E-04	2561.33377	4.30E-04
2560.36941	7.30E-04	2560.36941	0.00103	2560.36941	4.20E-04	2560.36941	4.30E-04
2559.40505	7.00E-04	2559.40505	0.00103	2559.40505	4.20E-04	2559.40505	4.30E-04
2558.4407	6.10E-04	2558.4407	0.00103	2558.4407	4.20E-04	2558.4407	4.40E-04
2557.47634	5.00E-04	2557.47634	0.00103	2557.47634	4.20E-04	2557.47634	4.30E-04
2556.51198	4.70E-04	2556.51198	0.00102	2556.51198	4.30E-04	2556.51198	4.30E-04
2555.54762	5.50E-04	2555.54762	0.00101	2555.54762	4.40E-04	2555.54762	4.20E-04
2554.58327	6.70E-04	2554.58327	0.00101	2554.58327	4.40E-04	2554.58327	4.20E-04
2553.61891	7.40E-04	2553.61891	1.00E-03	2553.61891	4.40E-04	2553.61891	4.30E-04
2552.65455	7.30E-04	2552.65455	9.90E-04	2552.65455	4.30E-04	2552.65455	4.30E-04
2551.69019	7.00E-04	2551.69019	9.90E-04	2551.69019	4.30E-04	2551.69019	4.30E-04
2550.72584	6.70E-04	2550.72584	1.00E-03	2550.72584	4.20E-04	2550.72584	4.30E-04
2549.76148	6.70E-04	2549.76148	1.00E-03	2549.76148	4.10E-04	2549.76148	4.30E-04
2548.79712	6.50E-04	2548.79712	1.00E-03	2548.79712	4.10E-04	2548.79712	4.30E-04
2547.83276	6.10E-04	2547.83276	9.90E-04	2547.83276	4.10E-04	2547.83276	4.40E-04
2546.86841	5.70E-04	2546.86841	9.90E-04	2546.86841	4.10E-04	2546.86841	4.40E-04
2545.90405	5.50E-04	2545.90405	9.80E-04	2545.90405	4.10E-04	2545.90405	4.40E-04
2544.93969	4.90E-04	2544.93969	9.70E-04	2544.93969	4.10E-04	2544.93969	4.30E-04
2543.97533	4.70E-04	2543.97533	9.60E-04	2543.97533	4.00E-04	2543.97533	4.20E-04
2543.01097	5.40E-04	2543.01097	9.60E-04	2543.01097	3.90E-04	2543.01097	4.10E-04
2542.04662	5.90E-04	2542.04662	9.60E-04	2542.04662	3.80E-04	2542.04662	4.00E-04
2541.08226	6.00E-04	2541.08226	9.60E-04	2541.08226	3.80E-04	2541.08226	3.90E-04
2540.1179	5.70E-04	2540.1179	9.60E-04	2540.1179	3.80E-04	2540.1179	3.90E-04
2539.15354	5.50E-04	2539.15354	9.60E-04	2539.15354	3.80E-04	2539.15354	4.00E-04
2538.18919	5.70E-04	2538.18919	9.50E-04	2538.18919	3.90E-04	2538.18919	4.00E-04
2537.22483	5.80E-04	2537.22483	9.50E-04	2537.22483	3.90E-04	2537.22483	4.10E-04
2536.26047	5.30E-04	2536.26047	9.40E-04	2536.26047	4.00E-04	2536.26047	4.00E-04
2535.29611	4.80E-04	2535.29611	9.40E-04	2535.29611	4.00E-04	2535.29611	4.00E-04
2534.33176	4.80E-04	2534.33176	9.40E-04	2534.33176	4.00E-04	2534.33176	4.00E-04
2533.3674	4.70E-04	2533.3674	9.40E-04	2533.3674	4.00E-04	2533.3674	4.10E-04
2532.40304	4.40E-04	2532.40304	9.30E-04	2532.40304	3.90E-04	2532.40304	4.10E-04
2531.43868	4.30E-04	2531.43868	9.30E-04	2531.43868	3.90E-04	2531.43868	4.10E-04
2530.47433	4.40E-04	2530.47433	9.20E-04	2530.47433	3.90E-04	2530.47433	4.10E-04
2529.50997	4.40E-04	2529.50997	9.10E-04	2529.50997	3.90E-04	2529.50997	4.00E-04
2528.54561	4.40E-04	2528.54561	9.00E-04	2528.54561	3.90E-04	2528.54561	3.90E-04
2527.58125	4.30E-04	2527.58125	8.90E-04	2527.58125	3.80E-04	2527.58125	3.90E-04
2526.6169	4.30E-04	2526.6169	8.90E-04	2526.6169	3.80E-04	2526.6169	3.80E-04
2525.65254	4.40E-04	2525.65254	8.90E-04	2525.65254	3.80E-04	2525.65254	3.90E-04
2524.68818	4.40E-04	2524.68818	9.00E-04	2524.68818	3.80E-04	2524.68818	3.90E-04
2523.72382	4.20E-04	2523.72382	9.10E-04	2523.72382	3.80E-04	2523.72382	3.90E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2522.75947	4.30E-04	2522.75947	9.20E-04	2522.75947	3.80E-04	2522.75947	4.00E-04
2521.79511	4.70E-04	2521.79511	9.20E-04	2521.79511	3.80E-04	2521.79511	4.00E-04
2520.83075	4.90E-04	2520.83075	9.20E-04	2520.83075	3.70E-04	2520.83075	3.90E-04
2519.86639	4.90E-04	2519.86639	9.20E-04	2519.86639	3.70E-04	2519.86639	3.90E-04
2518.90204	4.80E-04	2518.90204	9.10E-04	2518.90204	3.70E-04	2518.90204	3.80E-04
2517.93768	4.40E-04	2517.93768	9.10E-04	2517.93768	3.70E-04	2517.93768	3.70E-04
2516.97332	4.20E-04	2516.97332	9.10E-04	2516.97332	3.70E-04	2516.97332	3.70E-04
2516.00896	4.40E-04	2516.00896	9.10E-04	2516.00896	3.60E-04	2516.00896	3.70E-04
2515.0446	4.50E-04	2515.0446	9.20E-04	2515.0446	3.60E-04	2515.0446	3.70E-04
2514.08025	4.40E-04	2514.08025	9.20E-04	2514.08025	3.70E-04	2514.08025	3.70E-04
2513.11589	4.20E-04	2513.11589	9.10E-04	2513.11589	3.70E-04	2513.11589	3.80E-04
2512.15153	3.70E-04	2512.15153	9.00E-04	2512.15153	3.70E-04	2512.15153	3.80E-04
2511.18717	3.20E-04	2511.18717	8.90E-04	2511.18717	3.70E-04	2511.18717	3.80E-04
2510.22282	3.50E-04	2510.22282	8.80E-04	2510.22282	3.70E-04	2510.22282	3.80E-04
2509.25846	4.10E-04	2509.25846	8.80E-04	2509.25846	3.60E-04	2509.25846	3.80E-04
2508.2941	4.00E-04	2508.2941	8.70E-04	2508.2941	3.50E-04	2508.2941	3.80E-04
2507.32974	3.50E-04	2507.32974	8.70E-04	2507.32974	3.50E-04	2507.32974	3.80E-04
2506.36539	3.70E-04	2506.36539	8.70E-04	2506.36539	3.40E-04	2506.36539	3.70E-04
2505.40103	4.10E-04	2505.40103	8.60E-04	2505.40103	3.50E-04	2505.40103	3.70E-04
2504.43667	4.30E-04	2504.43667	8.60E-04	2504.43667	3.50E-04	2504.43667	3.60E-04
2503.47231	4.60E-04	2503.47231	8.60E-04	2503.47231	3.50E-04	2503.47231	3.60E-04
2502.50796	5.10E-04	2502.50796	8.60E-04	2502.50796	3.50E-04	2502.50796	3.50E-04
2501.5436	5.30E-04	2501.5436	8.60E-04	2501.5436	3.40E-04	2501.5436	3.60E-04
2500.57924	5.00E-04	2500.57924	8.50E-04	2500.57924	3.40E-04	2500.57924	3.60E-04
2499.61488	4.60E-04	2499.61488	8.50E-04	2499.61488	3.30E-04	2499.61488	3.70E-04
2498.65053	4.30E-04	2498.65053	8.50E-04	2498.65053	3.40E-04	2498.65053	3.60E-04
2497.68617	4.10E-04	2497.68617	8.40E-04	2497.68617	3.40E-04	2497.68617	3.60E-04
2496.72181	4.20E-04	2496.72181	8.40E-04	2496.72181	3.40E-04	2496.72181	3.50E-04
2495.75745	4.40E-04	2495.75745	8.40E-04	2495.75745	3.40E-04	2495.75745	3.50E-04
2494.7931	4.40E-04	2494.7931	8.30E-04	2494.7931	3.30E-04	2494.7931	3.50E-04
2493.82874	4.10E-04	2493.82874	8.20E-04	2493.82874	3.20E-04	2493.82874	3.40E-04
2492.86438	3.50E-04	2492.86438	8.20E-04	2492.86438	3.20E-04	2492.86438	3.40E-04
2491.90002	3.50E-04	2491.90002	8.10E-04	2491.90002	3.10E-04	2491.90002	3.30E-04
2490.93566	4.10E-04	2490.93566	8.10E-04	2490.93566	3.10E-04	2490.93566	3.30E-04
2489.97131	4.40E-04	2489.97131	8.20E-04	2489.97131	3.10E-04	2489.97131	3.30E-04
2489.00695	4.10E-04	2489.00695	8.20E-04	2489.00695	3.10E-04	2489.00695	3.40E-04
2488.04259	3.80E-04	2488.04259	8.10E-04	2488.04259	3.10E-04	2488.04259	3.40E-04
2487.07823	4.10E-04	2487.07823	8.00E-04	2487.07823	3.10E-04	2487.07823	3.40E-04
2486.11388	4.70E-04	2486.11388	8.00E-04	2486.11388	3.00E-04	2486.11388	3.40E-04
2485.14952	5.00E-04	2485.14952	8.00E-04	2485.14952	3.00E-04	2485.14952	3.30E-04
2484.18516	4.70E-04	2484.18516	8.00E-04	2484.18516	2.90E-04	2484.18516	3.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2483.2208	4.30E-04	2483.2208	8.00E-04	2483.2208	2.90E-04	2483.2208	3.20E-04
2482.25645	4.00E-04	2482.25645	8.00E-04	2482.25645	3.00E-04	2482.25645	3.30E-04
2481.29209	3.60E-04	2481.29209	7.90E-04	2481.29209	3.00E-04	2481.29209	3.30E-04
2480.32773	3.50E-04	2480.32773	7.80E-04	2480.32773	3.00E-04	2480.32773	3.40E-04
2479.36337	3.90E-04	2479.36337	7.60E-04	2479.36337	2.90E-04	2479.36337	3.40E-04
2478.39902	4.30E-04	2478.39902	7.60E-04	2478.39902	2.80E-04	2478.39902	3.40E-04
2477.43466	4.20E-04	2477.43466	7.70E-04	2477.43466	2.80E-04	2477.43466	3.40E-04
2476.4703	4.20E-04	2476.4703	7.80E-04	2476.4703	2.70E-04	2476.4703	3.40E-04
2475.50594	4.10E-04	2475.50594	7.80E-04	2475.50594	2.70E-04	2475.50594	3.50E-04
2474.54159	3.90E-04	2474.54159	7.80E-04	2474.54159	2.70E-04	2474.54159	3.50E-04
2473.57723	4.20E-04	2473.57723	7.70E-04	2473.57723	2.70E-04	2473.57723	3.50E-04
2472.61287	5.00E-04	2472.61287	7.70E-04	2472.61287	2.80E-04	2472.61287	3.50E-04
2471.64851	5.50E-04	2471.64851	7.60E-04	2471.64851	2.80E-04	2471.64851	3.40E-04
2470.68416	5.20E-04	2470.68416	7.60E-04	2470.68416	2.80E-04	2470.68416	3.40E-04
2469.7198	4.50E-04	2469.7198	7.70E-04	2469.7198	2.80E-04	2469.7198	3.30E-04
2468.75544	4.10E-04	2468.75544	7.70E-04	2468.75544	2.70E-04	2468.75544	3.30E-04
2467.79108	3.70E-04	2467.79108	7.70E-04	2467.79108	2.70E-04	2467.79108	3.30E-04
2466.82672	3.50E-04	2466.82672	7.70E-04	2466.82672	2.70E-04	2466.82672	3.30E-04
2465.86237	3.80E-04	2465.86237	7.70E-04	2465.86237	2.70E-04	2465.86237	3.30E-04
2464.89801	4.20E-04	2464.89801	7.70E-04	2464.89801	2.70E-04	2464.89801	3.30E-04
2463.93365	4.50E-04	2463.93365	7.70E-04	2463.93365	2.70E-04	2463.93365	3.40E-04
2462.96929	4.70E-04	2462.96929	7.70E-04	2462.96929	2.70E-04	2462.96929	3.50E-04
2462.00494	4.60E-04	2462.00494	7.70E-04	2462.00494	2.60E-04	2462.00494	3.50E-04
2461.04058	4.60E-04	2461.04058	7.70E-04	2461.04058	2.50E-04	2461.04058	3.40E-04
2460.07622	4.60E-04	2460.07622	7.70E-04	2460.07622	2.50E-04	2460.07622	3.40E-04
2459.11186	4.30E-04	2459.11186	7.60E-04	2459.11186	2.50E-04	2459.11186	3.30E-04
2458.14751	3.90E-04	2458.14751	7.50E-04	2458.14751	2.60E-04	2458.14751	3.30E-04
2457.18315	3.90E-04	2457.18315	7.40E-04	2457.18315	2.60E-04	2457.18315	3.30E-04
2456.21879	4.40E-04	2456.21879	7.40E-04	2456.21879	2.50E-04	2456.21879	3.30E-04
2455.25443	4.80E-04	2455.25443	7.50E-04	2455.25443	2.50E-04	2455.25443	3.30E-04
2454.29008	4.80E-04	2454.29008	7.50E-04	2454.29008	2.50E-04	2454.29008	3.20E-04
2453.32572	4.30E-04	2453.32572	7.50E-04	2453.32572	2.50E-04	2453.32572	3.20E-04
2452.36136	4.20E-04	2452.36136	7.40E-04	2452.36136	2.50E-04	2452.36136	3.20E-04
2451.397	4.30E-04	2451.397	7.20E-04	2451.397	2.40E-04	2451.397	3.20E-04
2450.43265	4.20E-04	2450.43265	7.20E-04	2450.43265	2.40E-04	2450.43265	3.20E-04
2449.46829	4.10E-04	2449.46829	7.20E-04	2449.46829	2.40E-04	2449.46829	3.20E-04
2448.50393	4.30E-04	2448.50393	7.20E-04	2448.50393	2.40E-04	2448.50393	3.20E-04
2447.53957	4.80E-04	2447.53957	7.30E-04	2447.53957	2.50E-04	2447.53957	3.20E-04
2446.57522	5.20E-04	2446.57522	7.30E-04	2446.57522	2.50E-04	2446.57522	3.20E-04
2445.61086	5.00E-04	2445.61086	7.30E-04	2445.61086	2.50E-04	2445.61086	3.30E-04
2444.6465	4.40E-04	2444.6465	7.30E-04	2444.6465	2.60E-04	2444.6465	3.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2443.68214	4.00E-04	2443.68214	7.20E-04	2443.68214	2.60E-04	2443.68214	3.30E-04
2442.71779	4.10E-04	2442.71779	7.20E-04	2442.71779	2.60E-04	2442.71779	3.20E-04
2441.75343	4.10E-04	2441.75343	7.10E-04	2441.75343	2.60E-04	2441.75343	3.20E-04
2440.78907	4.10E-04	2440.78907	7.10E-04	2440.78907	2.70E-04	2440.78907	3.10E-04
2439.82471	4.50E-04	2439.82471	7.00E-04	2439.82471	2.70E-04	2439.82471	3.10E-04
2438.86035	4.50E-04	2438.86035	7.00E-04	2438.86035	2.60E-04	2438.86035	3.10E-04
2437.896	3.90E-04	2437.896	6.90E-04	2437.896	2.50E-04	2437.896	3.10E-04
2436.93164	3.50E-04	2436.93164	6.90E-04	2436.93164	2.40E-04	2436.93164	3.10E-04
2435.96728	3.70E-04	2435.96728	6.90E-04	2435.96728	2.30E-04	2435.96728	3.00E-04
2435.00292	4.20E-04	2435.00292	6.90E-04	2435.00292	2.30E-04	2435.00292	3.00E-04
2434.03857	4.40E-04	2434.03857	6.90E-04	2434.03857	2.30E-04	2434.03857	3.00E-04
2433.07421	4.30E-04	2433.07421	7.00E-04	2433.07421	2.30E-04	2433.07421	3.10E-04
2432.10985	4.10E-04	2432.10985	7.00E-04	2432.10985	2.30E-04	2432.10985	3.10E-04
2431.14549	3.90E-04	2431.14549	7.00E-04	2431.14549	2.30E-04	2431.14549	3.10E-04
2430.18114	3.90E-04	2430.18114	7.00E-04	2430.18114	2.30E-04	2430.18114	3.10E-04
2429.21678	4.10E-04	2429.21678	7.00E-04	2429.21678	2.30E-04	2429.21678	3.10E-04
2428.25242	4.30E-04	2428.25242	7.00E-04	2428.25242	2.30E-04	2428.25242	3.00E-04
2427.28806	4.40E-04	2427.28806	6.90E-04	2427.28806	2.40E-04	2427.28806	3.00E-04
2426.32371	4.20E-04	2426.32371	6.90E-04	2426.32371	2.40E-04	2426.32371	3.10E-04
2425.35935	4.00E-04	2425.35935	6.80E-04	2425.35935	2.40E-04	2425.35935	3.10E-04
2424.39499	3.90E-04	2424.39499	6.90E-04	2424.39499	2.40E-04	2424.39499	3.00E-04
2423.43063	4.00E-04	2423.43063	6.90E-04	2423.43063	2.30E-04	2423.43063	3.00E-04
2422.46628	4.50E-04	2422.46628	6.90E-04	2422.46628	2.30E-04	2422.46628	3.00E-04
2421.50192	4.90E-04	2421.50192	6.90E-04	2421.50192	2.30E-04	2421.50192	2.90E-04
2420.53756	4.90E-04	2420.53756	6.90E-04	2420.53756	2.30E-04	2420.53756	2.90E-04
2419.5732	4.40E-04	2419.5732	6.80E-04	2419.5732	2.30E-04	2419.5732	3.00E-04
2418.60885	4.10E-04	2418.60885	6.80E-04	2418.60885	2.20E-04	2418.60885	3.00E-04
2417.64449	3.90E-04	2417.64449	6.80E-04	2417.64449	2.10E-04	2417.64449	3.10E-04
2416.68013	3.70E-04	2416.68013	6.80E-04	2416.68013	2.00E-04	2416.68013	3.20E-04
2415.71577	3.80E-04	2415.71577	6.90E-04	2415.71577	1.90E-04	2415.71577	3.20E-04
2414.75141	4.00E-04	2414.75141	6.90E-04	2414.75141	1.90E-04	2414.75141	3.20E-04
2413.78706	3.80E-04	2413.78706	6.90E-04	2413.78706	1.90E-04	2413.78706	3.20E-04
2412.8227	3.60E-04	2412.8227	6.90E-04	2412.8227	1.90E-04	2412.8227	3.10E-04
2411.85834	3.40E-04	2411.85834	6.90E-04	2411.85834	2.00E-04	2411.85834	3.10E-04
2410.89398	3.00E-04	2410.89398	6.80E-04	2410.89398	2.00E-04	2410.89398	3.00E-04
2409.92963	2.60E-04	2409.92963	6.80E-04	2409.92963	2.00E-04	2409.92963	2.90E-04
2408.96527	2.80E-04	2408.96527	6.80E-04	2408.96527	2.00E-04	2408.96527	2.90E-04
2408.00091	3.20E-04	2408.00091	6.70E-04	2408.00091	2.00E-04	2408.00091	2.80E-04
2407.03655	3.60E-04	2407.03655	6.60E-04	2407.03655	2.00E-04	2407.03655	2.90E-04
2406.0722	3.80E-04	2406.0722	6.60E-04	2406.0722	2.00E-04	2406.0722	2.90E-04
2405.10784	3.60E-04	2405.10784	6.60E-04	2405.10784	2.00E-04	2405.10784	3.00E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2404.14348	3.10E-04	2404.14348	6.70E-04	2404.14348	1.90E-04	2404.14348	3.10E-04
2403.17912	3.10E-04	2403.17912	6.80E-04	2403.17912	1.90E-04	2403.17912	3.10E-04
2402.21477	3.30E-04	2402.21477	6.90E-04	2402.21477	1.80E-04	2402.21477	3.10E-04
2401.25041	3.30E-04	2401.25041	6.90E-04	2401.25041	1.80E-04	2401.25041	3.00E-04
2400.28605	3.10E-04	2400.28605	6.90E-04	2400.28605	1.90E-04	2400.28605	2.80E-04
2399.32169	3.10E-04	2399.32169	6.90E-04	2399.32169	1.90E-04	2399.32169	2.80E-04
2398.35734	3.20E-04	2398.35734	6.90E-04	2398.35734	1.90E-04	2398.35734	2.70E-04
2397.39298	3.40E-04	2397.39298	6.90E-04	2397.39298	1.80E-04	2397.39298	2.70E-04
2396.42862	3.70E-04	2396.42862	6.90E-04	2396.42862	1.80E-04	2396.42862	2.80E-04
2395.46426	3.90E-04	2395.46426	6.80E-04	2395.46426	1.80E-04	2395.46426	2.80E-04
2394.49991	4.00E-04	2394.49991	6.70E-04	2394.49991	1.80E-04	2394.49991	2.80E-04
2393.53555	4.20E-04	2393.53555	6.70E-04	2393.53555	1.80E-04	2393.53555	2.80E-04
2392.57119	4.10E-04	2392.57119	6.70E-04	2392.57119	1.70E-04	2392.57119	2.80E-04
2391.60683	3.70E-04	2391.60683	6.70E-04	2391.60683	1.70E-04	2391.60683	2.80E-04
2390.64248	3.20E-04	2390.64248	6.70E-04	2390.64248	1.80E-04	2390.64248	2.80E-04
2389.67812	2.80E-04	2389.67812	6.60E-04	2389.67812	1.80E-04	2389.67812	2.80E-04
2388.71376	2.90E-04	2388.71376	6.60E-04	2388.71376	1.80E-04	2388.71376	2.80E-04
2387.7494	3.30E-04	2387.7494	6.50E-04	2387.7494	1.80E-04	2387.7494	2.80E-04
2386.78504	3.70E-04	2386.78504	6.40E-04	2386.78504	1.80E-04	2386.78504	2.80E-04
2385.82069	3.90E-04	2385.82069	6.40E-04	2385.82069	1.70E-04	2385.82069	2.80E-04
2384.85633	3.80E-04	2384.85633	6.20E-04	2384.85633	1.70E-04	2384.85633	2.90E-04
2383.89197	4.10E-04	2383.89197	6.10E-04	2383.89197	1.80E-04	2383.89197	3.00E-04
2382.92761	4.90E-04	2382.92761	5.90E-04	2382.92761	2.00E-04	2382.92761	3.20E-04
2381.96326	5.40E-04	2381.96326	5.70E-04	2381.96326	2.10E-04	2381.96326	3.50E-04
2380.9989	5.80E-04	2380.9989	5.50E-04	2380.9989	2.20E-04	2380.9989	3.70E-04
2380.03454	6.90E-04	2380.03454	5.40E-04	2380.03454	2.30E-04	2380.03454	4.00E-04
2379.07018	8.10E-04	2379.07018	5.40E-04	2379.07018	2.40E-04	2379.07018	4.20E-04
2378.10583	8.40E-04	2378.10583	5.30E-04	2378.10583	2.40E-04	2378.10583	4.50E-04
2377.14147	8.00E-04	2377.14147	5.20E-04	2377.14147	2.60E-04	2377.14147	4.80E-04
2376.17711	9.20E-04	2376.17711	4.90E-04	2376.17711	2.80E-04	2376.17711	5.30E-04
2375.21275	0.00125	2375.21275	4.70E-04	2375.21275	3.00E-04	2375.21275	5.90E-04
2374.2484	0.00148	2374.2484	4.50E-04	2374.2484	3.40E-04	2374.2484	6.70E-04
2373.28404	0.00142	2373.28404	4.30E-04	2373.28404	3.70E-04	2373.28404	7.50E-04
2372.31968	0.00138	2372.31968	4.00E-04	2372.31968	3.80E-04	2372.31968	8.20E-04
2371.35532	0.00154	2371.35532	3.60E-04	2371.35532	3.70E-04	2371.35532	8.70E-04
2370.39097	0.00175	2370.39097	3.00E-04	2370.39097	3.50E-04	2370.39097	9.00E-04
2369.42661	0.00202	2369.42661	2.30E-04	2369.42661	3.30E-04	2369.42661	9.10E-04
2368.46225	0.00227	2368.46225	1.60E-04	2368.46225	3.00E-04	2368.46225	9.30E-04
2367.49789	0.00226	2367.49789	1.10E-04	2367.49789	2.90E-04	2367.49789	1.00E-03
2366.53354	0.00216	2366.53354	1.00E-04	2366.53354	2.80E-04	2366.53354	0.0011
2365.56918	0.00227	2365.56918	1.00E-04	2365.56918	2.60E-04	2365.56918	0.00119

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2364.60482	0.00245	2364.60482	1.20E-04	2364.60482	2.40E-04	2364.60482	0.00128
2363.64046	0.00249	2363.64046	1.30E-04	2363.64046	2.10E-04	2363.64046	0.00137
2362.6761	0.00243	2362.6761	1.30E-04	2362.6761	2.00E-04	2362.6761	0.00144
2361.71175	0.00231	2361.71175	1.20E-04	2361.71175	2.00E-04	2361.71175	0.00146
2360.74739	0.00208	2360.74739	1.20E-04	2360.74739	2.10E-04	2360.74739	0.00146
2359.78303	0.00199	2359.78303	1.30E-04	2359.78303	2.10E-04	2359.78303	0.00145
2358.81867	0.00219	2358.81867	1.60E-04	2358.81867	1.90E-04	2358.81867	0.00143
2357.85432	0.00243	2357.85432	1.80E-04	2357.85432	1.70E-04	2357.85432	0.00137
2356.88996	0.00241	2356.88996	1.90E-04	2356.88996	1.70E-04	2356.88996	0.00131
2355.9256	0.00216	2355.9256	2.00E-04	2355.9256	1.70E-04	2355.9256	0.00128
2354.96124	0.00192	2354.96124	2.20E-04	2354.96124	1.70E-04	2354.96124	0.00125
2353.99689	0.00187	2353.99689	2.30E-04	2353.99689	1.70E-04	2353.99689	0.00118
2353.03253	0.00189	2353.03253	2.60E-04	2353.03253	1.60E-04	2353.03253	0.0011
2352.06817	0.0017	2352.06817	3.10E-04	2352.06817	1.20E-04	2352.06817	0.00103
2351.10381	0.00137	2351.10381	3.70E-04	2351.10381	1.00E-04	2351.10381	9.50E-04
2350.13946	0.00114	2350.13946	4.10E-04	2350.13946	1.20E-04	2350.13946	8.60E-04
2349.1751	0.00112	2349.1751	4.30E-04	2349.1751	1.70E-04	2349.1751	7.70E-04
2348.21074	0.00123	2348.21074	4.10E-04	2348.21074	2.20E-04	2348.21074	7.20E-04
2347.24638	0.00141	2347.24638	3.60E-04	2347.24638	2.60E-04	2347.24638	7.10E-04
2346.28203	0.00158	2346.28203	2.90E-04	2346.28203	2.70E-04	2346.28203	7.50E-04
2345.31767	0.00174	2345.31767	2.20E-04	2345.31767	2.50E-04	2345.31767	8.10E-04
2344.35331	0.00187	2344.35331	1.80E-04	2344.35331	2.10E-04	2344.35331	8.90E-04
2343.38895	0.0019	2343.38895	1.80E-04	2343.38895	1.80E-04	2343.38895	9.60E-04
2342.4246	0.00182	2342.4246	1.80E-04	2342.4246	1.70E-04	2342.4246	9.90E-04
2341.46024	0.00175	2341.46024	1.90E-04	2341.46024	1.80E-04	2341.46024	0.00101
2340.49588	0.00175	2340.49588	2.10E-04	2340.49588	1.90E-04	2340.49588	0.00102
2339.53152	0.00171	2339.53152	2.30E-04	2339.53152	2.10E-04	2339.53152	0.00101
2338.56716	0.00158	2338.56716	2.40E-04	2338.56716	2.30E-04	2338.56716	1.00E-03
2337.60281	0.00159	2337.60281	2.40E-04	2337.60281	2.40E-04	2337.60281	9.90E-04
2336.63845	0.00174	2336.63845	2.60E-04	2336.63845	2.50E-04	2336.63845	9.80E-04
2335.67409	0.00184	2335.67409	2.80E-04	2335.67409	2.50E-04	2335.67409	9.70E-04
2334.70973	0.00187	2334.70973	3.00E-04	2334.70973	2.30E-04	2334.70973	9.70E-04
2333.74538	0.00187	2333.74538	2.90E-04	2333.74538	2.10E-04	2333.74538	9.70E-04
2332.78102	0.00179	2332.78102	2.90E-04	2332.78102	2.00E-04	2332.78102	9.70E-04
2331.81666	0.00166	2331.81666	2.90E-04	2331.81666	1.90E-04	2331.81666	9.50E-04
2330.8523	0.00151	2330.8523	2.90E-04	2330.8523	1.80E-04	2330.8523	9.40E-04
2329.88795	0.00143	2329.88795	3.10E-04	2329.88795	1.70E-04	2329.88795	9.30E-04
2328.92359	0.00149	2328.92359	3.40E-04	2328.92359	1.70E-04	2328.92359	9.30E-04
2327.95923	0.00158	2327.95923	3.70E-04	2327.95923	1.60E-04	2327.95923	9.00E-04
2326.99487	0.00157	2326.99487	3.80E-04	2326.99487	1.50E-04	2326.99487	8.70E-04
2326.03052	0.00154	2326.03052	3.70E-04	2326.03052	1.40E-04	2326.03052	8.40E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2325.06616	0.00151	2325.06616	3.60E-04	2325.06616	1.40E-04	2325.06616	8.30E-04
2324.1018	0.00141	2324.1018	3.50E-04	2324.1018	1.50E-04	2324.1018	8.10E-04
2323.13744	0.00134	2323.13744	3.50E-04	2323.13744	1.50E-04	2323.13744	7.90E-04
2322.17309	0.00128	2322.17309	3.70E-04	2322.17309	1.60E-04	2322.17309	7.70E-04
2321.20873	0.00109	2321.20873	4.00E-04	2321.20873	1.50E-04	2321.20873	7.50E-04
2320.24437	8.90E-04	2320.24437	4.10E-04	2320.24437	1.30E-04	2320.24437	7.10E-04
2319.28001	8.60E-04	2319.28001	4.20E-04	2319.28001	1.20E-04	2319.28001	6.70E-04
2318.31566	9.10E-04	2318.31566	4.40E-04	2318.31566	1.10E-04	2318.31566	6.50E-04
2317.3513	8.70E-04	2317.3513	4.50E-04	2317.3513	1.00E-04	2317.3513	6.30E-04
2316.38694	8.10E-04	2316.38694	4.60E-04	2316.38694	1.00E-04	2316.38694	6.00E-04
2315.42258	8.20E-04	2315.42258	4.70E-04	2315.42258	1.00E-04	2315.42258	5.70E-04
2314.45823	8.80E-04	2314.45823	4.70E-04	2314.45823	9.00E-05	2314.45823	5.50E-04
2313.49387	8.90E-04	2313.49387	4.70E-04	2313.49387	9.00E-05	2313.49387	5.30E-04
2312.52951	7.80E-04	2312.52951	4.70E-04	2312.52951	9.00E-05	2312.52951	5.20E-04
2311.56515	6.80E-04	2311.56515	4.60E-04	2311.56515	8.00E-05	2311.56515	5.10E-04
2310.60079	6.50E-04	2310.60079	4.50E-04	2310.60079	8.00E-05	2310.60079	5.00E-04
2309.63644	6.50E-04	2309.63644	4.60E-04	2309.63644	7.00E-05	2309.63644	4.80E-04
2308.67208	6.20E-04	2308.67208	4.60E-04	2308.67208	7.00E-05	2308.67208	4.50E-04
2307.70772	5.70E-04	2307.70772	4.70E-04	2307.70772	7.00E-05	2307.70772	4.20E-04
2306.74336	5.10E-04	2306.74336	4.80E-04	2306.74336	8.00E-05	2306.74336	3.90E-04
2305.77901	4.40E-04	2305.77901	4.90E-04	2305.77901	9.00E-05	2305.77901	3.70E-04
2304.81465	4.30E-04	2304.81465	5.00E-04	2304.81465	1.00E-04	2304.81465	3.60E-04
2303.85029	4.90E-04	2303.85029	5.00E-04	2303.85029	1.00E-04	2303.85029	3.50E-04
2302.88593	5.40E-04	2302.88593	4.90E-04	2302.88593	9.00E-05	2302.88593	3.40E-04
2301.92158	5.50E-04	2301.92158	4.90E-04	2301.92158	8.00E-05	2301.92158	3.40E-04
2300.95722	5.40E-04	2300.95722	5.00E-04	2300.95722	7.00E-05	2300.95722	3.30E-04
2299.99286	4.80E-04	2299.99286	5.00E-04	2299.99286	7.00E-05	2299.99286	3.20E-04
2299.0285	4.10E-04	2299.0285	5.10E-04	2299.0285	7.00E-05	2299.0285	3.00E-04
2298.06415	4.00E-04	2298.06415	5.20E-04	2298.06415	7.00E-05	2298.06415	2.90E-04
2297.09979	4.20E-04	2297.09979	5.30E-04	2297.09979	7.00E-05	2297.09979	2.80E-04
2296.13543	4.30E-04	2296.13543	5.20E-04	2296.13543	7.00E-05	2296.13543	2.70E-04
2295.17107	4.30E-04	2295.17107	5.20E-04	2295.17107	6.00E-05	2295.17107	2.70E-04
2294.20672	4.20E-04	2294.20672	5.10E-04	2294.20672	6.00E-05	2294.20672	2.70E-04
2293.24236	4.30E-04	2293.24236	5.10E-04	2293.24236	6.00E-05	2293.24236	2.70E-04
2292.278	4.30E-04	2292.278	5.10E-04	2292.278	7.00E-05	2292.278	2.60E-04
2291.31364	4.00E-04	2291.31364	5.20E-04	2291.31364	7.00E-05	2291.31364	2.50E-04
2290.34929	3.40E-04	2290.34929	5.30E-04	2290.34929	7.00E-05	2290.34929	2.30E-04
2289.38493	2.90E-04	2289.38493	5.40E-04	2289.38493	7.00E-05	2289.38493	2.20E-04
2288.42057	2.70E-04	2288.42057	5.40E-04	2288.42057	6.00E-05	2288.42057	2.20E-04
2287.45621	3.00E-04	2287.45621	5.50E-04	2287.45621	5.00E-05	2287.45621	2.10E-04
2286.49185	3.20E-04	2286.49185	5.50E-04	2286.49185	5.00E-05	2286.49185	2.10E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2285.5275	2.70E-04	2285.5275	5.50E-04	2285.5275	6.00E-05	2285.5275	2.00E-04
2284.56314	2.10E-04	2284.56314	5.40E-04	2284.56314	7.00E-05	2284.56314	1.90E-04
2283.59878	1.80E-04	2283.59878	5.30E-04	2283.59878	8.00E-05	2283.59878	1.80E-04
2282.63442	1.90E-04	2282.63442	5.30E-04	2282.63442	8.00E-05	2282.63442	1.70E-04
2281.67007	2.00E-04	2281.67007	5.30E-04	2281.67007	8.00E-05	2281.67007	1.70E-04
2280.70571	2.10E-04	2280.70571	5.30E-04	2280.70571	7.00E-05	2280.70571	1.70E-04
2279.74135	2.50E-04	2279.74135	5.30E-04	2279.74135	7.00E-05	2279.74135	1.70E-04
2278.77699	2.90E-04	2278.77699	5.30E-04	2278.77699	6.00E-05	2278.77699	1.60E-04
2277.81264	3.20E-04	2277.81264	5.30E-04	2277.81264	6.00E-05	2277.81264	1.60E-04
2276.84828	3.70E-04	2276.84828	5.20E-04	2276.84828	5.00E-05	2276.84828	1.60E-04
2275.88392	3.90E-04	2275.88392	5.20E-04	2275.88392	6.00E-05	2275.88392	1.70E-04
2274.91956	3.60E-04	2274.91956	5.20E-04	2274.91956	6.00E-05	2274.91956	1.80E-04
2273.95521	3.20E-04	2273.95521	5.20E-04	2273.95521	7.00E-05	2273.95521	1.90E-04
2272.99085	3.00E-04	2272.99085	5.30E-04	2272.99085	7.00E-05	2272.99085	2.00E-04
2272.02649	2.60E-04	2272.02649	5.30E-04	2272.02649	8.00E-05	2272.02649	2.00E-04
2271.06213	2.00E-04	2271.06213	5.40E-04	2271.06213	8.00E-05	2271.06213	2.00E-04
2270.09778	1.70E-04	2270.09778	5.40E-04	2270.09778	7.00E-05	2270.09778	1.90E-04
2269.13342	1.90E-04	2269.13342	5.40E-04	2269.13342	7.00E-05	2269.13342	1.80E-04
2268.16906	2.10E-04	2268.16906	5.40E-04	2268.16906	7.00E-05	2268.16906	1.80E-04
2267.2047	2.50E-04	2267.2047	5.30E-04	2267.2047	7.00E-05	2267.2047	1.80E-04
2266.24035	2.90E-04	2266.24035	5.30E-04	2266.24035	7.00E-05	2266.24035	1.80E-04
2265.27599	3.10E-04	2265.27599	5.40E-04	2265.27599	7.00E-05	2265.27599	1.80E-04
2264.31163	3.00E-04	2264.31163	5.40E-04	2264.31163	7.00E-05	2264.31163	1.70E-04
2263.34727	2.60E-04	2263.34727	5.40E-04	2263.34727	7.00E-05	2263.34727	1.60E-04
2262.38292	2.40E-04	2262.38292	5.30E-04	2262.38292	6.00E-05	2262.38292	1.50E-04
2261.41856	2.90E-04	2261.41856	5.30E-04	2261.41856	6.00E-05	2261.41856	1.50E-04
2260.4542	3.10E-04	2260.4542	5.30E-04	2260.4542	6.00E-05	2260.4542	1.50E-04
2259.48984	2.70E-04	2259.48984	5.20E-04	2259.48984	5.00E-05	2259.48984	1.60E-04
2258.52548	2.50E-04	2258.52548	5.10E-04	2258.52548	5.00E-05	2258.52548	1.60E-04
2257.56113	2.60E-04	2257.56113	5.20E-04	2257.56113	5.00E-05	2257.56113	1.60E-04
2256.59677	2.60E-04	2256.59677	5.20E-04	2256.59677	5.00E-05	2256.59677	1.60E-04
2255.63241	2.30E-04	2255.63241	5.20E-04	2255.63241	6.00E-05	2255.63241	1.60E-04
2254.66805	2.20E-04	2254.66805	5.20E-04	2254.66805	6.00E-05	2254.66805	1.70E-04
2253.7037	2.30E-04	2253.7037	5.20E-04	2253.7037	6.00E-05	2253.7037	1.70E-04
2252.73934	2.20E-04	2252.73934	5.20E-04	2252.73934	6.00E-05	2252.73934	1.70E-04
2251.77498	2.10E-04	2251.77498	5.20E-04	2251.77498	6.00E-05	2251.77498	1.60E-04
2250.81062	2.00E-04	2250.81062	5.20E-04	2250.81062	6.00E-05	2250.81062	1.60E-04
2249.84627	2.10E-04	2249.84627	5.20E-04	2249.84627	6.00E-05	2249.84627	1.50E-04
2248.88191	2.10E-04	2248.88191	5.20E-04	2248.88191	5.00E-05	2248.88191	1.40E-04
2247.91755	2.10E-04	2247.91755	5.20E-04	2247.91755	5.00E-05	2247.91755	1.30E-04
2246.95319	2.00E-04	2246.95319	5.20E-04	2246.95319	5.00E-05	2246.95319	1.30E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2245.98884	1.80E-04	2245.98884	5.20E-04	2245.98884	5.00E-05	2245.98884	1.40E-04
2245.02448	1.50E-04	2245.02448	5.10E-04	2245.02448	5.00E-05	2245.02448	1.50E-04
2244.06012	1.40E-04	2244.06012	5.10E-04	2244.06012	5.00E-05	2244.06012	1.50E-04
2243.09576	1.50E-04	2243.09576	5.10E-04	2243.09576	6.00E-05	2243.09576	1.60E-04
2242.13141	1.50E-04	2242.13141	5.10E-04	2242.13141	6.00E-05	2242.13141	1.60E-04
2241.16705	1.50E-04	2241.16705	5.10E-04	2241.16705	6.00E-05	2241.16705	1.50E-04
2240.20269	1.90E-04	2240.20269	5.10E-04	2240.20269	5.00E-05	2240.20269	1.50E-04
2239.23833	2.30E-04	2239.23833	5.20E-04	2239.23833	5.00E-05	2239.23833	1.50E-04
2238.27398	2.40E-04	2238.27398	5.30E-04	2238.27398	4.00E-05	2238.27398	1.50E-04
2237.30962	2.40E-04	2237.30962	5.30E-04	2237.30962	3.00E-05	2237.30962	1.50E-04
2236.34526	2.10E-04	2236.34526	5.30E-04	2236.34526	4.00E-05	2236.34526	1.40E-04
2235.3809	1.80E-04	2235.3809	5.30E-04	2235.3809	4.00E-05	2235.3809	1.40E-04
2234.41654	1.80E-04	2234.41654	5.20E-04	2234.41654	5.00E-05	2234.41654	1.40E-04
2233.45219	1.90E-04	2233.45219	5.10E-04	2233.45219	5.00E-05	2233.45219	1.40E-04
2232.48783	1.70E-04	2232.48783	5.00E-04	2232.48783	6.00E-05	2232.48783	1.40E-04
2231.52347	1.50E-04	2231.52347	5.00E-04	2231.52347	6.00E-05	2231.52347	1.40E-04
2230.55911	1.60E-04	2230.55911	5.00E-04	2230.55911	6.00E-05	2230.55911	1.30E-04
2229.59476	1.80E-04	2229.59476	5.10E-04	2229.59476	6.00E-05	2229.59476	1.30E-04
2228.6304	1.90E-04	2228.6304	5.20E-04	2228.6304	5.00E-05	2228.6304	1.30E-04
2227.66604	1.80E-04	2227.66604	5.20E-04	2227.66604	5.00E-05	2227.66604	1.30E-04
2226.70168	1.90E-04	2226.70168	5.20E-04	2226.70168	5.00E-05	2226.70168	1.40E-04
2225.73733	2.30E-04	2225.73733	5.10E-04	2225.73733	4.00E-05	2225.73733	1.40E-04
2224.77297	2.40E-04	2224.77297	5.10E-04	2224.77297	4.00E-05	2224.77297	1.30E-04
2223.80861	2.00E-04	2223.80861	5.00E-04	2223.80861	4.00E-05	2223.80861	1.30E-04
2222.84425	1.60E-04	2222.84425	5.00E-04	2222.84425	5.00E-05	2222.84425	1.20E-04
2221.8799	1.60E-04	2221.8799	5.10E-04	2221.8799	5.00E-05	2221.8799	1.20E-04
2220.91554	1.60E-04	2220.91554	5.10E-04	2220.91554	5.00E-05	2220.91554	1.20E-04
2219.95118	1.40E-04	2219.95118	5.10E-04	2219.95118	5.00E-05	2219.95118	1.20E-04
2218.98682	1.40E-04	2218.98682	5.00E-04	2218.98682	4.00E-05	2218.98682	1.20E-04
2218.02247	1.60E-04	2218.02247	5.00E-04	2218.02247	4.00E-05	2218.02247	1.20E-04
2217.05811	1.70E-04	2217.05811	5.00E-04	2217.05811	5.00E-05	2217.05811	1.20E-04
2216.09375	1.80E-04	2216.09375	5.10E-04	2216.09375	5.00E-05	2216.09375	1.20E-04
2215.12939	1.80E-04	2215.12939	5.10E-04	2215.12939	5.00E-05	2215.12939	1.10E-04
2214.16504	1.80E-04	2214.16504	5.10E-04	2214.16504	5.00E-05	2214.16504	1.10E-04
2213.20068	1.60E-04	2213.20068	5.20E-04	2213.20068	5.00E-05	2213.20068	1.00E-04
2212.23632	1.40E-04	2212.23632	5.10E-04	2212.23632	5.00E-05	2212.23632	1.00E-04
2211.27196	1.40E-04	2211.27196	5.10E-04	2211.27196	4.00E-05	2211.27196	1.10E-04
2210.30761	1.70E-04	2210.30761	5.10E-04	2210.30761	4.00E-05	2210.30761	1.10E-04
2209.34325	1.50E-04	2209.34325	5.10E-04	2209.34325	5.00E-05	2209.34325	1.20E-04
2208.37889	1.00E-04	2208.37889	5.10E-04	2208.37889	5.00E-05	2208.37889	1.20E-04
2207.41453	8.00E-05	2207.41453	5.10E-04	2207.41453	6.00E-05	2207.41453	1.20E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2206.45017	1.20E-04	2206.45017	5.20E-04	2206.45017	6.00E-05	2206.45017	1.30E-04
2205.48582	1.50E-04	2205.48582	5.20E-04	2205.48582	5.00E-05	2205.48582	1.30E-04
2204.52146	1.30E-04	2204.52146	5.20E-04	2204.52146	5.00E-05	2204.52146	1.30E-04
2203.5571	1.20E-04	2203.5571	5.20E-04	2203.5571	4.00E-05	2203.5571	1.30E-04
2202.59274	1.40E-04	2202.59274	5.10E-04	2202.59274	3.00E-05	2202.59274	1.20E-04
2201.62839	1.90E-04	2201.62839	5.00E-04	2201.62839	3.00E-05	2201.62839	1.20E-04
2200.66403	2.10E-04	2200.66403	5.00E-04	2200.66403	3.00E-05	2200.66403	1.20E-04
2199.69967	2.00E-04	2199.69967	5.00E-04	2199.69967	4.00E-05	2199.69967	1.20E-04
2198.73531	1.80E-04	2198.73531	5.00E-04	2198.73531	4.00E-05	2198.73531	1.30E-04
2197.77096	1.70E-04	2197.77096	5.00E-04	2197.77096	4.00E-05	2197.77096	1.40E-04
2196.8066	1.80E-04	2196.8066	5.00E-04	2196.8066	5.00E-05	2196.8066	1.40E-04
2195.84224	1.90E-04	2195.84224	5.00E-04	2195.84224	5.00E-05	2195.84224	1.40E-04
2194.87788	1.80E-04	2194.87788	5.00E-04	2194.87788	6.00E-05	2194.87788	1.30E-04
2193.91353	1.70E-04	2193.91353	5.10E-04	2193.91353	6.00E-05	2193.91353	1.30E-04
2192.94917	1.80E-04	2192.94917	5.10E-04	2192.94917	6.00E-05	2192.94917	1.30E-04
2191.98481	1.90E-04	2191.98481	5.20E-04	2191.98481	6.00E-05	2191.98481	1.30E-04
2191.02045	1.60E-04	2191.02045	5.20E-04	2191.02045	6.00E-05	2191.02045	1.30E-04
2190.0561	1.50E-04	2190.0561	5.30E-04	2190.0561	6.00E-05	2190.0561	1.30E-04
2189.09174	1.80E-04	2189.09174	5.30E-04	2189.09174	6.00E-05	2189.09174	1.30E-04
2188.12738	1.90E-04	2188.12738	5.30E-04	2188.12738	5.00E-05	2188.12738	1.30E-04
2187.16302	1.60E-04	2187.16302	5.30E-04	2187.16302	5.00E-05	2187.16302	1.20E-04
2186.19867	1.40E-04	2186.19867	5.30E-04	2186.19867	4.00E-05	2186.19867	1.10E-04
2185.23431	1.50E-04	2185.23431	5.30E-04	2185.23431	3.00E-05	2185.23431	1.10E-04
2184.26995	1.40E-04	2184.26995	5.20E-04	2184.26995	3.00E-05	2184.26995	1.10E-04
2183.30559	1.20E-04	2183.30559	5.20E-04	2183.30559	3.00E-05	2183.30559	1.20E-04
2182.34123	1.20E-04	2182.34123	5.20E-04	2182.34123	4.00E-05	2182.34123	1.20E-04
2181.37688	1.20E-04	2181.37688	5.30E-04	2181.37688	4.00E-05	2181.37688	1.20E-04
2180.41252	9.00E-05	2180.41252	5.30E-04	2180.41252	5.00E-05	2180.41252	1.30E-04
2179.44816	6.00E-05	2179.44816	5.30E-04	2179.44816	6.00E-05	2179.44816	1.30E-04
2178.4838	7.00E-05	2178.4838	5.30E-04	2178.4838	6.00E-05	2178.4838	1.40E-04
2177.51945	1.10E-04	2177.51945	5.30E-04	2177.51945	6.00E-05	2177.51945	1.40E-04
2176.55509	1.60E-04	2176.55509	5.30E-04	2176.55509	6.00E-05	2176.55509	1.40E-04
2175.59073	1.70E-04	2175.59073	5.30E-04	2175.59073	6.00E-05	2175.59073	1.40E-04
2174.62637	1.80E-04	2174.62637	5.20E-04	2174.62637	6.00E-05	2174.62637	1.30E-04
2173.66202	1.80E-04	2173.66202	5.10E-04	2173.66202	6.00E-05	2173.66202	1.30E-04
2172.69766	1.60E-04	2172.69766	5.10E-04	2172.69766	6.00E-05	2172.69766	1.30E-04
2171.7333	1.20E-04	2171.7333	5.00E-04	2171.7333	5.00E-05	2171.7333	1.30E-04
2170.76894	1.00E-04	2170.76894	5.00E-04	2170.76894	5.00E-05	2170.76894	1.20E-04
2169.80459	8.00E-05	2169.80459	5.00E-04	2169.80459	4.00E-05	2169.80459	1.20E-04
2168.84023	6.00E-05	2168.84023	5.10E-04	2168.84023	4.00E-05	2168.84023	1.10E-04
2167.87587	6.00E-05	2167.87587	5.10E-04	2167.87587	4.00E-05	2167.87587	1.00E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2166.91151	8.00E-05	2166.91151	5.20E-04	2166.91151	4.00E-05	2166.91151	1.00E-04
2165.94716	1.10E-04	2165.94716	5.20E-04	2165.94716	4.00E-05	2165.94716	1.10E-04
2164.9828	1.20E-04	2164.9828	5.30E-04	2164.9828	4.00E-05	2164.9828	1.10E-04
2164.01844	1.20E-04	2164.01844	5.30E-04	2164.01844	5.00E-05	2164.01844	1.20E-04
2163.05408	1.40E-04	2163.05408	5.30E-04	2163.05408	5.00E-05	2163.05408	1.20E-04
2162.08973	1.20E-04	2162.08973	5.20E-04	2162.08973	5.00E-05	2162.08973	1.30E-04
2161.12537	1.00E-04	2161.12537	5.10E-04	2161.12537	6.00E-05	2161.12537	1.30E-04
2160.16101	1.00E-04	2160.16101	5.00E-04	2160.16101	7.00E-05	2160.16101	1.20E-04
2159.19665	1.10E-04	2159.19665	5.00E-04	2159.19665	7.00E-05	2159.19665	1.20E-04
2158.23229	1.10E-04	2158.23229	5.10E-04	2158.23229	8.00E-05	2158.23229	1.20E-04
2157.26794	1.30E-04	2157.26794	5.10E-04	2157.26794	7.00E-05	2157.26794	1.10E-04
2156.30358	1.10E-04	2156.30358	5.00E-04	2156.30358	6.00E-05	2156.30358	1.10E-04
2155.33922	1.10E-04	2155.33922	5.00E-04	2155.33922	5.00E-05	2155.33922	1.00E-04
2154.37486	1.40E-04	2154.37486	4.90E-04	2154.37486	5.00E-05	2154.37486	9.00E-05
2153.41051	1.80E-04	2153.41051	5.00E-04	2153.41051	5.00E-05	2153.41051	9.00E-05
2152.44615	2.00E-04	2152.44615	5.00E-04	2152.44615	5.00E-05	2152.44615	9.00E-05
2151.48179	2.00E-04	2151.48179	5.10E-04	2151.48179	6.00E-05	2151.48179	9.00E-05
2150.51743	2.00E-04	2150.51743	5.20E-04	2150.51743	7.00E-05	2150.51743	1.00E-04
2149.55308	1.50E-04	2149.55308	5.20E-04	2149.55308	7.00E-05	2149.55308	1.00E-04
2148.58872	7.00E-05	2148.58872	5.10E-04	2148.58872	6.00E-05	2148.58872	1.00E-04
2147.62436	4.00E-05	2147.62436	5.10E-04	2147.62436	5.00E-05	2147.62436	1.10E-04
2146.66	8.00E-05	2146.66	5.00E-04	2146.66	4.00E-05	2146.66	1.10E-04
2145.69565	1.50E-04	2145.69565	5.00E-04	2145.69565	3.00E-05	2145.69565	1.10E-04
2144.73129	1.80E-04	2144.73129	5.00E-04	2144.73129	3.00E-05	2144.73129	1.10E-04
2143.76693	1.70E-04	2143.76693	5.10E-04	2143.76693	4.00E-05	2143.76693	1.20E-04
2142.80257	1.50E-04	2142.80257	5.10E-04	2142.80257	4.00E-05	2142.80257	1.20E-04
2141.83822	1.60E-04	2141.83822	5.10E-04	2141.83822	5.00E-05	2141.83822	1.20E-04
2140.87386	1.80E-04	2140.87386	5.00E-04	2140.87386	6.00E-05	2140.87386	1.20E-04
2139.9095	1.50E-04	2139.9095	5.00E-04	2139.9095	6.00E-05	2139.9095	1.10E-04
2138.94514	1.10E-04	2138.94514	5.00E-04	2138.94514	6.00E-05	2138.94514	1.10E-04
2137.98079	1.00E-04	2137.98079	4.90E-04	2137.98079	5.00E-05	2137.98079	1.10E-04
2137.01643	1.10E-04	2137.01643	4.90E-04	2137.01643	5.00E-05	2137.01643	1.00E-04
2136.05207	1.40E-04	2136.05207	4.80E-04	2136.05207	4.00E-05	2136.05207	1.00E-04
2135.08771	1.40E-04	2135.08771	4.80E-04	2135.08771	4.00E-05	2135.08771	1.00E-04
2134.12336	1.20E-04	2134.12336	4.80E-04	2134.12336	4.00E-05	2134.12336	1.00E-04
2133.159	1.00E-04	2133.159	4.80E-04	2133.159	3.00E-05	2133.159	1.00E-04
2132.19464	9.00E-05	2132.19464	4.80E-04	2132.19464	4.00E-05	2132.19464	1.00E-04
2131.23028	9.00E-05	2131.23028	4.80E-04	2131.23028	4.00E-05	2131.23028	1.10E-04
2130.26592	1.00E-04	2130.26592	4.90E-04	2130.26592	4.00E-05	2130.26592	1.00E-04
2129.30157	1.10E-04	2129.30157	4.90E-04	2129.30157	4.00E-05	2129.30157	1.00E-04
2128.33721	1.20E-04	2128.33721	4.80E-04	2128.33721	4.00E-05	2128.33721	9.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2127.37285	1.30E-04	2127.37285	4.80E-04	2127.37285	5.00E-05	2127.37285	9.00E-05
2126.40849	1.50E-04	2126.40849	4.70E-04	2126.40849	5.00E-05	2126.40849	9.00E-05
2125.44414	1.50E-04	2125.44414	4.70E-04	2125.44414	5.00E-05	2125.44414	9.00E-05
2124.47978	1.30E-04	2124.47978	4.70E-04	2124.47978	5.00E-05	2124.47978	9.00E-05
2123.51542	1.20E-04	2123.51542	4.70E-04	2123.51542	5.00E-05	2123.51542	1.00E-04
2122.55106	1.20E-04	2122.55106	4.70E-04	2122.55106	4.00E-05	2122.55106	1.00E-04
2121.58671	1.30E-04	2121.58671	4.70E-04	2121.58671	4.00E-05	2121.58671	1.10E-04
2120.62235	1.00E-04	2120.62235	4.60E-04	2120.62235	4.00E-05	2120.62235	1.10E-04
2119.65799	8.00E-05	2119.65799	4.60E-04	2119.65799	4.00E-05	2119.65799	1.10E-04
2118.69363	8.00E-05	2118.69363	4.50E-04	2118.69363	6.00E-05	2118.69363	1.00E-04
2117.72928	1.10E-04	2117.72928	4.50E-04	2117.72928	7.00E-05	2117.72928	9.00E-05
2116.76492	1.20E-04	2116.76492	4.50E-04	2116.76492	8.00E-05	2116.76492	9.00E-05
2115.80056	1.50E-04	2115.80056	4.50E-04	2115.80056	9.00E-05	2115.80056	9.00E-05
2114.8362	1.70E-04	2114.8362	4.40E-04	2114.8362	8.00E-05	2114.8362	9.00E-05
2113.87185	1.60E-04	2113.87185	4.40E-04	2113.87185	8.00E-05	2113.87185	9.00E-05
2112.90749	1.60E-04	2112.90749	4.30E-04	2112.90749	7.00E-05	2112.90749	9.00E-05
2111.94313	1.70E-04	2111.94313	4.30E-04	2111.94313	6.00E-05	2111.94313	1.00E-04
2110.97877	1.50E-04	2110.97877	4.30E-04	2110.97877	6.00E-05	2110.97877	1.00E-04
2110.01442	1.20E-04	2110.01442	4.40E-04	2110.01442	6.00E-05	2110.01442	1.00E-04
2109.05006	1.30E-04	2109.05006	4.50E-04	2109.05006	6.00E-05	2109.05006	1.00E-04
2108.0857	1.50E-04	2108.0857	4.40E-04	2108.0857	6.00E-05	2108.0857	1.00E-04
2107.12134	1.70E-04	2107.12134	4.40E-04	2107.12134	6.00E-05	2107.12134	1.00E-04
2106.15698	1.80E-04	2106.15698	4.30E-04	2106.15698	5.00E-05	2106.15698	1.00E-04
2105.19263	1.90E-04	2105.19263	4.20E-04	2105.19263	5.00E-05	2105.19263	1.00E-04
2104.22827	1.80E-04	2104.22827	4.20E-04	2104.22827	5.00E-05	2104.22827	1.00E-04
2103.26391	1.50E-04	2103.26391	4.20E-04	2103.26391	6.00E-05	2103.26391	1.00E-04
2102.29955	1.40E-04	2102.29955	4.10E-04	2102.29955	6.00E-05	2102.29955	1.00E-04
2101.3352	1.40E-04	2101.3352	4.10E-04	2101.3352	5.00E-05	2101.3352	9.00E-05
2100.37084	1.60E-04	2100.37084	4.00E-04	2100.37084	5.00E-05	2100.37084	9.00E-05
2099.40648	1.90E-04	2099.40648	4.10E-04	2099.40648	6.00E-05	2099.40648	1.00E-04
2098.44212	1.90E-04	2098.44212	4.10E-04	2098.44212	6.00E-05	2098.44212	1.00E-04
2097.47777	1.60E-04	2097.47777	4.10E-04	2097.47777	6.00E-05	2097.47777	1.00E-04
2096.51341	1.00E-04	2096.51341	4.10E-04	2096.51341	6.00E-05	2096.51341	1.00E-04
2095.54905	8.00E-05	2095.54905	4.10E-04	2095.54905	6.00E-05	2095.54905	1.00E-04
2094.58469	7.00E-05	2094.58469	4.10E-04	2094.58469	6.00E-05	2094.58469	9.00E-05
2093.62034	5.00E-05	2093.62034	4.10E-04	2093.62034	6.00E-05	2093.62034	9.00E-05
2092.65598	6.00E-05	2092.65598	4.10E-04	2092.65598	6.00E-05	2092.65598	8.00E-05
2091.69162	9.00E-05	2091.69162	4.10E-04	2091.69162	7.00E-05	2091.69162	9.00E-05
2090.72726	1.30E-04	2090.72726	4.00E-04	2090.72726	7.00E-05	2090.72726	9.00E-05
2089.76291	1.50E-04	2089.76291	4.00E-04	2089.76291	7.00E-05	2089.76291	9.00E-05
2088.79855	1.80E-04	2088.79855	3.90E-04	2088.79855	7.00E-05	2088.79855	9.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2087.83419	2.20E-04	2087.83419	3.90E-04	2087.83419	7.00E-05	2087.83419	1.00E-04
2086.86983	2.10E-04	2086.86983	3.90E-04	2086.86983	7.00E-05	2086.86983	1.00E-04
2085.90548	1.40E-04	2085.90548	4.00E-04	2085.90548	6.00E-05	2085.90548	1.10E-04
2084.94112	8.00E-05	2084.94112	4.00E-04	2084.94112	5.00E-05	2084.94112	1.00E-04
2083.97676	8.00E-05	2083.97676	4.00E-04	2083.97676	5.00E-05	2083.97676	1.00E-04
2083.0124	1.30E-04	2083.0124	3.90E-04	2083.0124	4.00E-05	2083.0124	9.00E-05
2082.04805	1.70E-04	2082.04805	3.90E-04	2082.04805	4.00E-05	2082.04805	8.00E-05
2081.08369	1.80E-04	2081.08369	3.90E-04	2081.08369	3.00E-05	2081.08369	8.00E-05
2080.11933	1.50E-04	2080.11933	3.80E-04	2080.11933	3.00E-05	2080.11933	9.00E-05
2079.15497	1.50E-04	2079.15497	3.80E-04	2079.15497	4.00E-05	2079.15497	9.00E-05
2078.19061	2.00E-04	2078.19061	3.70E-04	2078.19061	5.00E-05	2078.19061	1.00E-04
2077.22626	2.40E-04	2077.22626	3.60E-04	2077.22626	5.00E-05	2077.22626	9.00E-05
2076.2619	2.10E-04	2076.2619	3.50E-04	2076.2619	6.00E-05	2076.2619	9.00E-05
2075.29754	1.60E-04	2075.29754	3.50E-04	2075.29754	7.00E-05	2075.29754	8.00E-05
2074.33318	1.60E-04	2074.33318	3.50E-04	2074.33318	7.00E-05	2074.33318	7.00E-05
2073.36883	1.80E-04	2073.36883	3.50E-04	2073.36883	7.00E-05	2073.36883	7.00E-05
2072.40447	1.80E-04	2072.40447	3.60E-04	2072.40447	6.00E-05	2072.40447	7.00E-05
2071.44011	1.70E-04	2071.44011	3.60E-04	2071.44011	6.00E-05	2071.44011	7.00E-05
2070.47575	1.40E-04	2070.47575	3.60E-04	2070.47575	6.00E-05	2070.47575	6.00E-05
2069.5114	1.10E-04	2069.5114	3.50E-04	2069.5114	5.00E-05	2069.5114	6.00E-05
2068.54704	1.00E-04	2068.54704	3.50E-04	2068.54704	5.00E-05	2068.54704	6.00E-05
2067.58268	1.10E-04	2067.58268	3.40E-04	2067.58268	5.00E-05	2067.58268	6.00E-05
2066.61832	1.20E-04	2066.61832	3.40E-04	2066.61832	5.00E-05	2066.61832	7.00E-05
2065.65397	1.30E-04	2065.65397	3.40E-04	2065.65397	5.00E-05	2065.65397	7.00E-05
2064.68961	1.20E-04	2064.68961	3.50E-04	2064.68961	5.00E-05	2064.68961	7.00E-05
2063.72525	6.00E-05	2063.72525	3.40E-04	2063.72525	5.00E-05	2063.72525	8.00E-05
2062.76089	3.00E-05	2062.76089	3.40E-04	2062.76089	5.00E-05	2062.76089	8.00E-05
2061.79654	6.00E-05	2061.79654	3.30E-04	2061.79654	5.00E-05	2061.79654	7.00E-05
2060.83218	1.00E-04	2060.83218	3.20E-04	2060.83218	5.00E-05	2060.83218	7.00E-05
2059.86782	1.00E-04	2059.86782	3.20E-04	2059.86782	5.00E-05	2059.86782	7.00E-05
2058.90346	9.00E-05	2058.90346	3.20E-04	2058.90346	5.00E-05	2058.90346	7.00E-05
2057.93911	1.10E-04	2057.93911	3.30E-04	2057.93911	5.00E-05	2057.93911	7.00E-05
2056.97475	1.50E-04	2056.97475	3.40E-04	2056.97475	5.00E-05	2056.97475	6.00E-05
2056.01039	1.80E-04	2056.01039	3.40E-04	2056.01039	5.00E-05	2056.01039	6.00E-05
2055.04603	2.00E-04	2055.04603	3.40E-04	2055.04603	5.00E-05	2055.04603	6.00E-05
2054.08167	2.10E-04	2054.08167	3.30E-04	2054.08167	5.00E-05	2054.08167	6.00E-05
2053.11732	1.90E-04	2053.11732	3.30E-04	2053.11732	6.00E-05	2053.11732	6.00E-05
2052.15296	1.70E-04	2052.15296	3.20E-04	2052.15296	5.00E-05	2052.15296	6.00E-05
2051.1886	1.90E-04	2051.1886	3.20E-04	2051.1886	5.00E-05	2051.1886	7.00E-05
2050.22424	2.20E-04	2050.22424	3.20E-04	2050.22424	4.00E-05	2050.22424	7.00E-05
2049.25989	2.30E-04	2049.25989	3.20E-04	2049.25989	4.00E-05	2049.25989	6.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2048.29553	2.20E-04	2048.29553	3.20E-04	2048.29553	4.00E-05	2048.29553	6.00E-05
2047.33117	2.00E-04	2047.33117	3.20E-04	2047.33117	5.00E-05	2047.33117	6.00E-05
2046.36681	1.60E-04	2046.36681	3.20E-04	2046.36681	5.00E-05	2046.36681	6.00E-05
2045.40246	1.20E-04	2045.40246	3.10E-04	2045.40246	6.00E-05	2045.40246	7.00E-05
2044.4381	1.10E-04	2044.4381	3.10E-04	2044.4381	6.00E-05	2044.4381	8.00E-05
2043.47374	1.20E-04	2043.47374	3.10E-04	2043.47374	6.00E-05	2043.47374	9.00E-05
2042.50938	1.40E-04	2042.50938	3.00E-04	2042.50938	6.00E-05	2042.50938	9.00E-05
2041.54503	1.60E-04	2041.54503	3.00E-04	2041.54503	6.00E-05	2041.54503	8.00E-05
2040.58067	1.70E-04	2040.58067	3.00E-04	2040.58067	6.00E-05	2040.58067	8.00E-05
2039.61631	1.60E-04	2039.61631	2.90E-04	2039.61631	6.00E-05	2039.61631	8.00E-05
2038.65195	1.40E-04	2038.65195	2.90E-04	2038.65195	6.00E-05	2038.65195	8.00E-05
2037.6876	1.40E-04	2037.6876	2.90E-04	2037.6876	6.00E-05	2037.6876	7.00E-05
2036.72324	1.80E-04	2036.72324	3.00E-04	2036.72324	5.00E-05	2036.72324	8.00E-05
2035.75888	1.90E-04	2035.75888	3.00E-04	2035.75888	5.00E-05	2035.75888	8.00E-05
2034.79452	1.80E-04	2034.79452	3.00E-04	2034.79452	5.00E-05	2034.79452	8.00E-05
2033.83017	1.80E-04	2033.83017	3.00E-04	2033.83017	5.00E-05	2033.83017	7.00E-05
2032.86581	1.80E-04	2032.86581	2.90E-04	2032.86581	5.00E-05	2032.86581	7.00E-05
2031.90145	1.70E-04	2031.90145	2.90E-04	2031.90145	5.00E-05	2031.90145	7.00E-05
2030.93709	1.40E-04	2030.93709	2.80E-04	2030.93709	5.00E-05	2030.93709	7.00E-05
2029.97273	1.10E-04	2029.97273	2.70E-04	2029.97273	5.00E-05	2029.97273	7.00E-05
2029.00838	1.20E-04	2029.00838	2.70E-04	2029.00838	5.00E-05	2029.00838	7.00E-05
2028.04402	1.40E-04	2028.04402	2.70E-04	2028.04402	6.00E-05	2028.04402	7.00E-05
2027.07966	1.30E-04	2027.07966	2.70E-04	2027.07966	6.00E-05	2027.07966	7.00E-05
2026.1153	1.00E-04	2026.1153	2.70E-04	2026.1153	6.00E-05	2026.1153	6.00E-05
2025.15095	8.00E-05	2025.15095	2.70E-04	2025.15095	7.00E-05	2025.15095	6.00E-05
2024.18659	8.00E-05	2024.18659	2.70E-04	2024.18659	7.00E-05	2024.18659	6.00E-05
2023.22223	1.00E-04	2023.22223	2.70E-04	2023.22223	7.00E-05	2023.22223	6.00E-05
2022.25787	1.20E-04	2022.25787	2.70E-04	2022.25787	6.00E-05	2022.25787	6.00E-05
2021.29352	1.50E-04	2021.29352	2.60E-04	2021.29352	6.00E-05	2021.29352	6.00E-05
2020.32916	1.50E-04	2020.32916	2.50E-04	2020.32916	6.00E-05	2020.32916	6.00E-05
2019.3648	1.30E-04	2019.3648	2.50E-04	2019.3648	6.00E-05	2019.3648	6.00E-05
2018.40044	1.30E-04	2018.40044	2.40E-04	2018.40044	6.00E-05	2018.40044	7.00E-05
2017.43609	1.40E-04	2017.43609	2.40E-04	2017.43609	6.00E-05	2017.43609	7.00E-05
2016.47173	1.50E-04	2016.47173	2.30E-04	2016.47173	6.00E-05	2016.47173	7.00E-05
2015.50737	1.50E-04	2015.50737	2.30E-04	2015.50737	5.00E-05	2015.50737	6.00E-05
2014.54301	1.30E-04	2014.54301	2.30E-04	2014.54301	5.00E-05	2014.54301	6.00E-05
2013.57866	1.10E-04	2013.57866	2.30E-04	2013.57866	5.00E-05	2013.57866	5.00E-05
2012.6143	1.20E-04	2012.6143	2.40E-04	2012.6143	5.00E-05	2012.6143	4.00E-05
2011.64994	1.40E-04	2011.64994	2.40E-04	2011.64994	5.00E-05	2011.64994	3.00E-05
2010.68558	1.00E-04	2010.68558	2.40E-04	2010.68558	4.00E-05	2010.68558	2.00E-05
2009.72123	5.00E-05	2009.72123	2.40E-04	2009.72123	4.00E-05	2009.72123	2.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2008.75687	4.00E-05	2008.75687	2.40E-04	2008.75687	4.00E-05	2008.75687	1.00E-05
2007.79251	5.00E-05	2007.79251	2.40E-04	2007.79251	4.00E-05	2007.79251	1.00E-05
2006.82815	5.00E-05	2006.82815	2.30E-04	2006.82815	4.00E-05	2006.82815	2.00E-05
2005.8638	5.00E-05	2005.8638	2.40E-04	2005.8638	4.00E-05	2005.8638	2.00E-05
2004.89944	7.00E-05	2004.89944	2.40E-04	2004.89944	3.00E-05	2004.89944	2.00E-05
2003.93508	6.00E-05	2003.93508	2.30E-04	2003.93508	2.00E-05	2003.93508	2.00E-05
2002.97072	4.00E-05	2002.97072	2.30E-04	2002.97072	2.00E-05	2002.97072	1.00E-05
2002.00636	3.00E-05	2002.00636	2.30E-04	2002.00636	2.00E-05	2002.00636	2.00E-05
2001.04201	2.00E-05	2001.04201	2.30E-04	2001.04201	2.00E-05	2001.04201	2.00E-05
2000.07765	3.00E-05	2000.07765	2.30E-04	2000.07765	3.00E-05	2000.07765	2.00E-05
1999.11329	6.00E-05	1999.11329	2.30E-04	1999.11329	3.00E-05	1999.11329	2.00E-05
1998.14893	9.00E-05	1998.14893	2.30E-04	1998.14893	3.00E-05	1998.14893	2.00E-05
1997.18458	1.30E-04	1997.18458	2.30E-04	1997.18458	2.00E-05	1997.18458	2.00E-05
1996.22022	1.20E-04	1996.22022	2.30E-04	1996.22022	2.00E-05	1996.22022	2.00E-05
1995.25586	9.00E-05	1995.25586	2.30E-04	1995.25586	3.00E-05	1995.25586	2.00E-05
1994.2915	7.00E-05	1994.2915	2.20E-04	1994.2915	3.00E-05	1994.2915	2.00E-05
1993.32715	7.00E-05	1993.32715	2.20E-04	1993.32715	4.00E-05	1993.32715	2.00E-05
1992.36279	7.00E-05	1992.36279	2.10E-04	1992.36279	5.00E-05	1992.36279	2.00E-05
1991.39843	8.00E-05	1991.39843	2.10E-04	1991.39843	4.00E-05	1991.39843	2.00E-05
1990.43407	7.00E-05	1990.43407	2.10E-04	1990.43407	4.00E-05	1990.43407	2.00E-05
1989.46972	0	1989.46972	2.10E-04	1989.46972	3.00E-05	1989.46972	2.00E-05
1988.50536	-3.00E-05	1988.50536	2.00E-04	1988.50536	3.00E-05	1988.50536	2.00E-05
1987.541	2.00E-05	1987.541	2.00E-04	1987.541	4.00E-05	1987.541	2.00E-05
1986.57664	1.00E-04	1986.57664	1.90E-04	1986.57664	4.00E-05	1986.57664	2.00E-05
1985.61229	1.30E-04	1985.61229	1.90E-04	1985.61229	5.00E-05	1985.61229	3.00E-05
1984.64793	1.10E-04	1984.64793	1.90E-04	1984.64793	5.00E-05	1984.64793	3.00E-05
1983.68357	7.00E-05	1983.68357	2.00E-04	1983.68357	6.00E-05	1983.68357	3.00E-05
1982.71921	5.00E-05	1982.71921	2.10E-04	1982.71921	6.00E-05	1982.71921	2.00E-05
1981.75486	4.00E-05	1981.75486	2.10E-04	1981.75486	6.00E-05	1981.75486	2.00E-05
1980.7905	4.00E-05	1980.7905	2.10E-04	1980.7905	5.00E-05	1980.7905	2.00E-05
1979.82614	7.00E-05	1979.82614	2.00E-04	1979.82614	5.00E-05	1979.82614	2.00E-05
1978.86178	1.10E-04	1978.86178	2.00E-04	1978.86178	5.00E-05	1978.86178	2.00E-05
1977.89742	1.20E-04	1977.89742	2.00E-04	1977.89742	4.00E-05	1977.89742	2.00E-05
1976.93307	9.00E-05	1976.93307	2.00E-04	1976.93307	5.00E-05	1976.93307	1.00E-05
1975.96871	4.00E-05	1975.96871	2.00E-04	1975.96871	5.00E-05	1975.96871	1.00E-05
1975.00435	2.00E-05	1975.00435	1.90E-04	1975.00435	5.00E-05	1975.00435	1.00E-05
1974.03999	6.00E-05	1974.03999	1.90E-04	1974.03999	5.00E-05	1974.03999	2.00E-05
1973.07564	8.00E-05	1973.07564	1.90E-04	1973.07564	5.00E-05	1973.07564	2.00E-05
1972.11128	9.00E-05	1972.11128	1.90E-04	1972.11128	4.00E-05	1972.11128	3.00E-05
1971.14692	7.00E-05	1971.14692	2.00E-04	1971.14692	4.00E-05	1971.14692	3.00E-05
1970.18256	3.00E-05	1970.18256	1.90E-04	1970.18256	4.00E-05	1970.18256	4.00E-05



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1969.21821	0	1969.21821	1.90E-04	1969.21821	4.00E-05	1969.21821	4.00E-05
1968.25385	2.00E-05	1968.25385	1.80E-04	1968.25385	3.00E-05	1968.25385	4.00E-05
1967.28949	6.00E-05	1967.28949	1.80E-04	1967.28949	3.00E-05	1967.28949	4.00E-05
1966.32513	8.00E-05	1966.32513	1.80E-04	1966.32513	3.00E-05	1966.32513	4.00E-05
1965.36078	7.00E-05	1965.36078	1.80E-04	1965.36078	3.00E-05	1965.36078	5.00E-05
1964.39642	8.00E-05	1964.39642	1.90E-04	1964.39642	3.00E-05	1964.39642	5.00E-05
1963.43206	9.00E-05	1963.43206	2.00E-04	1963.43206	3.00E-05	1963.43206	4.00E-05
1962.4677	7.00E-05	1962.4677	2.10E-04	1962.4677	3.00E-05	1962.4677	4.00E-05
1961.50335	5.00E-05	1961.50335	2.20E-04	1961.50335	4.00E-05	1961.50335	3.00E-05
1960.53899	7.00E-05	1960.53899	2.20E-04	1960.53899	4.00E-05	1960.53899	3.00E-05
1959.57463	1.00E-04	1959.57463	2.20E-04	1959.57463	4.00E-05	1959.57463	3.00E-05
1958.61027	9.00E-05	1958.61027	2.10E-04	1958.61027	3.00E-05	1958.61027	3.00E-05
1957.64592	6.00E-05	1957.64592	1.90E-04	1957.64592	3.00E-05	1957.64592	3.00E-05
1956.68156	7.00E-05	1956.68156	1.80E-04	1956.68156	2.00E-05	1956.68156	2.00E-05
1955.7172	9.00E-05	1955.7172	1.70E-04	1955.7172	2.00E-05	1955.7172	3.00E-05
1954.75284	1.00E-04	1954.75284	1.70E-04	1954.75284	3.00E-05	1954.75284	3.00E-05
1953.78849	9.00E-05	1953.78849	1.70E-04	1953.78849	4.00E-05	1953.78849	4.00E-05
1952.82413	6.00E-05	1952.82413	1.80E-04	1952.82413	5.00E-05	1952.82413	4.00E-05
1951.85977	5.00E-05	1951.85977	1.80E-04	1951.85977	6.00E-05	1951.85977	5.00E-05
1950.89541	7.00E-05	1950.89541	1.80E-04	1950.89541	6.00E-05	1950.89541	5.00E-05
1949.93105	9.00E-05	1949.93105	1.80E-04	1949.93105	6.00E-05	1949.93105	5.00E-05
1948.9667	9.00E-05	1948.9667	1.70E-04	1948.9667	5.00E-05	1948.9667	5.00E-05
1948.00234	1.00E-04	1948.00234	1.60E-04	1948.00234	4.00E-05	1948.00234	5.00E-05
1947.03798	1.10E-04	1947.03798	1.60E-04	1947.03798	4.00E-05	1947.03798	5.00E-05
1946.07362	1.40E-04	1946.07362	1.50E-04	1946.07362	5.00E-05	1946.07362	5.00E-05
1945.10927	1.70E-04	1945.10927	1.50E-04	1945.10927	6.00E-05	1945.10927	5.00E-05
1944.14491	1.90E-04	1944.14491	1.50E-04	1944.14491	6.00E-05	1944.14491	7.00E-05
1943.18055	1.60E-04	1943.18055	1.50E-04	1943.18055	6.00E-05	1943.18055	8.00E-05
1942.21619	1.00E-04	1942.21619	1.60E-04	1942.21619	6.00E-05	1942.21619	9.00E-05
1941.25184	4.00E-05	1941.25184	1.60E-04	1941.25184	5.00E-05	1941.25184	8.00E-05
1940.28748	4.00E-05	1940.28748	1.60E-04	1940.28748	4.00E-05	1940.28748	7.00E-05
1939.32312	8.00E-05	1939.32312	1.60E-04	1939.32312	3.00E-05	1939.32312	6.00E-05
1938.35876	1.50E-04	1938.35876	1.60E-04	1938.35876	4.00E-05	1938.35876	5.00E-05
1937.39441	2.10E-04	1937.39441	1.60E-04	1937.39441	4.00E-05	1937.39441	4.00E-05
1936.43005	2.10E-04	1936.43005	1.50E-04	1936.43005	4.00E-05	1936.43005	4.00E-05
1935.46569	1.70E-04	1935.46569	1.50E-04	1935.46569	4.00E-05	1935.46569	4.00E-05
1934.50133	1.20E-04	1934.50133	1.50E-04	1934.50133	4.00E-05	1934.50133	4.00E-05
1933.53698	1.00E-04	1933.53698	1.50E-04	1933.53698	4.00E-05	1933.53698	4.00E-05
1932.57262	1.00E-04	1932.57262	1.50E-04	1932.57262	5.00E-05	1932.57262	5.00E-05
1931.60826	1.00E-04	1931.60826	1.60E-04	1931.60826	5.00E-05	1931.60826	5.00E-05
1930.6439	8.00E-05	1930.6439	1.60E-04	1930.6439	6.00E-05	1930.6439	5.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1929.67955	7.00E-05	1929.67955	1.60E-04	1929.67955	6.00E-05	1929.67955	5.00E-05
1928.71519	7.00E-05	1928.71519	1.50E-04	1928.71519	5.00E-05	1928.71519	5.00E-05
1927.75083	9.00E-05	1927.75083	1.50E-04	1927.75083	5.00E-05	1927.75083	5.00E-05
1926.78647	1.10E-04	1926.78647	1.50E-04	1926.78647	5.00E-05	1926.78647	4.00E-05
1925.82211	1.00E-04	1925.82211	1.50E-04	1925.82211	5.00E-05	1925.82211	4.00E-05
1924.85776	9.00E-05	1924.85776	1.50E-04	1924.85776	6.00E-05	1924.85776	5.00E-05
1923.8934	1.10E-04	1923.8934	1.50E-04	1923.8934	6.00E-05	1923.8934	6.00E-05
1922.92904	1.40E-04	1922.92904	1.50E-04	1922.92904	6.00E-05	1922.92904	7.00E-05
1921.96468	1.50E-04	1921.96468	1.60E-04	1921.96468	6.00E-05	1921.96468	8.00E-05
1921.00033	1.40E-04	1921.00033	1.60E-04	1921.00033	6.00E-05	1921.00033	9.00E-05
1920.03597	1.60E-04	1920.03597	1.60E-04	1920.03597	6.00E-05	1920.03597	1.00E-04
1919.07161	1.80E-04	1919.07161	1.60E-04	1919.07161	6.00E-05	1919.07161	1.00E-04
1918.10725	1.50E-04	1918.10725	1.50E-04	1918.10725	5.00E-05	1918.10725	1.00E-04
1917.1429	1.20E-04	1917.1429	1.50E-04	1917.1429	4.00E-05	1917.1429	1.00E-04
1916.17854	1.40E-04	1916.17854	1.50E-04	1916.17854	4.00E-05	1916.17854	9.00E-05
1915.21418	1.70E-04	1915.21418	1.50E-04	1915.21418	3.00E-05	1915.21418	8.00E-05
1914.24982	1.90E-04	1914.24982	1.50E-04	1914.24982	3.00E-05	1914.24982	7.00E-05
1913.28547	2.00E-04	1913.28547	1.50E-04	1913.28547	4.00E-05	1913.28547	6.00E-05
1912.32111	2.20E-04	1912.32111	1.40E-04	1912.32111	5.00E-05	1912.32111	7.00E-05
1911.35675	2.50E-04	1911.35675	1.40E-04	1911.35675	5.00E-05	1911.35675	8.00E-05
1910.39239	2.50E-04	1910.39239	1.30E-04	1910.39239	5.00E-05	1910.39239	9.00E-05
1909.42804	2.10E-04	1909.42804	1.30E-04	1909.42804	5.00E-05	1909.42804	1.00E-04
1908.46368	1.90E-04	1908.46368	1.40E-04	1908.46368	5.00E-05	1908.46368	1.10E-04
1907.49932	2.00E-04	1907.49932	1.40E-04	1907.49932	4.00E-05	1907.49932	1.10E-04
1906.53496	2.20E-04	1906.53496	1.40E-04	1906.53496	4.00E-05	1906.53496	1.00E-04
1905.57061	2.30E-04	1905.57061	1.40E-04	1905.57061	4.00E-05	1905.57061	1.00E-04
1904.60625	2.30E-04	1904.60625	1.40E-04	1904.60625	4.00E-05	1904.60625	1.00E-04
1903.64189	2.60E-04	1903.64189	1.40E-04	1903.64189	3.00E-05	1903.64189	1.00E-04
1902.67753	2.90E-04	1902.67753	1.50E-04	1902.67753	3.00E-05	1902.67753	9.00E-05
1901.71317	3.10E-04	1901.71317	1.50E-04	1901.71317	3.00E-05	1901.71317	9.00E-05
1900.74882	2.90E-04	1900.74882	1.40E-04	1900.74882	3.00E-05	1900.74882	8.00E-05
1899.78446	2.50E-04	1899.78446	1.40E-04	1899.78446	3.00E-05	1899.78446	8.00E-05
1898.8201	2.20E-04	1898.8201	1.30E-04	1898.8201	4.00E-05	1898.8201	7.00E-05
1897.85574	2.20E-04	1897.85574	1.20E-04	1897.85574	4.00E-05	1897.85574	7.00E-05
1896.89139	2.10E-04	1896.89139	1.20E-04	1896.89139	4.00E-05	1896.89139	6.00E-05
1895.92703	2.00E-04	1895.92703	1.20E-04	1895.92703	4.00E-05	1895.92703	5.00E-05
1894.96267	2.00E-04	1894.96267	1.20E-04	1894.96267	4.00E-05	1894.96267	4.00E-05
1893.99831	2.20E-04	1893.99831	1.20E-04	1893.99831	4.00E-05	1893.99831	4.00E-05
1893.03396	2.30E-04	1893.03396	1.20E-04	1893.03396	5.00E-05	1893.03396	5.00E-05
1892.0696	2.20E-04	1892.0696	1.20E-04	1892.0696	5.00E-05	1892.0696	6.00E-05
1891.10524	2.00E-04	1891.10524	1.20E-04	1891.10524	6.00E-05	1891.10524	8.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1890.14088	1.90E-04	1890.14088	1.20E-04	1890.14088	6.00E-05	1890.14088	9.00E-05
1889.17653	1.70E-04	1889.17653	1.20E-04	1889.17653	6.00E-05	1889.17653	1.00E-04
1888.21217	1.70E-04	1888.21217	1.20E-04	1888.21217	5.00E-05	1888.21217	9.00E-05
1887.24781	1.50E-04	1887.24781	1.20E-04	1887.24781	5.00E-05	1887.24781	7.00E-05
1886.28345	1.40E-04	1886.28345	1.20E-04	1886.28345	4.00E-05	1886.28345	6.00E-05
1885.3191	1.50E-04	1885.3191	1.20E-04	1885.3191	4.00E-05	1885.3191	5.00E-05
1884.35474	1.60E-04	1884.35474	1.20E-04	1884.35474	4.00E-05	1884.35474	4.00E-05
1883.39038	1.60E-04	1883.39038	1.20E-04	1883.39038	4.00E-05	1883.39038	5.00E-05
1882.42602	1.60E-04	1882.42602	1.20E-04	1882.42602	4.00E-05	1882.42602	5.00E-05
1881.46167	1.50E-04	1881.46167	1.20E-04	1881.46167	5.00E-05	1881.46167	5.00E-05
1880.49731	1.30E-04	1880.49731	1.10E-04	1880.49731	5.00E-05	1880.49731	5.00E-05
1879.53295	1.10E-04	1879.53295	1.00E-04	1879.53295	4.00E-05	1879.53295	4.00E-05
1878.56859	1.40E-04	1878.56859	1.00E-04	1878.56859	3.00E-05	1878.56859	4.00E-05
1877.60424	1.80E-04	1877.60424	1.00E-04	1877.60424	3.00E-05	1877.60424	3.00E-05
1876.63988	1.60E-04	1876.63988	1.10E-04	1876.63988	2.00E-05	1876.63988	3.00E-05
1875.67552	1.10E-04	1875.67552	1.10E-04	1875.67552	2.00E-05	1875.67552	3.00E-05
1874.71116	8.00E-05	1874.71116	1.10E-04	1874.71116	2.00E-05	1874.71116	3.00E-05
1873.7468	8.00E-05	1873.7468	1.10E-04	1873.7468	3.00E-05	1873.7468	2.00E-05
1872.78245	8.00E-05	1872.78245	1.00E-04	1872.78245	4.00E-05	1872.78245	2.00E-05
1871.81809	1.00E-04	1871.81809	9.00E-05	1871.81809	5.00E-05	1871.81809	3.00E-05
1870.85373	1.40E-04	1870.85373	9.00E-05	1870.85373	7.00E-05	1870.85373	6.00E-05
1869.88937	1.80E-04	1869.88937	1.00E-04	1869.88937	8.00E-05	1869.88937	9.00E-05
1868.92502	1.80E-04	1868.92502	1.10E-04	1868.92502	7.00E-05	1868.92502	1.20E-04
1867.96066	1.40E-04	1867.96066	1.10E-04	1867.96066	6.00E-05	1867.96066	1.30E-04
1866.9963	1.00E-04	1866.9963	1.10E-04	1866.9963	4.00E-05	1866.9963	1.20E-04
1866.03194	8.00E-05	1866.03194	1.10E-04	1866.03194	3.00E-05	1866.03194	9.00E-05
1865.06759	8.00E-05	1865.06759	1.10E-04	1865.06759	2.00E-05	1865.06759	6.00E-05
1864.10323	9.00E-05	1864.10323	1.00E-04	1864.10323	3.00E-05	1864.10323	4.00E-05
1863.13887	1.00E-04	1863.13887	1.00E-04	1863.13887	3.00E-05	1863.13887	3.00E-05
1862.17451	1.10E-04	1862.17451	1.10E-04	1862.17451	3.00E-05	1862.17451	3.00E-05
1861.21016	9.00E-05	1861.21016	1.10E-04	1861.21016	2.00E-05	1861.21016	3.00E-05
1860.2458	8.00E-05	1860.2458	1.10E-04	1860.2458	1.00E-05	1860.2458	3.00E-05
1859.28144	8.00E-05	1859.28144	1.10E-04	1859.28144	0	1859.28144	3.00E-05
1858.31708	8.00E-05	1858.31708	1.10E-04	1858.31708	0	1858.31708	2.00E-05
1857.35273	4.00E-05	1857.35273	1.10E-04	1857.35273	0	1857.35273	2.00E-05
1856.38837	2.00E-05	1856.38837	1.00E-04	1856.38837	1.00E-05	1856.38837	2.00E-05
1855.42401	5.00E-05	1855.42401	9.00E-05	1855.42401	1.00E-05	1855.42401	2.00E-05
1854.45965	8.00E-05	1854.45965	9.00E-05	1854.45965	2.00E-05	1854.45965	2.00E-05
1853.4953	9.00E-05	1853.4953	1.00E-04	1853.4953	2.00E-05	1853.4953	3.00E-05
1852.53094	9.00E-05	1852.53094	1.10E-04	1852.53094	3.00E-05	1852.53094	3.00E-05
1851.56658	7.00E-05	1851.56658	1.10E-04	1851.56658	3.00E-05	1851.56658	2.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1850.60222	6.00E-05	1850.60222	1.10E-04	1850.60222	3.00E-05	1850.60222	2.00E-05
1849.63786	7.00E-05	1849.63786	1.00E-04	1849.63786	2.00E-05	1849.63786	2.00E-05
1848.67351	1.00E-04	1848.67351	9.00E-05	1848.67351	2.00E-05	1848.67351	3.00E-05
1847.70915	1.10E-04	1847.70915	8.00E-05	1847.70915	3.00E-05	1847.70915	2.00E-05
1846.74479	1.20E-04	1846.74479	7.00E-05	1846.74479	5.00E-05	1846.74479	2.00E-05
1845.78043	1.40E-04	1845.78043	7.00E-05	1845.78043	6.00E-05	1845.78043	5.00E-05
1844.81608	1.00E-04	1844.81608	8.00E-05	1844.81608	6.00E-05	1844.81608	8.00E-05
1843.85172	6.00E-05	1843.85172	9.00E-05	1843.85172	5.00E-05	1843.85172	1.00E-04
1842.88736	7.00E-05	1842.88736	1.00E-04	1842.88736	3.00E-05	1842.88736	1.10E-04
1841.923	8.00E-05	1841.923	1.10E-04	1841.923	0	1841.923	1.00E-04
1840.95865	7.00E-05	1840.95865	1.20E-04	1840.95865	-1.00E-05	1840.95865	7.00E-05
1839.99429	7.00E-05	1839.99429	1.20E-04	1839.99429	-1.00E-05	1839.99429	4.00E-05
1839.02993	9.00E-05	1839.02993	1.10E-04	1839.02993	0	1839.02993	2.00E-05
1838.06557	9.00E-05	1838.06557	1.10E-04	1838.06557	0	1838.06557	2.00E-05
1837.10122	1.00E-04	1837.10122	1.10E-04	1837.10122	0	1837.10122	2.00E-05
1836.13686	1.00E-04	1836.13686	1.10E-04	1836.13686	0	1836.13686	2.00E-05
1835.1725	9.00E-05	1835.1725	1.10E-04	1835.1725	0	1835.1725	1.00E-05
1834.20814	6.00E-05	1834.20814	1.10E-04	1834.20814	0	1834.20814	0
1833.24379	3.00E-05	1833.24379	1.10E-04	1833.24379	2.00E-05	1833.24379	-1.00E-05
1832.27943	3.00E-05	1832.27943	1.00E-04	1832.27943	3.00E-05	1832.27943	0
1831.31507	6.00E-05	1831.31507	1.00E-04	1831.31507	3.00E-05	1831.31507	2.00E-05
1830.35071	1.00E-04	1830.35071	1.00E-04	1830.35071	2.00E-05	1830.35071	5.00E-05
1829.38636	1.20E-04	1829.38636	1.00E-04	1829.38636	0	1829.38636	6.00E-05
1828.422	1.10E-04	1828.422	1.00E-04	1828.422	-2.00E-05	1828.422	6.00E-05
1827.45764	9.00E-05	1827.45764	9.00E-05	1827.45764	-3.00E-05	1827.45764	6.00E-05
1826.49328	1.00E-04	1826.49328	9.00E-05	1826.49328	-4.00E-05	1826.49328	5.00E-05
1825.52893	1.10E-04	1825.52893	8.00E-05	1825.52893	-4.00E-05	1825.52893	4.00E-05
1824.56457	9.00E-05	1824.56457	7.00E-05	1824.56457	-4.00E-05	1824.56457	4.00E-05
1823.60021	7.00E-05	1823.60021	7.00E-05	1823.60021	-5.00E-05	1823.60021	4.00E-05
1822.63585	3.00E-05	1822.63585	7.00E-05	1822.63585	-6.00E-05	1822.63585	3.00E-05
1821.67149	0	1821.67149	7.00E-05	1821.67149	-7.00E-05	1821.67149	2.00E-05
1820.70714	1.00E-05	1820.70714	7.00E-05	1820.70714	-6.00E-05	1820.70714	1.00E-05
1819.74278	3.00E-05	1819.74278	7.00E-05	1819.74278	-7.00E-05	1819.74278	0
1818.77842	5.00E-05	1818.77842	6.00E-05	1818.77842	-7.00E-05	1818.77842	1.00E-05
1817.81406	8.00E-05	1817.81406	5.00E-05	1817.81406	-8.00E-05	1817.81406	1.00E-05
1816.84971	9.00E-05	1816.84971	4.00E-05	1816.84971	-9.00E-05	1816.84971	2.00E-05
1815.88535	6.00E-05	1815.88535	3.00E-05	1815.88535	-9.00E-05	1815.88535	2.00E-05
1814.92099	2.00E-05	1814.92099	3.00E-05	1814.92099	-9.00E-05	1814.92099	2.00E-05
1813.95663	1.00E-05	1813.95663	2.00E-05	1813.95663	-8.00E-05	1813.95663	2.00E-05
1812.99228	1.00E-05	1812.99228	1.00E-05	1812.99228	-7.00E-05	1812.99228	3.00E-05
1812.02792	3.00E-05	1812.02792	1.00E-05	1812.02792	-7.00E-05	1812.02792	4.00E-05

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1811.06356	2.00E-05	1811.06356	0	1811.06356	-7.00E-05	1811.06356	4.00E-05
1810.0992	2.00E-05	1810.0992	0	1810.0992	-7.00E-05	1810.0992	4.00E-05
1809.13485	5.00E-05	1809.13485	0	1809.13485	-8.00E-05	1809.13485	4.00E-05
1808.17049	8.00E-05	1808.17049	0	1808.17049	-9.00E-05	1808.17049	3.00E-05
1807.20613	8.00E-05	1807.20613	1.00E-05	1807.20613	-1.00E-04	1807.20613	2.00E-05
1806.24177	6.00E-05	1806.24177	1.00E-05	1806.24177	-9.00E-05	1806.24177	1.00E-05
1805.27742	5.00E-05	1805.27742	1.00E-05	1805.27742	-8.00E-05	1805.27742	1.00E-05
1804.31306	4.00E-05	1804.31306	0	1804.31306	-7.00E-05	1804.31306	1.00E-05
1803.3487	4.00E-05	1803.3487	0	1803.3487	-6.00E-05	1803.3487	2.00E-05
1802.38434	5.00E-05	1802.38434	0	1802.38434	-4.00E-05	1802.38434	4.00E-05
1801.41999	6.00E-05	1801.41999	1.00E-05	1801.41999	-4.00E-05	1801.41999	7.00E-05
1800.45563	7.00E-05	1800.45563	1.00E-05	1800.45563	-4.00E-05	1800.45563	9.00E-05
1799.49127	8.00E-05	1799.49127	2.00E-05	1799.49127	-4.00E-05	1799.49127	9.00E-05
1798.52691	1.10E-04	1798.52691	3.00E-05	1798.52691	-4.00E-05	1798.52691	9.00E-05
1797.56255	1.10E-04	1797.56255	4.00E-05	1797.56255	-4.00E-05	1797.56255	7.00E-05
1796.5982	7.00E-05	1796.5982	4.00E-05	1796.5982	-3.00E-05	1796.5982	5.00E-05
1795.63384	4.00E-05	1795.63384	4.00E-05	1795.63384	-1.00E-05	1795.63384	4.00E-05
1794.66948	6.00E-05	1794.66948	3.00E-05	1794.66948	1.00E-05	1794.66948	4.00E-05
1793.70512	1.00E-04	1793.70512	4.00E-05	1793.70512	2.00E-05	1793.70512	7.00E-05
1792.74077	1.10E-04	1792.74077	4.00E-05	1792.74077	2.00E-05	1792.74077	1.10E-04
1791.77641	9.00E-05	1791.77641	5.00E-05	1791.77641	1.00E-05	1791.77641	1.30E-04
1790.81205	6.00E-05	1790.81205	7.00E-05	1790.81205	0	1790.81205	1.40E-04
1789.84769	4.00E-05	1789.84769	8.00E-05	1789.84769	-2.00E-05	1789.84769	1.30E-04
1788.88334	4.00E-05	1788.88334	1.00E-04	1788.88334	-1.00E-05	1788.88334	1.00E-04
1787.91898	2.00E-05	1787.91898	1.00E-04	1787.91898	1.00E-05	1787.91898	6.00E-05
1786.95462	0	1786.95462	1.00E-04	1786.95462	2.00E-05	1786.95462	5.00E-05
1785.99026	2.00E-05	1785.99026	1.00E-04	1785.99026	3.00E-05	1785.99026	6.00E-05
1785.02591	5.00E-05	1785.02591	9.00E-05	1785.02591	4.00E-05	1785.02591	8.00E-05
1784.06155	7.00E-05	1784.06155	9.00E-05	1784.06155	4.00E-05	1784.06155	9.00E-05
1783.09719	1.00E-04	1783.09719	9.00E-05	1783.09719	5.00E-05	1783.09719	1.00E-04
1782.13283	1.20E-04	1782.13283	9.00E-05	1782.13283	5.00E-05	1782.13283	1.10E-04
1781.16848	1.10E-04	1781.16848	9.00E-05	1781.16848	6.00E-05	1781.16848	1.20E-04
1780.20412	1.00E-04	1780.20412	9.00E-05	1780.20412	7.00E-05	1780.20412	1.30E-04
1779.23976	1.30E-04	1779.23976	9.00E-05	1779.23976	7.00E-05	1779.23976	1.40E-04
1778.2754	1.70E-04	1778.2754	9.00E-05	1778.2754	7.00E-05	1778.2754	1.40E-04
1777.31105	1.80E-04	1777.31105	9.00E-05	1777.31105	8.00E-05	1777.31105	1.40E-04
1776.34669	1.60E-04	1776.34669	8.00E-05	1776.34669	1.10E-04	1776.34669	1.20E-04
1775.38233	1.50E-04	1775.38233	7.00E-05	1775.38233	1.60E-04	1775.38233	1.10E-04
1774.41797	1.60E-04	1774.41797	7.00E-05	1774.41797	2.10E-04	1774.41797	1.30E-04
1773.45362	1.70E-04	1773.45362	7.00E-05	1773.45362	2.30E-04	1773.45362	1.70E-04
1772.48926	1.60E-04	1772.48926	7.00E-05	1772.48926	2.30E-04	1772.48926	2.00E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1771.5249	1.40E-04	1771.5249	7.00E-05	1771.5249	2.30E-04	1771.5249	2.30E-04
1770.56054	1.40E-04	1770.56054	8.00E-05	1770.56054	2.20E-04	1770.56054	2.40E-04
1769.59618	1.70E-04	1769.59618	9.00E-05	1769.59618	2.00E-04	1769.59618	2.40E-04
1768.63183	1.80E-04	1768.63183	9.00E-05	1768.63183	2.00E-04	1768.63183	2.20E-04
1767.66747	1.50E-04	1767.66747	9.00E-05	1767.66747	2.20E-04	1767.66747	1.90E-04
1766.70311	1.30E-04	1766.70311	9.00E-05	1766.70311	2.30E-04	1766.70311	1.80E-04
1765.73875	1.20E-04	1765.73875	9.00E-05	1765.73875	2.50E-04	1765.73875	1.70E-04
1764.7744	9.00E-05	1764.7744	9.00E-05	1764.7744	2.80E-04	1764.7744	1.50E-04
1763.81004	9.00E-05	1763.81004	9.00E-05	1763.81004	3.10E-04	1763.81004	1.50E-04
1762.84568	1.70E-04	1762.84568	9.00E-05	1762.84568	3.20E-04	1762.84568	1.70E-04
1761.88132	2.20E-04	1761.88132	1.00E-04	1761.88132	3.30E-04	1761.88132	1.90E-04
1760.91697	1.80E-04	1760.91697	1.10E-04	1760.91697	3.50E-04	1760.91697	2.00E-04
1759.95261	1.50E-04	1759.95261	1.20E-04	1759.95261	3.70E-04	1759.95261	2.00E-04
1758.98825	1.80E-04	1758.98825	1.20E-04	1758.98825	4.00E-04	1758.98825	1.90E-04
1758.02389	2.20E-04	1758.02389	1.20E-04	1758.02389	4.30E-04	1758.02389	1.90E-04
1757.05954	2.20E-04	1757.05954	1.20E-04	1757.05954	4.70E-04	1757.05954	1.90E-04
1756.09518	2.30E-04	1756.09518	1.30E-04	1756.09518	5.00E-04	1756.09518	2.00E-04
1755.13082	2.60E-04	1755.13082	1.50E-04	1755.13082	5.30E-04	1755.13082	2.10E-04
1754.16646	2.80E-04	1754.16646	1.70E-04	1754.16646	5.80E-04	1754.16646	2.10E-04
1753.20211	2.70E-04	1753.20211	1.80E-04	1753.20211	6.40E-04	1753.20211	2.30E-04
1752.23775	2.80E-04	1752.23775	1.90E-04	1752.23775	7.10E-04	1752.23775	2.60E-04
1751.27339	3.00E-04	1751.27339	2.00E-04	1751.27339	7.70E-04	1751.27339	3.00E-04
1750.30903	3.60E-04	1750.30903	2.20E-04	1750.30903	8.30E-04	1750.30903	3.40E-04
1749.34468	4.40E-04	1749.34468	2.30E-04	1749.34468	8.70E-04	1749.34468	3.80E-04
1748.38032	4.70E-04	1748.38032	2.50E-04	1748.38032	9.10E-04	1748.38032	3.90E-04
1747.41596	4.50E-04	1747.41596	2.70E-04	1747.41596	9.50E-04	1747.41596	3.70E-04
1746.4516	4.10E-04	1746.4516	2.90E-04	1746.4516	0.00101	1746.4516	3.50E-04
1745.48724	4.20E-04	1745.48724	3.10E-04	1745.48724	0.00106	1745.48724	3.50E-04
1744.52289	4.50E-04	1744.52289	3.40E-04	1744.52289	0.00111	1744.52289	3.60E-04
1743.55853	4.50E-04	1743.55853	3.60E-04	1743.55853	0.00118	1743.55853	3.60E-04
1742.59417	4.60E-04	1742.59417	3.80E-04	1742.59417	0.00126	1742.59417	3.80E-04
1741.62981	5.20E-04	1741.62981	4.00E-04	1741.62981	0.00133	1741.62981	4.10E-04
1740.66546	5.80E-04	1740.66546	4.20E-04	1740.66546	0.00139	1740.66546	4.40E-04
1739.7011	5.70E-04	1739.7011	4.50E-04	1739.7011	0.00143	1739.7011	4.60E-04
1738.73674	5.60E-04	1738.73674	4.90E-04	1738.73674	0.00149	1738.73674	4.70E-04
1737.77238	5.90E-04	1737.77238	5.20E-04	1737.77238	0.00157	1737.77238	4.70E-04
1736.80803	6.50E-04	1736.80803	5.40E-04	1736.80803	0.00166	1736.80803	4.80E-04
1735.84367	7.40E-04	1735.84367	5.60E-04	1735.84367	0.00175	1735.84367	5.20E-04
1734.87931	8.40E-04	1734.87931	5.80E-04	1734.87931	0.00182	1734.87931	5.90E-04
1733.91495	8.70E-04	1733.91495	6.10E-04	1733.91495	0.00187	1733.91495	6.60E-04
1732.9506	8.40E-04	1732.9506	6.50E-04	1732.9506	0.00191	1732.9506	7.10E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1731.98624	8.30E-04	1731.98624	7.00E-04	1731.98624	0.00194	1731.98624	7.30E-04
1731.02188	8.40E-04	1731.02188	7.40E-04	1731.02188	0.00196	1731.02188	7.10E-04
1730.05752	8.40E-04	1730.05752	7.80E-04	1730.05752	0.00201	1730.05752	6.70E-04
1729.09317	8.60E-04	1729.09317	8.10E-04	1729.09317	0.00206	1729.09317	6.40E-04
1728.12881	8.90E-04	1728.12881	8.40E-04	1728.12881	0.0021	1728.12881	6.40E-04
1727.16445	9.10E-04	1727.16445	8.70E-04	1727.16445	0.00213	1727.16445	6.50E-04
1726.20009	9.50E-04	1726.20009	9.00E-04	1726.20009	0.00218	1726.20009	6.60E-04
1725.23574	9.90E-04	1725.23574	9.30E-04	1725.23574	0.00223	1725.23574	6.70E-04
1724.27138	1.00E-03	1724.27138	9.60E-04	1724.27138	0.00228	1724.27138	6.90E-04
1723.30702	1.00E-03	1723.30702	1.00E-03	1723.30702	0.00232	1723.30702	7.10E-04
1722.34266	0.00105	1722.34266	0.00104	1722.34266	0.00236	1722.34266	7.30E-04
1721.3783	0.00112	1721.3783	0.00108	1721.3783	0.00244	1721.3783	7.50E-04
1720.41395	0.0012	1720.41395	0.0011	1720.41395	0.00251	1720.41395	7.80E-04
1719.44959	0.00128	1719.44959	0.00113	1719.44959	0.00258	1719.44959	8.50E-04
1718.48523	0.00133	1718.48523	0.00118	1718.48523	0.00262	1718.48523	9.20E-04
1717.52087	0.00133	1717.52087	0.00122	1717.52087	0.00266	1717.52087	9.80E-04
1716.55652	0.00136	1716.55652	0.00128	1716.55652	0.00266	1716.55652	0.00103
1715.59216	0.0014	1715.59216	0.00134	1715.59216	0.00265	1715.59216	0.00105
1714.6278	0.00141	1714.6278	0.00141	1714.6278	0.00265	1714.6278	0.00104
1713.66344	0.00143	1713.66344	0.00147	1713.66344	0.00268	1713.66344	1.00E-03
1712.69909	0.00145	1712.69909	0.00153	1712.69909	0.00271	1712.69909	9.80E-04
1711.73473	0.00146	1711.73473	0.0016	1711.73473	0.00273	1711.73473	9.70E-04
1710.77037	0.00146	1710.77037	0.00168	1710.77037	0.00277	1710.77037	9.70E-04
1709.80601	0.0015	1709.80601	0.00176	1709.80601	0.00282	1709.80601	9.70E-04
1708.84166	0.00158	1708.84166	0.00184	1708.84166	0.00288	1708.84166	9.90E-04
1707.8773	0.00167	1707.8773	0.00194	1707.8773	0.00294	1707.8773	0.00103
1706.91294	0.00175	1706.91294	0.00205	1706.91294	0.00301	1706.91294	0.00108
1705.94858	0.00183	1705.94858	0.00219	1705.94858	0.00309	1705.94858	0.00114
1704.98423	0.00192	1704.98423	0.00233	1704.98423	0.00317	1704.98423	0.00118
1704.01987	0.00204	1704.01987	0.00248	1704.01987	0.00329	1704.01987	0.0012
1703.05551	0.00216	1703.05551	0.00264	1703.05551	0.00345	1703.05551	0.00122
1702.09115	0.00231	1702.09115	0.00282	1702.09115	0.00361	1702.09115	0.0013
1701.1268	0.00249	1701.1268	0.00302	1701.1268	0.00377	1701.1268	0.00141
1700.16244	0.00262	1700.16244	0.00325	1700.16244	0.00393	1700.16244	0.00152
1699.19808	0.0027	1699.19808	0.00348	1699.19808	0.00411	1699.19808	0.0016
1698.23372	0.00283	1698.23372	0.00373	1698.23372	0.0043	1698.23372	0.00169
1697.26937	0.00302	1697.26937	0.00401	1697.26937	0.00449	1697.26937	0.00179
1696.30501	0.00325	1696.30501	0.0043	1696.30501	0.00472	1696.30501	0.00184
1695.34065	0.00352	1695.34065	0.0046	1695.34065	0.00496	1695.34065	0.00192
1694.37629	0.00379	1694.37629	0.00493	1694.37629	0.00519	1694.37629	0.00204
1693.41193	0.00407	1693.41193	0.00527	1693.41193	0.00543	1693.41193	0.00216

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1692.44758	0.00438	1692.44758	0.00561	1692.44758	0.0057	1692.44758	0.00227
1691.48322	0.0047	1691.48322	0.00594	1691.48322	0.00601	1691.48322	0.00238
1690.51886	0.00506	1690.51886	0.00629	1690.51886	0.00633	1690.51886	0.00254
1689.5545	0.00549	1689.5545	0.00668	1689.5545	0.00666	1689.5545	0.00274
1688.59015	0.00594	1688.59015	0.00707	1688.59015	0.007	1688.59015	0.00292
1687.62579	0.00638	1687.62579	0.00745	1687.62579	0.00738	1687.62579	0.00308
1686.66143	0.00682	1686.66143	0.00783	1686.66143	0.00777	1686.66143	0.0033
1685.69707	0.00723	1685.69707	0.00823	1685.69707	0.00815	1685.69707	0.00357
1684.73272	0.0077	1684.73272	0.00864	1684.73272	0.00852	1684.73272	0.00385
1683.76836	0.00821	1683.76836	0.00906	1683.76836	0.00888	1683.76836	0.00409
1682.804	0.00859	1682.804	0.0095	1682.804	0.00922	1682.804	0.0043
1681.83964	0.00892	1681.83964	0.00993	1681.83964	0.00954	1681.83964	0.00447
1680.87529	0.00925	1680.87529	0.01036	1680.87529	0.00986	1680.87529	0.00457
1679.91093	0.0096	1679.91093	0.01077	1679.91093	0.01021	1679.91093	0.00463
1678.94657	0.00994	1678.94657	0.01117	1678.94657	0.01059	1678.94657	0.00473
1677.98221	0.01026	1677.98221	0.0116	1677.98221	0.01098	1677.98221	0.00486
1677.01786	0.01056	1677.01786	0.01204	1677.01786	0.01136	1677.01786	0.00502
1676.0535	0.01083	1676.0535	0.01249	1676.0535	0.01174	1676.0535	0.00517
1675.08914	0.0111	1675.08914	0.01294	1675.08914	0.01213	1675.08914	0.0053
1674.12478	0.01136	1674.12478	0.01341	1674.12478	0.01251	1674.12478	0.00542
1673.16043	0.01157	1673.16043	0.01388	1673.16043	0.0129	1673.16043	0.00553
1672.19607	0.01175	1672.19607	0.01435	1672.19607	0.01331	1672.19607	0.00562
1671.23171	0.01194	1671.23171	0.01483	1671.23171	0.01374	1671.23171	0.0057
1670.26735	0.01218	1670.26735	0.01534	1670.26735	0.01417	1670.26735	0.00578
1669.30299	0.01236	1669.30299	0.01587	1669.30299	0.01458	1669.30299	0.00586
1668.33864	0.01241	1668.33864	0.01642	1668.33864	0.01498	1668.33864	0.00592
1667.37428	0.01245	1667.37428	0.01698	1667.37428	0.01539	1667.37428	0.00593
1666.40992	0.01251	1666.40992	0.01754	1666.40992	0.01581	1666.40992	0.00592
1665.44556	0.01256	1665.44556	0.0181	1665.44556	0.01626	1665.44556	0.00592
1664.48121	0.01261	1664.48121	0.01866	1664.48121	0.01673	1664.48121	0.00593
1663.51685	0.01262	1663.51685	0.01921	1663.51685	0.01718	1663.51685	0.00595
1662.55249	0.01256	1662.55249	0.01976	1662.55249	0.01761	1662.55249	0.00596
1661.58813	0.01253	1661.58813	0.02029	1661.58813	0.01801	1661.58813	0.00595
1660.62378	0.01252	1660.62378	0.02079	1660.62378	0.01836	1660.62378	0.00592
1659.65942	0.01248	1659.65942	0.02126	1659.65942	0.01868	1659.65942	0.00588
1658.69506	0.01241	1658.69506	0.02168	1658.69506	0.01896	1658.69506	0.00582
1657.7307	0.01231	1657.7307	0.02208	1657.7307	0.01922	1657.7307	0.00577
1656.76635	0.0122	1656.76635	0.02245	1656.76635	0.01951	1656.76635	0.00573
1655.80199	0.01211	1655.80199	0.02273	1655.80199	0.01975	1655.80199	0.00572
1654.83763	0.01206	1654.83763	0.02289	1654.83763	0.01985	1654.83763	0.00574
1653.87327	0.01196	1653.87327	0.02298	1653.87327	0.01981	1653.87327	0.00575



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1652.90892	0.01155	1652.90892	0.02302	1652.90892	0.01967	1652.90892	0.00572
1651.94456	0.0112	1651.94456	0.02304	1651.94456	0.01946	1651.94456	0.00563
1650.9802	0.01104	1650.9802	0.02306	1650.9802	0.01925	1650.9802	0.00551
1650.01584	0.01088	1650.01584	0.0231	1650.01584	0.01908	1650.01584	0.00536
1649.05149	0.0107	1649.05149	0.02313	1649.05149	0.01896	1649.05149	0.00522
1648.08713	0.01053	1648.08713	0.02308	1648.08713	0.01879	1648.08713	0.00512
1647.12277	0.01033	1647.12277	0.02295	1647.12277	0.01851	1647.12277	0.00504
1646.15841	0.01005	1646.15841	0.02282	1646.15841	0.01816	1646.15841	0.00494
1645.19406	0.00975	1645.19406	0.02271	1645.19406	0.01781	1645.19406	0.00482
1644.2297	0.00953	1644.2297	0.02261	1644.2297	0.01748	1644.2297	0.00467
1643.26534	0.00933	1643.26534	0.02255	1643.26534	0.01719	1643.26534	0.00451
1642.30098	0.00914	1642.30098	0.02249	1642.30098	0.01693	1642.30098	0.00437
1641.33662	0.00897	1641.33662	0.02244	1641.33662	0.01667	1641.33662	0.00425
1640.37227	0.00878	1640.37227	0.02237	1640.37227	0.01639	1640.37227	0.00416
1639.40791	0.00861	1639.40791	0.02233	1639.40791	0.01615	1639.40791	0.00408
1638.44355	0.00848	1638.44355	0.02228	1638.44355	0.01593	1638.44355	0.00402
1637.47919	0.00839	1637.47919	0.02221	1637.47919	0.01567	1637.47919	0.004
1636.51484	0.00833	1636.51484	0.02212	1636.51484	0.01536	1636.51484	0.00399
1635.55048	0.00812	1635.55048	0.02205	1635.55048	0.01501	1635.55048	0.00395
1634.58612	0.00786	1634.58612	0.02198	1634.58612	0.01466	1634.58612	0.00389
1633.62176	0.00775	1633.62176	0.02194	1633.62176	0.0143	1633.62176	0.0038
1632.65741	0.00766	1632.65741	0.02193	1632.65741	0.01398	1632.65741	0.0037
1631.69305	0.00757	1631.69305	0.02196	1631.69305	0.01374	1631.69305	0.0036
1630.72869	0.00754	1630.72869	0.02198	1630.72869	0.01353	1630.72869	0.00354
1629.76433	0.00756	1629.76433	0.02198	1629.76433	0.01329	1629.76433	0.00353
1628.79998	0.0076	1628.79998	0.02198	1628.79998	0.01302	1628.79998	0.00355
1627.83562	0.00768	1627.83562	0.02199	1627.83562	0.01278	1627.83562	0.00358
1626.87126	0.0078	1626.87126	0.02202	1626.87126	0.01256	1626.87126	0.00363
1625.9069	0.00793	1625.9069	0.02205	1625.9069	0.01235	1625.9069	0.0037
1624.94255	0.00809	1624.94255	0.02209	1624.94255	0.01212	1624.94255	0.00381
1623.97819	0.00833	1623.97819	0.02214	1623.97819	0.0119	1623.97819	0.00393
1623.01383	0.00867	1623.01383	0.0222	1623.01383	0.01168	1623.01383	0.00407
1622.04947	0.00904	1622.04947	0.02226	1622.04947	0.01145	1622.04947	0.00424
1621.08512	0.00942	1621.08512	0.02235	1621.08512	0.01126	1621.08512	0.00441
1620.12076	0.00984	1620.12076	0.02248	1620.12076	0.01114	1620.12076	0.00458
1619.1564	0.0103	1619.1564	0.02261	1619.1564	0.01107	1619.1564	0.00481
1618.19204	0.01077	1618.19204	0.02272	1618.19204	0.01098	1618.19204	0.00511
1617.22768	0.01134	1617.22768	0.02283	1617.22768	0.01087	1617.22768	0.00544
1616.26333	0.01207	1616.26333	0.02295	1616.26333	0.01074	1616.26333	0.00576
1615.29897	0.01267	1615.29897	0.02306	1615.29897	0.0106	1615.29897	0.00605
1614.33461	0.01314	1614.33461	0.02318	1614.33461	0.01046	1614.33461	0.00631

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1613.37025	0.01356	1613.37025	0.02331	1613.37025	0.01035	1613.37025	0.00651
1612.4059	0.01393	1612.4059	0.02344	1612.4059	0.01028	1612.4059	0.00665
1611.44154	0.01423	1611.44154	0.02354	1611.44154	0.01019	1611.44154	0.00679
1610.47718	0.01442	1610.47718	0.02362	1610.47718	0.01007	1610.47718	0.00689
1609.51282	0.01446	1609.51282	0.02369	1609.51282	0.00994	1609.51282	0.00694
1608.54847	0.01434	1608.54847	0.02374	1608.54847	0.0098	1608.54847	0.00692
1607.58411	0.01405	1607.58411	0.02379	1607.58411	0.00965	1607.58411	0.00684
1606.61975	0.01364	1606.61975	0.02383	1606.61975	0.0095	1606.61975	0.00669
1605.65539	0.01319	1605.65539	0.02387	1605.65539	0.00934	1605.65539	0.00649
1604.69104	0.01274	1604.69104	0.02389	1604.69104	0.00919	1604.69104	0.00625
1603.72668	0.01224	1603.72668	0.02388	1603.72668	0.00904	1603.72668	0.00599
1602.76232	0.0117	1602.76232	0.02385	1602.76232	0.0089	1602.76232	0.00574
1601.79796	0.01116	1601.79796	0.02379	1601.79796	0.00875	1601.79796	0.0055
1600.83361	0.01069	1600.83361	0.02371	1600.83361	0.00861	1600.83361	0.00528
1599.86925	0.01028	1599.86925	0.02361	1599.86925	0.00848	1599.86925	0.00508
1598.90489	0.00995	1598.90489	0.0235	1598.90489	0.00835	1598.90489	0.00492
1597.94053	0.00974	1597.94053	0.02337	1597.94053	0.00824	1597.94053	0.0048
1596.97618	0.00964	1596.97618	0.0232	1596.97618	0.00814	1596.97618	0.00474
1596.01182	0.00965	1596.01182	0.023	1596.01182	0.00805	1596.01182	0.00475
1595.04746	0.00978	1595.04746	0.02277	1595.04746	0.00799	1595.04746	0.00484
1594.0831	0.01006	1594.0831	0.02251	1594.0831	0.00795	1594.0831	0.00499
1593.11874	0.01045	1593.11874	0.02222	1593.11874	0.00792	1593.11874	0.0052
1592.15439	0.01094	1592.15439	0.02192	1592.15439	0.0079	1592.15439	0.00546
1591.19003	0.01149	1591.19003	0.02159	1591.19003	0.00788	1591.19003	0.00574
1590.22567	0.01205	1590.22567	0.02125	1590.22567	0.00786	1590.22567	0.00602
1589.26131	0.01255	1589.26131	0.02088	1589.26131	0.00783	1589.26131	0.00627
1588.29696	0.0129	1588.29696	0.0205	1588.29696	0.00779	1588.29696	0.00645
1587.3326	0.01306	1587.3326	0.0201	1587.3326	0.00774	1587.3326	0.00654
1586.36824	0.01298	1586.36824	0.01969	1586.36824	0.00767	1586.36824	0.00653
1585.40388	0.01268	1585.40388	0.01927	1585.40388	0.00758	1585.40388	0.0064
1584.43953	0.01221	1584.43953	0.01883	1584.43953	0.00747	1584.43953	0.00619
1583.47517	0.01161	1583.47517	0.01839	1583.47517	0.00734	1583.47517	0.00591
1582.51081	0.01093	1582.51081	0.01794	1582.51081	0.0072	1582.51081	0.0056
1581.54645	0.01025	1581.54645	0.01749	1581.54645	0.00706	1581.54645	0.00527
1580.5821	0.0096	1580.5821	0.01707	1580.5821	0.00694	1580.5821	0.00496
1579.61774	0.00896	1579.61774	0.01668	1579.61774	0.00686	1579.61774	0.00467
1578.65338	0.00838	1578.65338	0.01627	1578.65338	0.0068	1578.65338	0.00441
1577.68902	0.00792	1577.68902	0.01585	1577.68902	0.00672	1577.68902	0.00418
1576.72467	0.00742	1576.72467	0.01544	1576.72467	0.00663	1576.72467	0.00398
1575.76031	0.00678	1575.76031	0.01505	1575.76031	0.00655	1575.76031	0.00379
1574.79595	0.00634	1574.79595	0.0147	1574.79595	0.00647	1574.79595	0.00362

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1573.83159	0.00611	1573.83159	0.01439	1573.83159	0.00642	1573.83159	0.00347
1572.86724	0.00597	1572.86724	0.01414	1572.86724	0.00642	1572.86724	0.00337
1571.90288	0.00595	1571.90288	0.01391	1571.90288	0.00649	1571.90288	0.00333
1570.93852	0.00601	1570.93852	0.01365	1570.93852	0.00655	1570.93852	0.00336
1569.97416	0.00608	1569.97416	0.0134	1569.97416	0.0066	1569.97416	0.00343
1569.00981	0.00618	1569.00981	0.01317	1569.00981	0.00666	1569.00981	0.00352
1568.04545	0.00635	1568.04545	0.01299	1568.04545	0.00674	1568.04545	0.0036
1567.08109	0.00654	1567.08109	0.01283	1567.08109	0.00683	1567.08109	0.00369
1566.11673	0.00676	1566.11673	0.01273	1566.11673	0.00696	1566.11673	0.00378
1565.15237	0.00706	1565.15237	0.01265	1565.15237	0.00711	1565.15237	0.00389
1564.18802	0.00742	1564.18802	0.0126	1564.18802	0.0073	1564.18802	0.00401
1563.22366	0.00779	1563.22366	0.01257	1563.22366	0.00751	1563.22366	0.00415
1562.2593	0.00814	1562.2593	0.01257	1562.2593	0.00778	1562.2593	0.00432
1561.29494	0.0085	1561.29494	0.01258	1561.29494	0.0081	1561.29494	0.00457
1560.33059	0.0089	1560.33059	0.0126	1560.33059	0.00843	1560.33059	0.00488
1559.36623	0.00943	1559.36623	0.01265	1559.36623	0.00874	1559.36623	0.00521
1558.40187	0.01001	1558.40187	0.01273	1558.40187	0.00902	1558.40187	0.00549
1557.43751	0.01046	1557.43751	0.01285	1557.43751	0.0093	1557.43751	0.0057
1556.47316	0.01077	1556.47316	0.01301	1556.47316	0.00958	1556.47316	0.00585
1555.5088	0.01105	1555.5088	0.0132	1555.5088	0.00989	1555.5088	0.00596
1554.54444	0.01143	1554.54444	0.01342	1554.54444	0.01024	1554.54444	0.00607
1553.58008	0.01188	1553.58008	0.01363	1553.58008	0.01062	1553.58008	0.00622
1552.61573	0.01228	1552.61573	0.01385	1552.61573	0.011	1552.61573	0.00641
1551.65137	0.01266	1551.65137	0.01406	1551.65137	0.01138	1551.65137	0.00662
1550.68701	0.01307	1550.68701	0.01426	1550.68701	0.01173	1550.68701	0.00682
1549.72265	0.01351	1549.72265	0.01446	1549.72265	0.01208	1549.72265	0.007
1548.7583	0.01389	1548.7583	0.01464	1548.7583	0.01241	1548.7583	0.00718
1547.79394	0.01423	1547.79394	0.01479	1547.79394	0.01272	1547.79394	0.00736
1546.82958	0.01457	1546.82958	0.01492	1546.82958	0.013	1546.82958	0.00753
1545.86522	0.01491	1545.86522	0.01503	1545.86522	0.01326	1545.86522	0.00768
1544.90087	0.0152	1544.90087	0.01511	1544.90087	0.0135	1544.90087	0.00783
1543.93651	0.01541	1543.93651	0.01515	1543.93651	0.0137	1543.93651	0.00796
1542.97215	0.01558	1542.97215	0.01516	1542.97215	0.01388	1542.97215	0.00808
1542.00779	0.0157	1542.00779	0.01512	1542.00779	0.01402	1542.00779	0.00817
1541.04343	0.01579	1541.04343	0.01502	1541.04343	0.01408	1541.04343	0.00821
1540.07908	0.01578	1540.07908	0.01489	1540.07908	0.01406	1540.07908	0.00821
1539.11472	0.01553	1539.11472	0.01476	1539.11472	0.01399	1539.11472	0.00815
1538.15036	0.01522	1538.15036	0.01463	1538.15036	0.0139	1538.15036	0.00803
1537.186	0.01498	1537.186	0.01451	1537.186	0.01383	1537.186	0.00785
1536.22165	0.01473	1536.22165	0.01438	1536.22165	0.01376	1536.22165	0.00767
1535.25729	0.01447	1535.25729	0.01422	1535.25729	0.01369	1535.25729	0.00748

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1534.29293	0.01414	1534.29293	0.01401	1534.29293	0.01358	1534.29293	0.0073
1533.32857	0.01361	1533.32857	0.01375	1533.32857	0.01341	1533.32857	0.0071
1532.36422	0.01308	1532.36422	0.01349	1532.36422	0.01321	1532.36422	0.00688
1531.39986	0.01266	1531.39986	0.01324	1531.39986	0.01299	1531.39986	0.00664
1530.4355	0.01224	1530.4355	0.01299	1530.4355	0.01279	1530.4355	0.0064
1529.47114	0.0118	1529.47114	0.01276	1529.47114	0.01261	1529.47114	0.00616
1528.50679	0.01132	1528.50679	0.01252	1528.50679	0.01245	1528.50679	0.00594
1527.54243	0.01081	1527.54243	0.01225	1527.54243	0.01225	1527.54243	0.00573
1526.57807	0.01034	1526.57807	0.01198	1526.57807	0.01203	1526.57807	0.00553
1525.61371	0.00986	1525.61371	0.01172	1525.61371	0.01183	1525.61371	0.00533
1524.64936	0.0094	1524.64936	0.01149	1524.64936	0.01165	1524.64936	0.00514
1523.685	0.00911	1523.685	0.01125	1523.685	0.01149	1523.685	0.00497
1522.72064	0.00886	1522.72064	0.01102	1522.72064	0.0113	1522.72064	0.00483
1521.75628	0.00849	1521.75628	0.01082	1521.75628	0.01112	1521.75628	0.0047
1520.79193	0.00801	1520.79193	0.01065	1520.79193	0.01097	1520.79193	0.00456
1519.82757	0.00764	1519.82757	0.01049	1519.82757	0.01084	1519.82757	0.00443
1518.86321	0.00743	1518.86321	0.01034	1518.86321	0.0107	1518.86321	0.00433
1517.89885	0.00727	1517.89885	0.0102	1517.89885	0.01057	1517.89885	0.00424
1516.9345	0.00711	1516.9345	0.01003	1516.9345	0.01043	1516.9345	0.00417
1515.97014	0.00704	1515.97014	0.0098	1515.97014	0.01025	1515.97014	0.00413
1515.00578	0.00706	1515.00578	0.00952	1515.00578	0.01001	1515.00578	0.00412
1514.04142	0.00715	1514.04142	0.00921	1514.04142	0.00974	1514.04142	0.00416
1513.07706	0.00733	1513.07706	0.00888	1513.07706	0.0095	1513.07706	0.00424
1512.11271	0.00768	1512.11271	0.00856	1512.11271	0.00928	1512.11271	0.0044
1511.14835	0.00818	1511.14835	0.00824	1511.14835	0.00909	1511.14835	0.00465
1510.18399	0.00877	1510.18399	0.00793	1510.18399	0.00895	1510.18399	0.00498
1509.21963	0.00951	1509.21963	0.00763	1509.21963	0.00885	1509.21963	0.00544
1508.25528	0.01037	1508.25528	0.0073	1508.25528	0.00875	1508.25528	0.00599
1507.29092	0.01145	1507.29092	0.00697	1507.29092	0.00859	1507.29092	0.00658
1506.32656	0.01268	1506.32656	0.00664	1506.32656	0.00839	1506.32656	0.0071
1505.3622	0.01344	1505.3622	0.00633	1505.3622	0.00816	1505.3622	0.00747
1504.39785	0.01369	1504.39785	0.00604	1504.39785	0.00789	1504.39785	0.00764
1503.43349	0.01365	1503.43349	0.0058	1503.43349	0.00763	1503.43349	0.00758
1502.46913	0.01338	1502.46913	0.00559	1502.46913	0.0074	1502.46913	0.00736
1501.50477	0.01294	1501.50477	0.00539	1501.50477	0.00717	1501.50477	0.00709
1500.54042	0.01252	1500.54042	0.00517	1500.54042	0.00694	1500.54042	0.00685
1499.57606	0.0122	1499.57606	0.00497	1499.57606	0.00671	1499.57606	0.00666
1498.6117	0.01203	1498.6117	0.00475	1498.6117	0.0065	1498.6117	0.0066
1497.64734	0.01208	1497.64734	0.00452	1497.64734	0.00631	1497.64734	0.0067
1496.68299	0.01248	1496.68299	0.00429	1496.68299	0.00614	1496.68299	0.00698
1495.71863	0.01338	1495.71863	0.00406	1495.71863	0.00602	1495.71863	0.00745

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1494.75427	0.01462	1494.75427	0.00384	1494.75427	0.00597	1494.75427	0.00811
1493.78991	0.01619	1493.78991	0.00363	1493.78991	0.00601	1493.78991	0.00899
1492.82556	0.01818	1492.82556	0.00343	1492.82556	0.00614	1492.82556	0.01011
1491.8612	0.02042	1491.8612	0.00325	1491.8612	0.00632	1491.8612	0.01138
1490.89684	0.02287	1490.89684	0.00307	1490.89684	0.00649	1490.89684	0.01266
1489.93248	0.02521	1489.93248	0.0029	1489.93248	0.0066	1489.93248	0.01374
1488.96812	0.02654	1488.96812	0.00274	1488.96812	0.00659	1488.96812	0.01437
1488.00377	0.02658	1488.00377	0.00259	1488.00377	0.00643	1488.00377	0.01444
1487.03941	0.02533	1487.03941	0.00246	1487.03941	0.00616	1487.03941	0.01393
1486.07505	0.02326	1486.07505	0.00236	1486.07505	0.0058	1486.07505	0.01299
1485.11069	0.02101	1485.11069	0.00227	1485.11069	0.00541	1485.11069	0.01185
1484.14634	0.01874	1484.14634	0.00221	1484.14634	0.00504	1484.14634	0.01069
1483.18198	0.01669	1483.18198	0.00216	1483.18198	0.00471	1483.18198	0.00965
1482.21762	0.01501	1482.21762	0.00213	1482.21762	0.00443	1482.21762	0.00875
1481.25326	0.01354	1481.25326	0.00211	1481.25326	0.00421	1481.25326	0.00799
1480.28891	0.01223	1480.28891	0.00211	1480.28891	0.00404	1480.28891	0.00736
1479.32455	0.01115	1479.32455	0.00213	1479.32455	0.00392	1479.32455	0.00683
1478.36019	0.01027	1478.36019	0.00216	1478.36019	0.00383	1478.36019	0.00637
1477.39583	0.00952	1477.39583	0.00222	1477.39583	0.00378	1477.39583	0.00599
1476.43148	0.00878	1476.43148	0.0023	1476.43148	0.00378	1476.43148	0.00566
1475.46712	0.00815	1475.46712	0.0024	1475.46712	0.0038	1475.46712	0.00538
1474.50276	0.00773	1474.50276	0.00251	1474.50276	0.00383	1474.50276	0.00514
1473.5384	0.00732	1473.5384	0.00263	1473.5384	0.00386	1473.5384	0.00494
1472.57405	0.00686	1472.57405	0.00278	1472.57405	0.00388	1472.57405	0.00476
1471.60969	0.00652	1471.60969	0.00292	1471.60969	0.00391	1471.60969	0.0046
1470.64533	0.00633	1470.64533	0.00306	1470.64533	0.00392	1470.64533	0.00446
1469.68097	0.00623	1469.68097	0.00319	1469.68097	0.00394	1469.68097	0.00435
1468.71662	0.00618	1468.71662	0.00331	1468.71662	0.00399	1468.71662	0.00425
1467.75226	0.00619	1467.75226	0.0034	1467.75226	0.00406	1467.75226	0.00419
1466.7879	0.00625	1466.7879	0.00348	1466.7879	0.00413	1466.7879	0.00418
1465.82354	0.00634	1465.82354	0.00358	1465.82354	0.00416	1465.82354	0.00421
1464.85918	0.00641	1464.85918	0.00369	1464.85918	0.00419	1464.85918	0.00425
1463.89483	0.00646	1463.89483	0.00381	1463.89483	0.00421	1463.89483	0.0043
1462.93047	0.00653	1462.93047	0.00396	1462.93047	0.00425	1462.93047	0.00435
1461.96611	0.0066	1461.96611	0.00412	1461.96611	0.00431	1461.96611	0.00441
1461.00175	0.00671	1461.00175	0.00429	1461.00175	0.00442	1461.00175	0.00449
1460.0374	0.0069	1460.0374	0.00445	1460.0374	0.00457	1460.0374	0.00458
1459.07304	0.00711	1459.07304	0.00463	1459.07304	0.00472	1459.07304	0.00471
1458.10868	0.00728	1458.10868	0.00482	1458.10868	0.00484	1458.10868	0.00486
1457.14432	0.0074	1457.14432	0.00504	1457.14432	0.00495	1457.14432	0.005
1456.17997	0.00757	1456.17997	0.00526	1456.17997	0.00504	1456.17997	0.00512

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1455.21561	0.00775	1455.21561	0.00549	1455.21561	0.00511	1455.21561	0.00522
1454.25125	0.00787	1454.25125	0.00571	1454.25125	0.00517	1454.25125	0.0053
1453.28689	0.00797	1453.28689	0.00592	1453.28689	0.00521	1453.28689	0.00537
1452.32254	0.00813	1452.32254	0.00611	1452.32254	0.00526	1452.32254	0.00544
1451.35818	0.00831	1451.35818	0.00628	1451.35818	0.0053	1451.35818	0.00551
1450.39382	0.00842	1450.39382	0.00645	1450.39382	0.00534	1450.39382	0.00559
1449.42946	0.00843	1449.42946	0.00663	1449.42946	0.00536	1449.42946	0.00566
1448.46511	0.00836	1448.46511	0.00682	1448.46511	0.00538	1448.46511	0.00571
1447.50075	0.00828	1447.50075	0.00702	1447.50075	0.00538	1447.50075	0.00574
1446.53639	0.0083	1446.53639	0.00722	1446.53639	0.00537	1446.53639	0.00574
1445.57203	0.00833	1445.57203	0.00743	1445.57203	0.00534	1445.57203	0.00572
1444.60768	0.00825	1444.60768	0.00765	1444.60768	0.0053	1444.60768	0.00567
1443.64332	0.00817	1443.64332	0.00788	1443.64332	0.00527	1443.64332	0.0056
1442.67896	0.00811	1442.67896	0.0081	1442.67896	0.00522	1442.67896	0.00552
1441.7146	0.00802	1441.7146	0.00832	1441.7146	0.00518	1441.7146	0.00544
1440.75025	0.00792	1440.75025	0.00854	1440.75025	0.00516	1440.75025	0.00536
1439.78589	0.00779	1439.78589	0.00877	1439.78589	0.00516	1439.78589	0.00528
1438.82153	0.0076	1438.82153	0.00899	1438.82153	0.00515	1438.82153	0.00523
1437.85717	0.00741	1437.85717	0.00921	1437.85717	0.00509	1437.85717	0.00517
1436.89281	0.0072	1436.89281	0.00942	1436.89281	0.00501	1436.89281	0.0051
1435.92846	0.00703	1435.92846	0.00961	1435.92846	0.0049	1435.92846	0.00501
1434.9641	0.00695	1434.9641	0.0098	1434.9641	0.00479	1434.9641	0.0049
1433.99974	0.00689	1433.99974	0.00999	1433.99974	0.00468	1433.99974	0.00477
1433.03538	0.00685	1433.03538	0.01018	1433.03538	0.00463	1433.03538	0.00465
1432.07103	0.00684	1432.07103	0.01038	1432.07103	0.0046	1432.07103	0.00455
1431.10667	0.00684	1431.10667	0.01057	1431.10667	0.00455	1431.10667	0.00447
1430.14231	0.0068	1430.14231	0.01076	1430.14231	0.00449	1430.14231	0.00441
1429.17795	0.00673	1429.17795	0.01095	1429.17795	0.00444	1429.17795	0.00436
1428.2136	0.0067	1428.2136	0.01114	1428.2136	0.00442	1428.2136	0.00432
1427.24924	0.00669	1427.24924	0.01132	1427.24924	0.00442	1427.24924	0.00429
1426.28488	0.00673	1426.28488	0.0115	1426.28488	0.00445	1426.28488	0.00427
1425.32052	0.00681	1425.32052	0.01168	1425.32052	0.00448	1425.32052	0.00428
1424.35617	0.00694	1424.35617	0.01184	1424.35617	0.00453	1424.35617	0.00432
1423.39181	0.00709	1423.39181	0.012	1423.39181	0.0046	1423.39181	0.00438
1422.42745	0.00723	1422.42745	0.01214	1422.42745	0.00469	1422.42745	0.00447
1421.46309	0.00738	1421.46309	0.01225	1421.46309	0.00479	1421.46309	0.0046
1420.49874	0.00756	1420.49874	0.01235	1420.49874	0.00489	1420.49874	0.00475
1419.53438	0.00777	1419.53438	0.01243	1419.53438	0.00499	1419.53438	0.00488
1418.57002	0.00789	1418.57002	0.01249	1418.57002	0.00507	1418.57002	0.00498
1417.60566	0.00793	1417.60566	0.01253	1417.60566	0.00514	1417.60566	0.00506
1416.64131	0.00795	1416.64131	0.01255	1416.64131	0.00517	1416.64131	0.00507

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1415.67695	0.00796	1415.67695	0.0125	1415.67695	0.00517	1415.67695	0.00498
1414.71259	0.00792	1414.71259	0.01239	1414.71259	0.00512	1414.71259	0.00481
1413.74823	0.00783	1413.74823	0.01226	1413.74823	0.00507	1413.74823	0.00464
1412.78387	0.00768	1412.78387	0.01214	1412.78387	0.00503	1412.78387	0.0045
1411.81952	0.00744	1411.81952	0.01204	1411.81952	0.00501	1411.81952	0.00439
1410.85516	0.00713	1410.85516	0.01195	1410.85516	0.00503	1410.85516	0.00431
1409.8908	0.00679	1409.8908	0.01188	1409.8908	0.00506	1409.8908	0.00425
1408.92644	0.00642	1408.92644	0.01179	1408.92644	0.0051	1408.92644	0.00419
1407.96209	0.00605	1407.96209	0.01164	1407.96209	0.00509	1407.96209	0.00406
1406.99773	0.00577	1406.99773	0.01144	1406.99773	0.00504	1406.99773	0.00389
1406.03337	0.00554	1406.03337	0.01123	1406.03337	0.00497	1406.03337	0.0037
1405.06901	0.00522	1405.06901	0.01101	1405.06901	0.00491	1405.06901	0.00352
1404.10466	0.00484	1404.10466	0.01078	1404.10466	0.00484	1404.10466	0.00333
1403.1403	0.00451	1403.1403	0.01056	1403.1403	0.00477	1403.1403	0.00314
1402.17594	0.00425	1402.17594	0.01034	1402.17594	0.00472	1402.17594	0.00297
1401.21158	0.00406	1401.21158	0.01012	1401.21158	0.00468	1401.21158	0.00283
1400.24723	0.00387	1400.24723	0.00989	1400.24723	0.00465	1400.24723	0.00271
1399.28287	0.00358	1399.28287	0.00966	1399.28287	0.00464	1399.28287	0.00261
1398.31851	0.00331	1398.31851	0.00944	1398.31851	0.00463	1398.31851	0.00254
1397.35415	0.0032	1397.35415	0.00921	1397.35415	0.00463	1397.35415	0.00249
1396.3898	0.00313	1396.3898	0.00897	1396.3898	0.00461	1396.3898	0.00247
1395.42544	0.003	1395.42544	0.00873	1395.42544	0.00459	1395.42544	0.00246
1394.46108	0.00285	1394.46108	0.00849	1394.46108	0.00458	1394.46108	0.00247
1393.49672	0.00277	1393.49672	0.00825	1393.49672	0.00457	1393.49672	0.00248
1392.53237	0.00276	1392.53237	0.00802	1392.53237	0.00455	1392.53237	0.0025
1391.56801	0.00278	1391.56801	0.00779	1391.56801	0.00455	1391.56801	0.00253
1390.60365	0.00284	1390.60365	0.00758	1390.60365	0.00457	1390.60365	0.00257
1389.63929	0.00291	1389.63929	0.00735	1389.63929	0.00459	1389.63929	0.00263
1388.67494	0.00301	1388.67494	0.00711	1388.67494	0.00458	1388.67494	0.00269
1387.71058	0.00308	1387.71058	0.00686	1387.71058	0.00456	1387.71058	0.00274
1386.74622	0.0031	1386.74622	0.00661	1386.74622	0.00451	1386.74622	0.00276
1385.78186	0.0031	1385.78186	0.00637	1385.78186	0.00445	1385.78186	0.00276
1384.8175	0.00309	1384.8175	0.00613	1384.8175	0.00436	1384.8175	0.00275
1383.85315	0.00307	1383.85315	0.0059	1383.85315	0.00426	1383.85315	0.00272
1382.88879	0.00302	1382.88879	0.00569	1382.88879	0.00417	1382.88879	0.00269
1381.92443	0.00296	1381.92443	0.00549	1381.92443	0.00409	1381.92443	0.00267
1380.96007	0.00292	1380.96007	0.0053	1380.96007	0.004	1380.96007	0.00264
1379.99572	0.00295	1379.99572	0.00513	1379.99572	0.00392	1379.99572	0.00262
1379.03136	0.00299	1379.03136	0.00497	1379.03136	0.00386	1379.03136	0.0026
1378.067	0.00295	1378.067	0.00483	1378.067	0.00381	1378.067	0.00259
1377.10264	0.00287	1377.10264	0.00471	1377.10264	0.00377	1377.10264	0.00258

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1376.13829	0.00281	1376.13829	0.00459	1376.13829	0.00372	1376.13829	0.00257
1375.17393	0.00277	1375.17393	0.00449	1375.17393	0.00366	1375.17393	0.00255
1374.20957	0.0027	1374.20957	0.00441	1374.20957	0.0036	1374.20957	0.00251
1373.24521	0.00262	1373.24521	0.00434	1373.24521	0.00355	1373.24521	0.00247
1372.28086	0.00258	1372.28086	0.0043	1372.28086	0.00351	1372.28086	0.00243
1371.3165	0.00261	1371.3165	0.00429	1371.3165	0.00349	1371.3165	0.0024
1370.35214	0.00266	1370.35214	0.00429	1370.35214	0.0035	1370.35214	0.0024
1369.38778	0.00267	1369.38778	0.00428	1369.38778	0.00352	1369.38778	0.00242
1368.42343	0.00271	1368.42343	0.00426	1368.42343	0.00352	1368.42343	0.00248
1367.45907	0.00283	1367.45907	0.00422	1367.45907	0.00351	1367.45907	0.00257
1366.49471	0.00296	1366.49471	0.00417	1366.49471	0.0035	1366.49471	0.00266
1365.53035	0.00306	1365.53035	0.00411	1365.53035	0.00348	1365.53035	0.00275
1364.566	0.00315	1364.566	0.00405	1364.566	0.00344	1364.566	0.00281
1363.60164	0.00321	1363.60164	0.004	1363.60164	0.0034	1363.60164	0.00283
1362.63728	0.0032	1362.63728	0.00395	1362.63728	0.00335	1362.63728	0.00281
1361.67292	0.0031	1361.67292	0.00392	1361.67292	0.0033	1361.67292	0.00277
1360.70856	0.00293	1360.70856	0.00389	1360.70856	0.00325	1360.70856	0.0027
1359.74421	0.00275	1359.74421	0.00387	1359.74421	0.0032	1359.74421	0.00265
1358.77985	0.00263	1358.77985	0.00385	1358.77985	0.00318	1358.77985	0.00261
1357.81549	0.0026	1357.81549	0.00383	1357.81549	0.00316	1357.81549	0.0026
1356.85113	0.00265	1356.85113	0.0038	1356.85113	0.00314	1356.85113	0.00261
1355.88678	0.00271	1355.88678	0.00377	1355.88678	0.00313	1355.88678	0.00264
1354.92242	0.00277	1354.92242	0.00375	1354.92242	0.00312	1354.92242	0.00268
1353.95806	0.00286	1353.95806	0.00373	1353.95806	0.00313	1353.95806	0.00274
1352.9937	0.00297	1352.9937	0.00371	1352.9937	0.00314	1352.9937	0.0028
1352.02935	0.00311	1352.02935	0.00369	1352.02935	0.00317	1352.02935	0.00287
1351.06499	0.00324	1351.06499	0.00367	1351.06499	0.0032	1351.06499	0.00294
1350.10063	0.00334	1350.10063	0.00366	1350.10063	0.00324	1350.10063	0.00302
1349.13627	0.00345	1349.13627	0.00366	1349.13627	0.00328	1349.13627	0.0031
1348.17192	0.00358	1348.17192	0.00366	1348.17192	0.00332	1348.17192	0.00319
1347.20756	0.0037	1347.20756	0.00366	1347.20756	0.00335	1347.20756	0.00328
1346.2432	0.00383	1346.2432	0.00366	1346.2432	0.00338	1346.2432	0.00338
1345.27884	0.00399	1345.27884	0.00367	1345.27884	0.00341	1345.27884	0.00349
1344.31449	0.00421	1344.31449	0.00368	1344.31449	0.00346	1344.31449	0.00361
1343.35013	0.00443	1343.35013	0.0037	1343.35013	0.00352	1343.35013	0.00373
1342.38577	0.0046	1342.38577	0.00373	1342.38577	0.00358	1342.38577	0.00386
1341.42141	0.00477	1341.42141	0.00375	1341.42141	0.00365	1341.42141	0.00401
1340.45706	0.00497	1340.45706	0.00377	1340.45706	0.0037	1340.45706	0.00417
1339.4927	0.00522	1339.4927	0.00378	1339.4927	0.00374	1339.4927	0.00434
1338.52834	0.0055	1338.52834	0.00379	1338.52834	0.00378	1338.52834	0.00452
1337.56398	0.00579	1337.56398	0.0038	1337.56398	0.00382	1337.56398	0.00471



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1336.59963	0.00609	1336.59963	0.00382	1336.59963	0.00386	1336.59963	0.0049
1335.63527	0.00644	1335.63527	0.00384	1335.63527	0.00393	1335.63527	0.0051
1334.67091	0.00684	1334.67091	0.00386	1334.67091	0.004	1334.67091	0.00534
1333.70655	0.00726	1333.70655	0.00388	1333.70655	0.00409	1333.70655	0.0056
1332.74219	0.0077	1332.74219	0.0039	1332.74219	0.00418	1332.74219	0.0059
1331.77784	0.00816	1331.77784	0.00392	1331.77784	0.00428	1331.77784	0.0062
1330.81348	0.00866	1330.81348	0.00394	1330.81348	0.00438	1330.81348	0.00652
1329.84912	0.00916	1329.84912	0.00396	1329.84912	0.00447	1329.84912	0.00681
1328.88476	0.0096	1328.88476	0.00398	1328.88476	0.00456	1328.88476	0.00709
1327.92041	0.0099	1327.92041	0.00401	1327.92041	0.00464	1327.92041	0.00732
1326.95605	0.01009	1326.95605	0.00405	1326.95605	0.00471	1326.95605	0.00751
1325.99169	0.01025	1325.99169	0.0041	1325.99169	0.00476	1325.99169	0.00764
1325.02733	0.01036	1325.02733	0.00415	1325.02733	0.0048	1325.02733	0.00771
1324.06298	0.01037	1324.06298	0.0042	1324.06298	0.00481	1324.06298	0.00772
1323.09862	0.01027	1323.09862	0.00425	1323.09862	0.00482	1323.09862	0.00768
1322.13426	0.01008	1322.13426	0.0043	1322.13426	0.00482	1322.13426	0.00759
1321.1699	0.00983	1321.1699	0.00436	1321.1699	0.00481	1321.1699	0.00746
1320.20555	0.0096	1320.20555	0.00441	1320.20555	0.0048	1320.20555	0.00731
1319.24119	0.00938	1319.24119	0.00446	1319.24119	0.00479	1319.24119	0.00716
1318.27683	0.00915	1318.27683	0.00451	1318.27683	0.00478	1318.27683	0.00701
1317.31247	0.00889	1317.31247	0.00454	1317.31247	0.00477	1317.31247	0.00689
1316.34812	0.00864	1316.34812	0.00457	1316.34812	0.00477	1316.34812	0.0068
1315.38376	0.00849	1315.38376	0.00459	1315.38376	0.00478	1315.38376	0.00675
1314.4194	0.00847	1314.4194	0.00461	1314.4194	0.00479	1314.4194	0.00673
1313.45504	0.00852	1313.45504	0.00463	1313.45504	0.00482	1313.45504	0.00675
1312.49069	0.00862	1312.49069	0.00466	1312.49069	0.00485	1312.49069	0.00681
1311.52633	0.00876	1311.52633	0.00468	1311.52633	0.00489	1311.52633	0.00691
1310.56197	0.00893	1310.56197	0.00469	1310.56197	0.00494	1310.56197	0.00702
1309.59761	0.0091	1309.59761	0.0047	1309.59761	0.00498	1309.59761	0.00713
1308.63325	0.00921	1308.63325	0.0047	1308.63325	0.00503	1308.63325	0.00722
1307.6689	0.0092	1307.6689	0.00469	1307.6689	0.00506	1307.6689	0.00728
1306.70454	0.00912	1306.70454	0.00469	1306.70454	0.00507	1306.70454	0.0073
1305.74018	0.00906	1305.74018	0.00469	1305.74018	0.00508	1305.74018	0.00731
1304.77582	0.00905	1304.77582	0.00469	1304.77582	0.00508	1304.77582	0.0073
1303.81147	0.00907	1303.81147	0.0047	1303.81147	0.00511	1303.81147	0.00731
1302.84711	0.00912	1302.84711	0.00471	1302.84711	0.00514	1302.84711	0.00733
1301.88275	0.0092	1301.88275	0.00473	1301.88275	0.0052	1301.88275	0.00738
1300.91839	0.0093	1300.91839	0.00476	1300.91839	0.00526	1300.91839	0.00746
1299.95404	0.00945	1299.95404	0.00478	1299.95404	0.00533	1299.95404	0.00756
1298.98968	0.0097	1298.98968	0.00481	1298.98968	0.00539	1298.98968	0.0077
1298.02532	0.01004	1298.02532	0.00484	1298.02532	0.00544	1298.02532	0.00788

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1297.06096	0.01033	1297.06096	0.00485	1297.06096	0.00549	1297.06096	0.00805
1296.09661	0.01049	1296.09661	0.00485	1296.09661	0.00554	1296.09661	0.00819
1295.13225	0.01054	1295.13225	0.00484	1295.13225	0.00557	1295.13225	0.00826
1294.16789	0.01049	1294.16789	0.00483	1294.16789	0.00558	1294.16789	0.00821
1293.20353	0.01028	1293.20353	0.00482	1293.20353	0.00558	1293.20353	0.00807
1292.23918	0.00991	1292.23918	0.00481	1292.23918	0.00555	1292.23918	0.00783
1291.27482	0.00947	1291.27482	0.0048	1291.27482	0.0055	1291.27482	0.00756
1290.31046	0.00905	1290.31046	0.00478	1290.31046	0.00544	1290.31046	0.0073
1289.3461	0.00871	1289.3461	0.00475	1289.3461	0.00539	1289.3461	0.00706
1288.38175	0.00844	1288.38175	0.00469	1288.38175	0.00534	1288.38175	0.00685
1287.41739	0.00824	1287.41739	0.00463	1287.41739	0.0053	1287.41739	0.00668
1286.45303	0.00804	1286.45303	0.00455	1286.45303	0.00526	1286.45303	0.00652
1285.48867	0.00778	1285.48867	0.00447	1285.48867	0.00523	1285.48867	0.00639
1284.52431	0.00754	1284.52431	0.00438	1284.52431	0.00519	1284.52431	0.00628
1283.55996	0.00736	1283.55996	0.00431	1283.55996	0.00516	1283.55996	0.00618
1282.5956	0.00717	1282.5956	0.00423	1282.5956	0.00512	1282.5956	0.00608
1281.63124	0.00699	1281.63124	0.00414	1281.63124	0.0051	1281.63124	0.00598
1280.66688	0.00685	1280.66688	0.00404	1280.66688	0.00509	1280.66688	0.00587
1279.70253	0.00671	1279.70253	0.00393	1279.70253	0.00508	1279.70253	0.00577
1278.73817	0.00661	1278.73817	0.00381	1278.73817	0.00506	1278.73817	0.00567
1277.77381	0.00656	1277.77381	0.00369	1277.77381	0.00504	1277.77381	0.0056
1276.80945	0.00654	1276.80945	0.00359	1276.80945	0.00501	1276.80945	0.00556
1275.8451	0.00652	1275.8451	0.00351	1275.8451	0.00499	1275.8451	0.00554
1274.88074	0.00652	1274.88074	0.00344	1274.88074	0.00497	1274.88074	0.00555
1273.91638	0.00658	1273.91638	0.00338	1273.91638	0.00497	1273.91638	0.00558
1272.95202	0.00665	1272.95202	0.00332	1272.95202	0.00498	1272.95202	0.00563
1271.98767	0.00673	1271.98767	0.00327	1271.98767	0.00501	1271.98767	0.00571
1271.02331	0.00685	1271.02331	0.00322	1271.02331	0.00506	1271.02331	0.00582
1270.05895	0.00706	1270.05895	0.00316	1270.05895	0.00511	1270.05895	0.00597
1269.09459	0.0074	1269.09459	0.0031	1269.09459	0.00518	1269.09459	0.00614
1268.13024	0.00779	1268.13024	0.00304	1268.13024	0.00526	1268.13024	0.00636
1267.16588	0.00819	1267.16588	0.00299	1267.16588	0.00535	1267.16588	0.0066
1266.20152	0.00867	1266.20152	0.00295	1266.20152	0.00545	1266.20152	0.00689
1265.23716	0.00922	1265.23716	0.00292	1265.23716	0.00556	1265.23716	0.00722
1264.27281	0.00983	1264.27281	0.00289	1264.27281	0.00568	1264.27281	0.00762
1263.30845	0.01052	1263.30845	0.00285	1263.30845	0.00582	1263.30845	0.00808
1262.34409	0.01131	1262.34409	0.00281	1262.34409	0.00598	1262.34409	0.00862
1261.37973	0.01219	1261.37973	0.00276	1261.37973	0.00615	1261.37973	0.00923
1260.41538	0.0132	1260.41538	0.00271	1260.41538	0.00635	1260.41538	0.0099
1259.45102	0.01435	1259.45102	0.00267	1259.45102	0.00657	1259.45102	0.01063
1258.48666	0.01556	1258.48666	0.00264	1258.48666	0.00681	1258.48666	0.01141

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1257.5223	0.0168	1257.5223	0.0026	1257.5223	0.00706	1257.5223	0.01224
1256.55794	0.0181	1256.55794	0.00257	1256.55794	0.00732	1256.55794	0.01309
1255.59359	0.01942	1255.59359	0.00253	1255.59359	0.00758	1255.59359	0.01397
1254.62923	0.02072	1254.62923	0.00249	1254.62923	0.00785	1254.62923	0.01484
1253.66487	0.022	1253.66487	0.00244	1253.66487	0.00811	1253.66487	0.01569
1252.70051	0.02326	1252.70051	0.00241	1252.70051	0.00836	1252.70051	0.01649
1251.73616	0.02442	1251.73616	0.00239	1251.73616	0.0086	1251.73616	0.01723
1250.7718	0.02541	1250.7718	0.00237	1250.7718	0.00882	1250.7718	0.0179
1249.80744	0.02627	1249.80744	0.00237	1249.80744	0.00903	1249.80744	0.0185
1248.84308	0.02703	1248.84308	0.00236	1248.84308	0.00921	1248.84308	0.01902
1247.87873	0.02762	1247.87873	0.00234	1247.87873	0.00936	1247.87873	0.01945
1246.91437	0.02807	1246.91437	0.00232	1246.91437	0.00948	1246.91437	0.01977
1245.95001	0.0284	1245.95001	0.0023	1245.95001	0.00955	1245.95001	0.01998
1244.98565	0.02858	1244.98565	0.00229	1244.98565	0.00959	1244.98565	0.02007
1244.0213	0.02857	1244.0213	0.00228	1244.0213	0.0096	1244.0213	0.02003
1243.05694	0.02831	1243.05694	0.00228	1243.05694	0.00958	1243.05694	0.01986
1242.09258	0.02779	1242.09258	0.00228	1242.09258	0.00953	1242.09258	0.01956
1241.12822	0.02712	1241.12822	0.00228	1241.12822	0.00945	1241.12822	0.01914
1240.16387	0.02635	1240.16387	0.00226	1240.16387	0.00933	1240.16387	0.01861
1239.19951	0.02541	1239.19951	0.00222	1239.19951	0.00919	1239.19951	0.01798
1238.23515	0.02427	1238.23515	0.00217	1238.23515	0.009	1238.23515	0.01728
1237.27079	0.02302	1237.27079	0.00211	1237.27079	0.00879	1237.27079	0.01652
1236.30644	0.02175	1236.30644	0.00205	1236.30644	0.00856	1236.30644	0.0157
1235.34208	0.02049	1235.34208	0.00199	1235.34208	0.00831	1235.34208	0.01485
1234.37772	0.01924	1234.37772	0.00194	1234.37772	0.00807	1234.37772	0.01399
1233.41336	0.01799	1233.41336	0.00187	1233.41336	0.00782	1233.41336	0.01314
1232.449	0.01671	1232.449	0.00181	1232.449	0.00757	1232.449	0.01232
1231.48465	0.01546	1231.48465	0.00175	1231.48465	0.00734	1231.48465	0.01154
1230.52029	0.0143	1230.52029	0.00168	1230.52029	0.00711	1230.52029	0.0108
1229.55593	0.01322	1229.55593	0.00162	1229.55593	0.00688	1229.55593	0.01009
1228.59157	0.01218	1228.59157	0.00155	1228.59157	0.00666	1228.59157	0.00944
1227.62722	0.01122	1227.62722	0.00148	1227.62722	0.00645	1227.62722	0.00883
1226.66286	0.01035	1226.66286	0.00141	1226.66286	0.00625	1226.66286	0.00827
1225.6985	0.00955	1225.6985	0.00134	1225.6985	0.00606	1225.6985	0.00776
1224.73414	0.00881	1224.73414	0.00127	1224.73414	0.00589	1224.73414	0.00729
1223.76979	0.00812	1223.76979	0.00121	1223.76979	0.00572	1223.76979	0.00687
1222.80543	0.00753	1222.80543	0.00115	1222.80543	0.00557	1222.80543	0.00648
1221.84107	0.00703	1221.84107	0.00109	1221.84107	0.00542	1221.84107	0.00613
1220.87671	0.00658	1220.87671	0.00103	1220.87671	0.00527	1220.87671	0.00581
1219.91236	0.00615	1219.91236	9.80E-04	1219.91236	0.00512	1219.91236	0.00553
1218.948	0.00576	1218.948	9.30E-04	1218.948	0.00498	1218.948	0.00528

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1217.98364	0.00542	1217.98364	8.90E-04	1217.98364	0.00486	1217.98364	0.00505
1217.01928	0.0051	1217.01928	8.40E-04	1217.01928	0.00475	1217.01928	0.00485
1216.05493	0.00481	1216.05493	7.80E-04	1216.05493	0.00465	1216.05493	0.00469
1215.09057	0.00458	1215.09057	7.40E-04	1215.09057	0.00457	1215.09057	0.00456
1214.12621	0.00443	1214.12621	6.90E-04	1214.12621	0.00449	1214.12621	0.00448
1213.16185	0.00434	1213.16185	6.50E-04	1213.16185	0.00442	1213.16185	0.00443
1212.1975	0.00426	1212.1975	6.20E-04	1212.1975	0.00437	1212.1975	0.00441
1211.23314	0.0042	1211.23314	5.80E-04	1211.23314	0.00433	1211.23314	0.00441
1210.26878	0.00421	1210.26878	5.40E-04	1210.26878	0.0043	1210.26878	0.00444
1209.30442	0.00427	1209.30442	4.90E-04	1209.30442	0.00427	1209.30442	0.00448
1208.34007	0.00433	1208.34007	4.40E-04	1208.34007	0.00426	1208.34007	0.00453
1207.37571	0.00436	1207.37571	4.00E-04	1207.37571	0.00424	1207.37571	0.00457
1206.41135	0.00435	1206.41135	3.60E-04	1206.41135	0.00421	1206.41135	0.00458
1205.44699	0.0043	1205.44699	3.40E-04	1205.44699	0.00416	1205.44699	0.00457
1204.48263	0.00422	1204.48263	3.10E-04	1204.48263	0.0041	1204.48263	0.00452
1203.51828	0.00411	1203.51828	2.70E-04	1203.51828	0.00403	1203.51828	0.00445
1202.55392	0.00396	1202.55392	2.30E-04	1202.55392	0.00396	1202.55392	0.00437
1201.58956	0.00377	1201.58956	1.80E-04	1201.58956	0.00388	1201.58956	0.00428
1200.6252	0.0036	1200.6252	1.40E-04	1200.6252	0.00381	1200.6252	0.00419
1199.66085	0.00341	1199.66085	1.00E-04	1199.66085	0.00375	1199.66085	0.0041
1198.69649	0.0032	1198.69649	9.00E-05	1198.69649	0.0037	1198.69649	0.004
1197.73213	0.00303	1197.73213	8.00E-05	1197.73213	0.00364	1197.73213	0.00392
1196.76777	0.00292	1196.76777	9.00E-05	1196.76777	0.00359	1196.76777	0.00384
1195.80342	0.00282	1195.80342	1.00E-04	1195.80342	0.00354	1195.80342	0.00377
1194.83906	0.00274	1194.83906	1.20E-04	1194.83906	0.00351	1194.83906	0.00373
1193.8747	0.00267	1193.8747	1.40E-04	1193.8747	0.00348	1193.8747	0.00369
1192.91034	0.00258	1192.91034	1.80E-04	1192.91034	0.00346	1192.91034	0.00367
1191.94599	0.00252	1191.94599	2.50E-04	1191.94599	0.00346	1191.94599	0.00366
1190.98163	0.00255	1190.98163	3.50E-04	1190.98163	0.00348	1190.98163	0.00365
1190.01727	0.00259	1190.01727	4.60E-04	1190.01727	0.00349	1190.01727	0.00365
1189.05291	0.00259	1189.05291	5.90E-04	1189.05291	0.00351	1189.05291	0.00366
1188.08856	0.00257	1188.08856	7.10E-04	1188.08856	0.00353	1188.08856	0.0037
1187.1242	0.00259	1187.1242	8.20E-04	1187.1242	0.00353	1187.1242	0.00376
1186.15984	0.00265	1186.15984	9.30E-04	1186.15984	0.00352	1186.15984	0.00382
1185.19548	0.00275	1185.19548	0.00106	1185.19548	0.00352	1185.19548	0.0039
1184.23113	0.00288	1184.23113	0.0012	1184.23113	0.00354	1184.23113	0.00401
1183.26677	0.00306	1183.26677	0.00135	1183.26677	0.00359	1183.26677	0.00415
1182.30241	0.00329	1182.30241	0.00152	1182.30241	0.00367	1182.30241	0.00432
1181.33805	0.00358	1181.33805	0.00167	1181.33805	0.00379	1181.33805	0.00453
1180.37369	0.00392	1180.37369	0.00181	1180.37369	0.00392	1180.37369	0.0048
1179.40934	0.00438	1179.40934	0.00194	1179.40934	0.00408	1179.40934	0.00513

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1178.44498	0.00497	1178.44498	0.00207	1178.44498	0.00425	1178.44498	0.00553
1177.48062	0.00566	1177.48062	0.0022	1177.48062	0.00444	1177.48062	0.00602
1176.51626	0.00642	1176.51626	0.00234	1176.51626	0.00463	1176.51626	0.0066
1175.55191	0.00726	1175.55191	0.00248	1175.55191	0.00484	1175.55191	0.00721
1174.58755	0.00816	1174.58755	0.00259	1174.58755	0.00504	1174.58755	0.00782
1173.62319	0.00908	1173.62319	0.00268	1173.62319	0.00524	1173.62319	0.0084
1172.65883	0.00991	1172.65883	0.00274	1172.65883	0.00542	1172.65883	0.00895
1171.69448	0.01056	1171.69448	0.00279	1171.69448	0.00556	1171.69448	0.00941
1170.73012	0.01103	1170.73012	0.00284	1170.73012	0.00565	1170.73012	0.00974
1169.76576	0.01128	1169.76576	0.00288	1169.76576	0.00567	1169.76576	0.00989
1168.8014	0.01117	1168.8014	0.00291	1168.8014	0.00561	1168.8014	0.00982
1167.83705	0.01068	1167.83705	0.00294	1167.83705	0.00548	1167.83705	0.00952
1166.87269	0.00993	1166.87269	0.00295	1166.87269	0.00529	1166.87269	0.00904
1165.90833	0.00908	1165.90833	0.00295	1165.90833	0.00508	1165.90833	0.00848
1164.94397	0.00827	1164.94397	0.00294	1164.94397	0.00487	1164.94397	0.00791
1163.97962	0.00759	1163.97962	0.00292	1163.97962	0.00468	1163.97962	0.00741
1163.01526	0.00705	1163.01526	0.00289	1163.01526	0.00452	1163.01526	0.007
1162.0509	0.00657	1162.0509	0.00286	1162.0509	0.00441	1162.0509	0.00671
1161.08654	0.00625	1161.08654	0.00284	1161.08654	0.00436	1161.08654	0.0066
1160.12219	0.00636	1160.12219	0.00281	1160.12219	0.00437	1160.12219	0.00676
1159.15783	0.00707	1159.15783	0.00279	1159.15783	0.00447	1159.15783	0.00726
1158.19347	0.00836	1158.19347	0.00279	1158.19347	0.00468	1158.19347	0.00814
1157.22911	0.01018	1157.22911	0.00281	1157.22911	0.005	1157.22911	0.00937
1156.26475	0.01234	1156.26475	0.00283	1156.26475	0.00539	1156.26475	0.01082
1155.3004	0.01451	1155.3004	0.00284	1155.3004	0.0058	1155.3004	0.0123
1154.33604	0.01629	1154.33604	0.00285	1154.33604	0.00616	1154.33604	0.01359
1153.37168	0.01745	1153.37168	0.00283	1153.37168	0.0064	1153.37168	0.01451
1152.40732	0.01799	1152.40732	0.00279	1152.40732	0.00648	1152.40732	0.01495
1151.44297	0.01793	1151.44297	0.00275	1151.44297	0.0064	1151.44297	0.01488
1150.47861	0.01733	1150.47861	0.00273	1150.47861	0.00618	1150.47861	0.01435
1149.51425	0.01636	1149.51425	0.0027	1149.51425	0.00586	1149.51425	0.01348
1148.54989	0.01509	1148.54989	0.00264	1148.54989	0.00543	1148.54989	0.01235
1147.58554	0.01354	1147.58554	0.00253	1147.58554	0.00488	1147.58554	0.01101
1146.62118	0.01188	1146.62118	0.00237	1146.62118	0.00426	1146.62118	0.00954
1145.65682	0.01034	1145.65682	0.00216	1145.65682	0.00361	1145.65682	0.008
1144.69246	0.00898	1144.69246	0.00192	1144.69246	0.00295	1144.69246	0.00648
1143.72811	0.00785	1143.72811	0.00165	1143.72811	0.00224	1143.72811	0.00503
1142.76375	0.00699	1142.76375	0.00136	1142.76375	0.00154	1142.76375	0.00368
1141.79939	0.00623	1141.79939	0.00111	1141.79939	9.30E-04	1141.79939	0.00245
1140.83503	0.0055	1140.83503	9.70E-04	1140.83503	4.60E-04	1140.83503	0.00143
1139.87068	0.00501	1139.87068	9.70E-04	1139.87068	1.50E-04	1139.87068	6.70E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1138.90632	0.00477	1138.90632	0.00115	1138.90632	1.00E-05	1138.90632	2.20E-04
1137.94196	0.00453	1137.94196	0.0015	1137.94196	6.00E-05	1137.94196	7.00E-05
1136.9776	0.00425	1136.9776	0.00195	1136.9776	2.20E-04	1136.9776	1.70E-04
1136.01325	0.00404	1136.01325	0.00241	1136.01325	4.00E-04	1136.01325	4.20E-04
1135.04889	0.00394	1135.04889	0.00286	1135.04889	6.00E-04	1135.04889	6.80E-04
1134.08453	0.00389	1134.08453	0.00332	1134.08453	8.70E-04	1134.08453	9.00E-04
1133.12017	0.00381	1133.12017	0.00382	1133.12017	0.00118	1133.12017	0.00111
1132.15582	0.00368	1132.15582	0.00437	1132.15582	0.00149	1132.15582	0.00137
1131.19146	0.00365	1131.19146	0.00494	1131.19146	0.00178	1131.19146	0.00169
1130.2271	0.00379	1130.2271	0.00548	1130.2271	0.002	1130.2271	0.00202
1129.26274	0.00389	1129.26274	0.00594	1129.26274	0.00216	1129.26274	0.00232
1128.29838	0.00386	1128.29838	0.0063	1128.29838	0.00228	1128.29838	0.00259
1127.33403	0.00393	1127.33403	0.00659	1127.33403	0.0024	1127.33403	0.00286
1126.36967	0.00418	1126.36967	0.0068	1126.36967	0.00253	1126.36967	0.00312
1125.40531	0.00435	1125.40531	0.00697	1125.40531	0.00271	1125.40531	0.0034
1124.44095	0.00426	1124.44095	0.00711	1124.44095	0.0029	1124.44095	0.00371
1123.4766	0.00405	1123.4766	0.00723	1123.4766	0.00306	1123.4766	0.00404
1122.51224	0.004	1122.51224	0.00734	1122.51224	0.00318	1122.51224	0.00436
1121.54788	0.00419	1121.54788	0.00742	1121.54788	0.00328	1121.54788	0.00465
1120.58352	0.00442	1120.58352	0.00746	1120.58352	0.00339	1120.58352	0.00494
1119.61917	0.00461	1119.61917	0.00747	1119.61917	0.0035	1119.61917	0.00526
1118.65481	0.00494	1118.65481	0.00744	1118.65481	0.00363	1118.65481	0.00559
1117.69045	0.00541	1117.69045	0.00737	1117.69045	0.00377	1117.69045	0.00596
1116.72609	0.00587	1116.72609	0.00732	1116.72609	0.00391	1116.72609	0.00638
1115.76174	0.0063	1115.76174	0.00731	1115.76174	0.00407	1115.76174	0.00688
1114.79738	0.00687	1114.79738	0.00734	1114.79738	0.00427	1114.79738	0.00746
1113.83302	0.00768	1113.83302	0.00739	1113.83302	0.00453	1113.83302	0.00812
1112.86866	0.00868	1112.86866	0.00746	1112.86866	0.00484	1112.86866	0.00889
1111.90431	0.00975	1111.90431	0.00757	1111.90431	0.00519	1111.90431	0.00973
1110.93995	0.01093	1110.93995	0.00775	1110.93995	0.00556	1110.93995	0.01059
1109.97559	0.01217	1109.97559	0.00797	1109.97559	0.00592	1109.97559	0.01143
1109.01123	0.01325	1109.01123	0.00826	1109.01123	0.00624	1109.01123	0.01218
1108.04688	0.01398	1108.04688	0.0086	1108.04688	0.00651	1108.04688	0.01275
1107.08252	0.01436	1107.08252	0.00895	1107.08252	0.00672	1107.08252	0.01305
1106.11816	0.01439	1106.11816	0.00931	1106.11816	0.00683	1106.11816	0.01303
1105.1538	0.01392	1105.1538	0.00969	1105.1538	0.00681	1105.1538	0.01271
1104.18944	0.01302	1104.18944	0.01008	1104.18944	0.00668	1104.18944	0.01213
1103.22509	0.01204	1103.22509	0.01046	1103.22509	0.00647	1103.22509	0.01139
1102.26073	0.01107	1102.26073	0.01082	1102.26073	0.00622	1102.26073	0.01059
1101.29637	0.01	1101.29637	0.01115	1101.29637	0.00597	1101.29637	0.00982
1100.33201	0.00897	1100.33201	0.01146	1100.33201	0.00578	1100.33201	0.0091

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1099.36766	0.00817	1099.36766	0.01174	1099.36766	0.00565	1099.36766	0.00844
1098.4033	0.00751	1098.4033	0.012	1098.4033	0.00554	1098.4033	0.00784
1097.43894	0.00691	1097.43894	0.01222	1097.43894	0.00542	1097.43894	0.0073
1096.47458	0.00633	1096.47458	0.01242	1096.47458	0.0053	1096.47458	0.00682
1095.51023	0.00574	1095.51023	0.0126	1095.51023	0.00517	1095.51023	0.00641
1094.54587	0.00522	1094.54587	0.01281	1094.54587	0.00504	1094.54587	0.00606
1093.58151	0.00477	1093.58151	0.01302	1093.58151	0.00492	1093.58151	0.00578
1092.61715	0.00439	1092.61715	0.01324	1092.61715	0.00482	1092.61715	0.00555
1091.6528	0.00417	1091.6528	0.01348	1091.6528	0.00476	1091.6528	0.00533
1090.68844	0.00409	1090.68844	0.01368	1090.68844	0.00471	1090.68844	0.00512
1089.72408	0.00409	1089.72408	0.01381	1089.72408	0.00469	1089.72408	0.00493
1088.75972	0.00408	1088.75972	0.01388	1088.75972	0.00468	1088.75972	0.00477
1087.79537	0.00399	1087.79537	0.01392	1087.79537	0.00468	1087.79537	0.00466
1086.83101	0.00397	1086.83101	0.01392	1086.83101	0.00467	1086.83101	0.00463
1085.86665	0.00409	1085.86665	0.0139	1085.86665	0.00466	1085.86665	0.00468
1084.90229	0.0042	1084.90229	0.01386	1084.90229	0.00464	1084.90229	0.0048
1083.93794	0.00437	1083.93794	0.01379	1083.93794	0.00463	1083.93794	0.00495
1082.97358	0.00471	1082.97358	0.01367	1082.97358	0.00462	1082.97358	0.00506
1082.00922	0.00499	1082.00922	0.01347	1082.00922	0.0046	1082.00922	0.0051
1081.04486	0.00493	1081.04486	0.01321	1081.04486	0.00455	1081.04486	0.00507
1080.08051	0.00464	1080.08051	0.01293	1080.08051	0.00446	1080.08051	0.00496
1079.11615	0.00436	1079.11615	0.01264	1079.11615	0.00434	1079.11615	0.00478
1078.15179	0.00416	1078.15179	0.01235	1078.15179	0.00423	1078.15179	0.00457
1077.18743	0.00407	1077.18743	0.01208	1077.18743	0.00412	1077.18743	0.00437
1076.22307	0.00402	1076.22307	0.01182	1076.22307	0.00402	1076.22307	0.00419
1075.25872	0.00391	1075.25872	0.01157	1075.25872	0.00393	1075.25872	0.00401
1074.29436	0.00375	1074.29436	0.01133	1074.29436	0.00385	1074.29436	0.00383
1073.33	0.0035	1073.33	0.0111	1073.33	0.00374	1073.33	0.00363
1072.36564	0.00315	1072.36564	0.0109	1072.36564	0.00361	1072.36564	0.00341
1071.40129	0.00279	1071.40129	0.01071	1071.40129	0.00348	1071.40129	0.00316
1070.43693	0.0025	1070.43693	0.01058	1070.43693	0.00335	1070.43693	0.00292
1069.47257	0.00222	1069.47257	0.01052	1069.47257	0.00324	1069.47257	0.00269
1068.50821	0.00198	1068.50821	0.01053	1068.50821	0.00315	1068.50821	0.00247
1067.54386	0.00182	1067.54386	0.01057	1067.54386	0.00308	1067.54386	0.00224
1066.5795	0.0017	1066.5795	0.01065	1066.5795	0.00303	1066.5795	0.00203
1065.61514	0.00158	1065.61514	0.01076	1065.61514	0.00297	1065.61514	0.00185
1064.65078	0.00148	1064.65078	0.01088	1064.65078	0.00293	1064.65078	0.00171
1063.68643	0.00141	1063.68643	0.01099	1063.68643	0.00291	1063.68643	0.00162
1062.72207	0.00131	1062.72207	0.01111	1062.72207	0.00291	1062.72207	0.00155
1061.75771	0.00124	1061.75771	0.01124	1061.75771	0.00291	1061.75771	0.00148
1060.79335	0.00118	1060.79335	0.01136	1060.79335	0.0029	1060.79335	0.00137

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1059.829	0.00114	1059.829	0.01146	1059.829	0.00288	1059.829	0.00125
1058.86464	0.00111	1058.86464	0.01154	1058.86464	0.00286	1058.86464	0.00112
1057.90028	0.00105	1057.90028	0.01161	1057.90028	0.00283	1057.90028	0.00102
1056.93592	9.40E-04	1056.93592	0.01167	1056.93592	0.00283	1056.93592	9.60E-04
1055.97157	8.40E-04	1055.97157	0.01172	1055.97157	0.00284	1055.97157	9.20E-04
1055.00721	7.40E-04	1055.00721	0.01174	1055.00721	0.00285	1055.00721	9.00E-04
1054.04285	6.30E-04	1054.04285	0.01175	1054.04285	0.00286	1054.04285	8.60E-04
1053.07849	6.30E-04	1053.07849	0.01176	1053.07849	0.00287	1053.07849	8.00E-04
1052.11413	7.40E-04	1052.11413	0.01179	1052.11413	0.00286	1052.11413	7.30E-04
1051.14978	7.90E-04	1051.14978	0.01185	1051.14978	0.00285	1051.14978	6.60E-04
1050.18542	7.20E-04	1050.18542	0.01195	1050.18542	0.00284	1050.18542	6.00E-04
1049.22106	6.80E-04	1049.22106	0.0121	1049.22106	0.00284	1049.22106	5.50E-04
1048.2567	6.80E-04	1048.2567	0.0123	1048.2567	0.00285	1048.2567	5.10E-04
1047.29235	5.80E-04	1047.29235	0.01255	1047.29235	0.00289	1047.29235	5.10E-04
1046.32799	4.30E-04	1046.32799	0.01284	1046.32799	0.00294	1046.32799	5.20E-04
1045.36363	3.60E-04	1045.36363	0.01318	1045.36363	0.00301	1045.36363	5.30E-04
1044.39927	3.80E-04	1044.39927	0.01359	1044.39927	0.00309	1044.39927	5.20E-04
1043.43492	4.70E-04	1043.43492	0.01406	1043.43492	0.00317	1043.43492	5.00E-04
1042.47056	5.30E-04	1042.47056	0.01459	1042.47056	0.00325	1042.47056	4.70E-04
1041.5062	4.60E-04	1041.5062	0.01518	1041.5062	0.00333	1041.5062	4.20E-04
1040.54184	3.50E-04	1040.54184	0.01582	1040.54184	0.0034	1040.54184	3.80E-04
1039.57749	3.40E-04	1039.57749	0.01647	1039.57749	0.00345	1039.57749	3.50E-04
1038.61313	3.70E-04	1038.61313	0.01709	1038.61313	0.00348	1038.61313	3.20E-04
1037.64877	3.90E-04	1037.64877	0.01765	1037.64877	0.00351	1037.64877	3.00E-04
1036.68441	4.40E-04	1036.68441	0.01814	1036.68441	0.00354	1036.68441	2.90E-04
1035.72006	4.50E-04	1035.72006	0.01854	1035.72006	0.00358	1035.72006	2.90E-04
1034.7557	4.00E-04	1034.7557	0.01887	1034.7557	0.00361	1034.7557	2.90E-04
1033.79134	4.10E-04	1033.79134	0.01913	1033.79134	0.00362	1033.79134	2.70E-04
1032.82698	4.30E-04	1032.82698	0.01931	1032.82698	0.00361	1032.82698	2.60E-04
1031.86263	3.70E-04	1031.86263	0.01942	1031.86263	0.00355	1031.86263	2.50E-04
1030.89827	2.90E-04	1030.89827	0.01946	1030.89827	0.00344	1030.89827	2.50E-04
1029.93391	2.80E-04	1029.93391	0.01942	1029.93391	0.00333	1029.93391	2.60E-04
1028.96955	3.10E-04	1028.96955	0.01929	1028.96955	0.00316	1028.96955	2.80E-04
1028.0052	3.00E-04	1028.0052	0.01905	1028.0052	0.00302	1028.0052	2.80E-04
1027.04084	2.00E-04	1027.04084	0.01873	1027.04084	0.00288	1027.04084	2.60E-04
1026.07648	1.20E-04	1026.07648	0.01831	1026.07648	0.00273	1026.07648	2.40E-04
1025.11212	1.60E-04	1025.11212	0.01781	1025.11212	0.00258	1025.11212	2.30E-04
1024.14776	2.60E-04	1024.14776	0.01726	1024.14776	0.00242	1024.14776	2.70E-04
1023.18341	3.50E-04	1023.18341	0.01669	1023.18341	0.00225	1023.18341	3.40E-04
1022.21905	4.80E-04	1022.21905	0.0161	1022.21905	0.0021	1022.21905	4.70E-04
1021.25469	7.50E-04	1021.25469	0.01551	1021.25469	0.00198	1021.25469	6.70E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1020.29033	0.00107	1020.29033	0.01495	1020.29033	0.00192	1020.29033	9.50E-04
1019.32598	0.00139	1019.32598	0.01444	1019.32598	0.00191	1019.32598	0.00131
1018.36162	0.00189	1018.36162	0.01396	1018.36162	0.00195	1018.36162	0.00175
1017.39726	0.00256	1017.39726	0.01352	1017.39726	0.00201	1017.39726	0.00225
1016.4329	0.00325	1016.4329	0.01309	1016.4329	0.00205	1016.4329	0.00275
1015.46855	0.00374	1015.46855	0.01267	1015.46855	0.00205	1015.46855	0.00314
1014.50419	0.0039	1014.50419	0.01224	1014.50419	0.00199	1014.50419	0.00335
1013.53983	0.00371	1013.53983	0.01182	1013.53983	0.00188	1013.53983	0.00335
1012.57547	0.00331	1012.57547	0.01141	1012.57547	0.00173	1012.57547	0.00315
1011.61112	0.00293	1011.61112	0.01097	1011.61112	0.00156	1011.61112	0.00281
1010.64676	0.00256	1010.64676	0.01049	1010.64676	0.00137	1010.64676	0.00242
1009.6824	0.00214	1009.6824	0.00997	1009.6824	0.00116	1009.6824	0.00207
1008.71804	0.00182	1008.71804	0.00941	1008.71804	9.60E-04	1008.71804	0.00178
1007.75369	0.00155	1007.75369	0.00879	1007.75369	7.80E-04	1007.75369	0.00157
1006.78933	0.00125	1006.78933	0.00816	1006.78933	6.30E-04	1006.78933	0.00139
1005.82497	0.00102	1005.82497	0.00753	1005.82497	5.20E-04	1005.82497	0.00123
1004.86061	9.10E-04	1004.86061	0.00694	1004.86061	4.20E-04	1004.86061	0.00112
1003.89626	8.10E-04	1003.89626	0.00639	1003.89626	3.10E-04	1003.89626	0.00104
1002.9319	7.80E-04	1002.9319	0.00591	1002.9319	2.00E-04	1002.9319	9.80E-04
1001.96754	9.20E-04	1001.96754	0.00553	1001.96754	1.20E-04	1001.96754	9.60E-04
1001.00318	0.00104	1001.00318	0.00525	1001.00318	8.00E-05	1001.00318	1.00E-03
1000.03882	0.00101	1000.03882	0.00504	1000.03882	7.00E-05	1000.03882	0.00106
999.07447	9.80E-04	999.07447	0.00487	999.07447	9.00E-05	999.07447	0.00111
998.11011	0.00101	998.11011	0.00475	998.11011	1.10E-04	998.11011	0.00117
997.14575	0.00102	997.14575	0.00464	997.14575	1.10E-04	997.14575	0.00126
996.18139	0.00103	996.18139	0.00455	996.18139	1.00E-04	996.18139	0.00135
995.21704	0.00101	995.21704	0.00447	995.21704	9.00E-05	995.21704	0.00143
994.25268	9.20E-04	994.25268	0.00438	994.25268	9.00E-05	994.25268	0.00151
993.28832	9.30E-04	993.28832	0.00425	993.28832	9.00E-05	993.28832	0.00163
992.32396	0.00114	992.32396	0.00407	992.32396	9.00E-05	992.32396	0.00177
991.35961	0.00134	991.35961	0.00383	991.35961	1.00E-04	991.35961	0.00193
990.39525	0.00146	990.39525	0.00352	990.39525	1.10E-04	990.39525	0.00207
989.43089	0.00152	989.43089	0.00319	989.43089	1.20E-04	989.43089	0.0022
988.46653	0.00154	988.46653	0.00287	988.46653	1.50E-04	988.46653	0.00233
987.50218	0.00163	987.50218	0.00257	987.50218	1.70E-04	987.50218	0.00247
986.53782	0.00178	986.53782	0.00228	986.53782	1.90E-04	986.53782	0.00263
985.57346	0.00195	985.57346	0.00202	985.57346	1.90E-04	985.57346	0.00282
984.6091	0.00211	984.6091	0.0018	984.6091	1.50E-04	984.6091	0.00305
983.64475	0.00211	983.64475	0.00162	983.64475	1.10E-04	983.64475	0.0033
982.68039	0.00186	982.68039	0.00146	982.68039	7.00E-05	982.68039	0.00354
981.71603	0.00162	981.71603	0.00131	981.71603	8.00E-05	981.71603	0.00376

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
980.75167	0.0017	980.75167	0.00111	980.75167	1.30E-04	980.75167	0.00395
979.78732	0.00208	979.78732	8.80E-04	979.78732	2.10E-04	979.78732	0.00412
978.82296	0.0025	978.82296	6.70E-04	978.82296	3.10E-04	978.82296	0.00425
977.8586	0.00273	977.8586	5.30E-04	977.8586	4.20E-04	977.8586	0.00433
976.89424	0.00281	976.89424	4.80E-04	976.89424	5.00E-04	976.89424	0.00442
975.92988	0.00289	975.92988	5.10E-04	975.92988	5.50E-04	975.92988	0.00459
974.96553	0.00301	974.96553	5.90E-04	974.96553	5.80E-04	974.96553	0.00479
974.00117	0.00311	974.00117	6.40E-04	974.00117	6.00E-04	974.00117	0.00495
973.03681	0.00314	973.03681	6.00E-04	973.03681	6.30E-04	973.03681	0.0051
972.07245	0.00307	972.07245	5.30E-04	972.07245	6.40E-04	972.07245	0.00525
971.1081	0.00298	971.1081	5.30E-04	971.1081	6.40E-04	971.1081	0.0054
970.14374	0.0031	970.14374	6.30E-04	970.14374	6.30E-04	970.14374	0.00551
969.17938	0.00339	969.17938	7.80E-04	969.17938	6.30E-04	969.17938	0.00563
968.21502	0.00347	968.21502	9.70E-04	968.21502	6.50E-04	968.21502	0.00573
967.25067	0.00332	967.25067	0.00114	967.25067	6.90E-04	967.25067	0.00579
966.28631	0.00322	966.28631	0.00129	966.28631	7.40E-04	966.28631	0.00585
965.32195	0.00328	965.32195	0.00139	965.32195	8.20E-04	965.32195	0.00595
964.35759	0.00346	964.35759	0.00144	964.35759	8.90E-04	964.35759	0.00606
963.39324	0.0036	963.39324	0.0014	963.39324	9.10E-04	963.39324	0.00616
962.42888	0.00358	962.42888	0.00131	962.42888	8.90E-04	962.42888	0.00617
961.46452	0.00345	961.46452	0.00119	961.46452	8.60E-04	961.46452	0.00604
960.50016	0.0033	960.50016	0.00109	960.50016	8.50E-04	960.50016	0.00581
959.53581	0.00316	959.53581	0.00104	959.53581	8.20E-04	959.53581	0.00559
958.57145	0.00314	958.57145	0.00105	958.57145	7.70E-04	958.57145	0.00548
957.60709	0.00339	957.60709	0.00111	957.60709	7.30E-04	957.60709	0.00545
956.64273	0.00363	956.64273	0.00113	956.64273	7.20E-04	956.64273	0.00546
955.67838	0.00357	955.67838	0.00109	955.67838	6.70E-04	955.67838	0.00544
954.71402	0.00346	954.71402	0.00103	954.71402	6.10E-04	954.71402	0.00536
953.74966	0.00355	953.74966	9.90E-04	953.74966	6.00E-04	953.74966	0.00522
952.7853	0.00364	952.7853	9.80E-04	952.7853	6.10E-04	952.7853	0.00513
951.82095	0.00363	951.82095	9.60E-04	951.82095	6.10E-04	951.82095	0.00514
950.85659	0.0036	950.85659	9.40E-04	950.85659	5.60E-04	950.85659	0.00521
949.89223	0.0035	949.89223	9.10E-04	949.89223	4.80E-04	949.89223	0.00526
948.92787	0.00342	948.92787	8.50E-04	948.92787	3.60E-04	948.92787	0.00526
947.96351	0.00339	947.96351	7.80E-04	947.96351	2.10E-04	947.96351	0.00521
946.99916	0.0034	946.99916	7.70E-04	946.99916	1.00E-04	946.99916	0.00511
946.0348	0.00351	946.0348	8.30E-04	946.0348	7.00E-05	946.0348	0.00498
945.07044	0.00349	945.07044	9.10E-04	945.07044	1.20E-04	945.07044	0.00493
944.10608	0.00315	944.10608	0.00103	944.10608	2.10E-04	944.10608	0.00495
943.14173	0.00282	943.14173	0.00119	943.14173	3.10E-04	943.14173	0.005
942.17737	0.0029	942.17737	0.00131	942.17737	3.60E-04	942.17737	0.00503

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
941.21301	0.00324	941.21301	0.00135	941.21301	3.40E-04	941.21301	0.00504
940.24865	0.00338	940.24865	0.00136	940.24865	3.20E-04	940.24865	0.00502
939.2843	0.00337	939.2843	0.00142	939.2843	3.40E-04	939.2843	0.005
938.31994	0.00348	938.31994	0.0015	938.31994	3.80E-04	938.31994	0.00503
937.35558	0.00368	937.35558	0.0016	937.35558	4.40E-04	937.35558	0.00512
936.39122	0.00378	936.39122	0.00169	936.39122	5.00E-04	936.39122	0.00529
935.42687	0.0036	935.42687	0.00176	935.42687	5.70E-04	935.42687	0.00552
934.46251	0.00327	934.46251	0.00176	934.46251	6.30E-04	934.46251	0.00579
933.49815	0.00323	933.49815	0.00171	933.49815	7.20E-04	933.49815	0.00601
932.53379	0.0035	932.53379	0.00168	932.53379	9.00E-04	932.53379	0.00614
931.56944	0.00388	931.56944	0.00168	931.56944	0.00111	931.56944	0.00623
930.60508	0.00427	930.60508	0.00168	930.60508	0.00128	930.60508	0.0064
929.64072	0.00451	929.64072	0.00171	929.64072	0.00137	929.64072	0.00666
928.67636	0.00462	928.67636	0.00177	928.67636	0.0014	928.67636	0.00697
927.71201	0.00476	927.71201	0.00186	927.71201	0.00135	927.71201	0.00731
926.74765	0.00482	926.74765	0.00191	926.74765	0.00128	926.74765	0.00765
925.78329	0.00482	925.78329	0.00193	925.78329	0.00125	925.78329	0.00794
924.81893	0.00483	924.81893	0.00196	924.81893	0.00127	924.81893	0.00814
923.85457	0.00483	923.85457	0.00204	923.85457	0.00128	923.85457	0.00826
922.89022	0.00492	922.89022	0.00214	922.89022	0.00131	922.89022	0.00839
921.92586	0.00523	921.92586	0.00231	921.92586	0.00143	921.92586	0.00862
920.9615	0.00539	920.9615	0.00257	920.9615	0.00169	920.9615	0.00899
919.99714	0.0051	919.99714	0.00283	919.99714	0.0021	919.99714	0.00945
919.03279	0.00487	919.03279	0.00303	919.03279	0.00257	919.03279	0.00988
918.06843	0.00508	918.06843	0.00322	918.06843	0.00301	918.06843	0.01027
917.10407	0.00556	917.10407	0.00341	917.10407	0.00327	917.10407	0.01064
916.13971	0.00639	916.13971	0.00357	916.13971	0.00328	916.13971	0.01101
915.17536	0.00727	915.17536	0.00371	915.17536	0.00318	915.17536	0.01139
914.211	0.00761	914.211	0.0039	914.211	0.00314	914.211	0.0118
913.24664	0.00771	913.24664	0.00414	913.24664	0.0032	913.24664	0.01228
912.28228	0.00806	912.28228	0.00443	912.28228	0.00337	912.28228	0.01276
911.31793	0.00828	911.31793	0.00482	911.31793	0.00356	911.31793	0.01312
910.35357	0.00819	910.35357	0.00521	910.35357	0.0037	910.35357	0.0134
909.38921	0.00839	909.38921	0.00545	909.38921	0.00381	909.38921	0.01375
908.42485	0.00883	908.42485	0.00551	908.42485	0.00397	908.42485	0.01416
907.4605	0.00888	907.4605	0.0056	907.4605	0.00423	907.4605	0.01455
906.49614	0.00865	906.49614	0.00577	906.49614	0.00452	906.49614	0.01491
905.53178	0.00872	905.53178	0.00594	905.53178	0.00472	905.53178	0.01518
904.56742	0.00887	904.56742	0.00608	904.56742	0.00478	904.56742	0.01526
903.60307	0.00863	903.60307	0.0063	903.60307	0.0047	903.60307	0.01529
902.63871	0.00834	902.63871	0.00648	902.63871	0.00453	902.63871	0.01552

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
901.67435	0.00825	901.67435	0.00649	901.67435	0.00438	901.67435	0.01598
900.70999	0.00827	900.70999	0.00637	900.70999	0.00432	900.70999	0.01641
899.74564	0.00838	899.74564	0.0063	899.74564	0.00436	899.74564	0.01665
898.78128	0.00825	898.78128	0.00629	898.78128	0.00448	898.78128	0.01673
897.81692	0.00783	897.81692	0.00627	897.81692	0.00471	897.81692	0.01662
896.85256	0.00773	896.85256	0.00635	896.85256	0.00507	896.85256	0.01632
895.8882	0.00799	895.8882	0.00677	895.8882	0.00547	895.8882	0.01605
894.92385	0.00801	894.92385	0.0075	894.92385	0.00572	894.92385	0.01605
893.95949	0.00793	893.95949	0.00813	893.95949	0.00574	893.95949	0.01631
892.99513	0.00817	892.99513	0.00837	892.99513	0.0056	892.99513	0.01669
892.03077	0.00857	892.03077	0.00831	892.03077	0.00542	892.03077	0.01709
891.06642	0.0087	891.06642	0.00816	891.06642	0.00519	891.06642	0.0174
890.10206	0.00862	890.10206	0.00793	890.10206	0.00494	890.10206	0.01756
889.1377	0.00876	889.1377	0.00777	889.1377	0.00468	889.1377	0.01755
888.17334	0.00902	888.17334	0.00788	888.17334	0.00443	888.17334	0.01735
887.20899	0.00924	887.20899	0.00813	887.20899	0.00425	887.20899	0.01701
886.24463	0.00949	886.24463	0.00811	886.24463	0.00418	886.24463	0.01673
885.28027	0.00963	885.28027	0.00769	885.28027	0.00421	885.28027	0.01666
884.31591	0.00978	884.31591	0.00722	884.31591	0.00437	884.31591	0.0168
883.35156	0.00979	883.35156	0.00699	883.35156	0.00462	883.35156	0.01701
882.3872	0.00946	882.3872	0.0069	882.3872	0.00492	882.3872	0.01725
881.42284	0.00949	881.42284	0.00687	881.42284	0.00526	881.42284	0.01753
880.45848	0.01033	880.45848	0.00693	880.45848	0.00568	880.45848	0.01786
879.49413	0.01114	879.49413	0.00696	879.49413	0.00614	879.49413	0.01823
878.52977	0.01113	878.52977	0.00672	878.52977	0.00651	878.52977	0.01859
877.56541	0.01073	877.56541	0.0063	877.56541	0.00666	877.56541	0.01881
876.60105	0.01074	876.60105	0.00602	876.60105	0.00661	876.60105	0.01885
875.6367	0.0112	875.6367	0.00597	875.6367	0.00644	875.6367	0.01868
874.67234	0.0115	874.67234	0.006	874.67234	0.00615	874.67234	0.01835
873.70798	0.01159	873.70798	0.00596	873.70798	0.00575	873.70798	0.01802
872.74362	0.01158	872.74362	0.00585	872.74362	0.00533	872.74362	0.01779
871.77926	0.01124	871.77926	0.0057	871.77926	0.00496	871.77926	0.0176
870.81491	0.01084	870.81491	0.00551	870.81491	0.0047	870.81491	0.01733
869.85055	0.01039	869.85055	0.00535	869.85055	0.00457	869.85055	0.01698
868.88619	0.00935	868.88619	0.00529	868.88619	0.00445	868.88619	0.01661
867.92183	0.0082	867.92183	0.00524	867.92183	0.00427	867.92183	0.01618
866.95748	0.00789	866.95748	0.00509	866.95748	0.00402	866.95748	0.01576
865.99312	0.00844	865.99312	0.00473	865.99312	0.00372	865.99312	0.01537
865.02876	0.00903	865.02876	0.00419	865.02876	0.00344	865.02876	0.01489
864.0644	0.00913	864.0644	0.00366	864.0644	0.00327	864.0644	0.01433
863.10005	0.00888	863.10005	0.00331	863.10005	0.00323	863.10005	0.01387

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
862.13569	0.00856	862.13569	0.00314	862.13569	0.00326	862.13569	0.0136
861.17133	0.00832	861.17133	0.0031	861.17133	0.00319	861.17133	0.01343
860.20697	0.00818	860.20697	0.00311	860.20697	0.00302	860.20697	0.01321
859.24262	0.00809	859.24262	0.00312	859.24262	0.00287	859.24262	0.01296
858.27826	0.00819	858.27826	0.00304	858.27826	0.00273	858.27826	0.01266
857.3139	0.00831	857.3139	0.0028	857.3139	0.00256	857.3139	0.01229
856.34954	0.00812	856.34954	0.0025	856.34954	0.00244	856.34954	0.01194
855.38519	0.00783	855.38519	0.00226	855.38519	0.00246	855.38519	0.01174
854.42083	0.00789	854.42083	0.002	854.42083	0.00255	854.42083	0.01173
853.45647	0.00827	853.45647	0.00165	853.45647	0.00256	853.45647	0.01179
852.49211	0.00839	852.49211	0.00121	852.49211	0.00245	852.49211	0.01182
851.52776	0.00793	851.52776	8.10E-04	851.52776	0.00223	851.52776	0.01176
850.5634	0.00743	850.5634	5.00E-04	850.5634	0.0019	850.5634	0.01153
849.59904	0.00739	849.59904	2.80E-04	849.59904	0.00156	849.59904	0.01105
848.63468	0.00739	848.63468	1.70E-04	848.63468	0.00136	848.63468	0.01039
847.67032	0.00664	847.67032	1.80E-04	847.67032	0.00132	847.67032	0.00974
846.70597	0.00555	846.70597	2.50E-04	846.70597	0.00133	846.70597	0.0092
845.74161	0.00536	845.74161	2.80E-04	845.74161	0.00126	845.74161	0.00884
844.77725	0.00596	844.77725	2.60E-04	844.77725	0.00111	844.77725	0.00872
843.81289	0.00649	843.81289	1.90E-04	843.81289	9.40E-04	843.81289	0.0088
842.84854	0.00674	842.84854	1.20E-04	842.84854	8.90E-04	842.84854	0.00893
841.88418	0.00688	841.88418	7.00E-05	841.88418	0.00105	841.88418	0.00913
840.91982	0.00715	840.91982	3.00E-05	840.91982	0.0014	840.91982	0.00947
839.95546	0.00747	839.95546	0	839.95546	0.00179	839.95546	0.00991
838.99111	0.00763	838.99111	5.00E-05	838.99111	0.00204	838.99111	0.01031
838.02675	0.00779	838.02675	2.40E-04	838.02675	0.00207	838.02675	0.01064
837.06239	0.00812	837.06239	5.40E-04	837.06239	0.00201	837.06239	0.0109
836.09803	0.00855	836.09803	8.60E-04	836.09803	0.002	836.09803	0.01107
835.13368	0.0088	835.13368	0.0012	835.13368	0.0021	835.13368	0.01115
834.16932	0.00883	834.16932	0.00163	834.16932	0.0023	834.16932	0.01122
833.20496	0.00902	833.20496	0.00214	833.20496	0.00259	833.20496	0.01128
832.2406	0.00919	832.2406	0.00263	832.2406	0.0029	832.2406	0.01138
831.27625	0.00906	831.27625	0.00301	831.27625	0.00307	831.27625	0.01151
830.31189	0.00906	830.31189	0.00333	830.31189	0.00301	830.31189	0.01164
829.34753	0.00907	829.34753	0.00363	829.34753	0.00277	829.34753	0.01174
828.38317	0.00868	828.38317	0.00398	828.38317	0.00248	828.38317	0.01192
827.41882	0.00839	827.41882	0.00446	827.41882	0.00227	827.41882	0.01223
826.45446	0.0086	826.45446	0.00507	826.45446	0.00224	826.45446	0.01261
825.4901	0.00865	825.4901	0.00571	825.4901	0.00241	825.4901	0.01304
824.52574	0.00805	824.52574	0.00629	824.52574	0.00273	824.52574	0.01346
823.56139	0.0074	823.56139	0.00679	823.56139	0.00313	823.56139	0.01376

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
822.59703	0.0074	822.59703	0.0072	822.59703	0.00348	822.59703	0.01388
821.63267	0.00789	821.63267	0.00748	821.63267	0.00364	821.63267	0.01394
820.66831	0.00812	820.66831	0.0077	820.66831	0.00364	820.66831	0.01409
819.70395	0.00789	819.70395	0.0079	819.70395	0.00355	819.70395	0.01431
818.7396	0.0077	818.7396	0.00801	818.7396	0.00351	818.7396	0.01451
817.77524	0.00767	817.77524	0.00785	817.77524	0.00357	817.77524	0.01468
816.81088	0.00779	816.81088	0.00746	816.81088	0.00373	816.81088	0.01469
815.84652	0.00806	815.84652	0.00705	815.84652	0.00386	815.84652	0.0144
814.88217	0.00789	814.88217	0.0067	814.88217	0.00376	814.88217	0.01383
813.91781	0.00722	813.91781	0.0064	813.91781	0.00343	813.91781	0.01316
812.95345	0.00664	812.95345	0.00616	812.95345	0.00305	812.95345	0.01258
811.98909	0.00626	811.98909	0.00607	811.98909	0.00276	811.98909	0.01209
811.02474	0.00615	811.02474	0.0061	811.02474	0.00264	811.02474	0.01173
810.06038	0.00645	810.06038	0.0061	810.06038	0.00271	810.06038	0.01155
809.09602	0.00682	809.09602	0.00595	809.09602	0.00287	809.09602	0.01149
808.13166	0.00688	808.13166	0.00568	808.13166	0.00295	808.13166	0.01138
807.16731	0.00659	807.16731	0.00535	807.16731	0.00284	807.16731	0.01113
806.20295	0.0062	806.20295	0.00498	806.20295	0.00253	806.20295	0.01075
805.23859	0.00603	805.23859	0.00461	805.23859	0.00214	805.23859	0.01022
804.27423	0.00579	804.27423	0.00427	804.27423	0.00176	804.27423	0.00953
803.30988	0.00515	803.30988	0.00401	803.30988	0.00138	803.30988	0.0088
802.34552	0.00457	802.34552	0.00383	802.34552	0.00103	802.34552	0.00818
801.38116	0.0045	801.38116	0.00374	801.38116	8.00E-04	801.38116	0.00778
800.4168	0.00469	800.4168	0.00379	800.4168	8.10E-04	800.4168	0.00775
799.45245	0.00489	799.45245	0.00402	799.45245	0.00104	799.45245	0.00814
798.48809	0.00511	798.48809	0.00436	798.48809	0.00135	798.48809	0.00884
797.52373	0.0055	797.52373	0.00468	797.52373	0.00166	797.52373	0.00967
796.55937	0.00597	796.55937	0.00494	796.55937	0.00191	796.55937	0.01045
795.59501	0.00641	795.59501	0.0051	795.59501	0.00212	795.59501	0.01114
794.63066	0.00685	794.63066	0.00515	794.63066	0.00227	794.63066	0.01169
793.6663	0.00713	793.6663	0.00518	793.6663	0.00236	793.6663	0.01205
792.70194	0.00718	792.70194	0.00528	792.70194	0.00239	792.70194	0.01227
791.73758	0.00703	791.73758	0.00542	791.73758	0.00245	791.73758	0.01235
790.77323	0.00657	790.77323	0.00553	790.77323	0.00264	790.77323	0.01238
789.80887	0.0061	789.80887	0.00565	789.80887	0.00295	789.80887	0.01245
788.84451	0.00629	788.84451	0.00585	788.84451	0.00324	788.84451	0.01258
787.88015	0.00688	787.88015	0.00607	787.88015	0.00342	787.88015	0.01274
786.9158	0.00683	786.9158	0.0062	786.9158	0.00345	786.9158	0.0129
785.95144	0.00639	785.95144	0.00616	785.95144	0.00336	785.95144	0.01304
784.98708	0.00661	784.98708	0.00592	784.98708	0.00329	784.98708	0.01306
784.02272	0.00692	784.02272	0.00555	784.02272	0.00331	784.02272	0.01298

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
783.05837	0.00676	783.05837	0.00522	783.05837	0.00343	783.05837	0.01285
782.09401	0.0067	782.09401	0.00512	782.09401	0.0036	782.09401	0.01276
781.12965	0.00681	781.12965	0.00531	781.12965	0.00374	781.12965	0.01273
780.16529	0.00679	780.16529	0.00563	780.16529	0.00379	780.16529	0.01275
779.20094	0.00692	779.20094	0.00592	779.20094	0.00375	779.20094	0.01282
778.23658	0.00728	778.23658	0.00605	778.23658	0.00367	778.23658	0.01297
777.27222	0.0072	777.27222	0.00594	777.27222	0.00362	777.27222	0.01321
776.30786	0.0065	776.30786	0.00568	776.30786	0.00353	776.30786	0.0135
775.34351	0.00597	775.34351	0.00546	775.34351	0.00339	775.34351	0.01374
774.37915	0.00611	774.37915	0.00546	774.37915	0.00327	774.37915	0.01388
773.41479	0.00638	773.41479	0.00565	773.41479	0.00329	773.41479	0.01392
772.45043	0.00639	772.45043	0.00586	772.45043	0.00346	772.45043	0.01387
771.48608	0.00656	771.48608	0.00598	771.48608	0.00366	771.48608	0.01378
770.52172	0.00698	770.52172	0.00594	770.52172	0.00382	770.52172	0.01373
769.55736	0.00723	769.55736	0.00573	769.55736	0.00391	769.55736	0.0138
768.593	0.00713	768.593	0.00534	768.593	0.00396	768.593	0.01399
767.62864	0.00696	767.62864	0.00499	767.62864	0.00391	767.62864	0.01429
766.66429	0.00724	766.66429	0.00496	766.66429	0.00374	766.66429	0.0146
765.69993	0.00766	765.69993	0.00528	765.69993	0.00351	765.69993	0.01477
764.73557	0.00753	764.73557	0.00578	764.73557	0.00334	764.73557	0.01479
763.77121	0.00714	763.77121	0.00629	763.77121	0.00322	763.77121	0.01474
762.80686	0.00737	762.80686	0.00672	762.80686	0.00316	762.80686	0.01473
761.8425	0.00826	761.8425	0.00697	761.8425	0.00321	761.8425	0.01479
760.87814	0.00839	760.87814	0.00699	760.87814	0.00339	760.87814	0.01496
759.91378	0.00734	759.91378	0.00692	759.91378	0.00365	759.91378	0.01528
758.94943	0.00675	758.94943	0.00695	758.94943	0.00395	758.94943	0.01563
757.98507	0.00725	757.98507	0.00711	757.98507	0.00426	757.98507	0.01585
757.02071	0.00782	757.02071	0.00732	757.02071	0.0045	757.02071	0.01591
756.05635	0.00825	756.05635	0.00754	756.05635	0.00455	756.05635	0.01595
755.092	0.00859	755.092	0.00776	755.092	0.00445	755.092	0.01609
754.12764	0.00843	754.12764	0.00793	754.12764	0.00434	754.12764	0.01637
753.16328	0.0082	753.16328	0.00805	753.16328	0.00431	753.16328	0.01676
752.19892	0.00847	752.19892	0.00816	752.19892	0.00438	752.19892	0.01726
751.23457	0.00852	751.23457	0.00815	751.23457	0.00455	751.23457	0.01779
750.27021	0.00809	750.27021	0.00797	750.27021	0.00475	750.27021	0.01818
749.30585	0.00799	749.30585	0.00777	749.30585	0.00496	749.30585	0.01835
748.34149	0.00811	748.34149	0.00767	748.34149	0.00512	748.34149	0.01844
747.37714	0.00792	747.37714	0.00754	747.37714	0.00526	747.37714	0.01862
746.41278	0.00818	746.41278	0.00737	746.41278	0.00552	746.41278	0.01894
745.44842	0.00924	745.44842	0.00728	745.44842	0.00587	745.44842	0.01942
744.48406	0.00981	744.48406	0.00726	744.48406	0.00612	744.48406	0.02012

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
743.5197	0.00913	743.5197	0.00724	743.5197	0.00622	743.5197	0.02091
742.55535	0.00802	742.55535	0.00742	742.55535	0.00627	742.55535	0.0216
741.59099	0.00744	741.59099	0.00791	741.59099	0.00636	741.59099	0.02216
740.62663	0.00783	740.62663	0.00844	740.62663	0.00648	740.62663	0.02262
739.66227	0.00918	739.66227	0.00867	739.66227	0.00659	739.66227	0.02294
738.69792	0.01056	738.69792	0.00853	738.69792	0.00683	738.69792	0.02301
737.73356	0.01075	737.73356	0.00809	737.73356	0.00716	737.73356	0.02285
736.7692	0.00978	736.7692	0.00755	736.7692	0.00739	736.7692	0.02263
735.80484	0.00882	735.80484	0.0073	735.80484	0.00741	735.80484	0.0224
734.84049	0.00854	734.84049	0.00748	734.84049	0.00723	734.84049	0.02217
733.87613	0.00872	733.87613	0.00777	733.87613	0.00694	733.87613	0.02208
732.91177	0.00897	732.91177	0.00785	732.91177	0.00664	732.91177	0.02218
731.94741	0.00891	731.94741	0.00774	731.94741	0.00638	731.94741	0.02223
730.98306	0.00853	730.98306	0.00749	730.98306	0.00621	730.98306	0.02193
730.0187	0.00845	730.0187	0.00721	730.0187	0.00607	730.0187	0.02121
729.05434	0.00892	729.05434	0.00718	729.05434	0.00583	729.05434	0.02024
728.08998	0.0093	728.08998	0.00748	728.08998	0.0054	728.08998	0.01917
727.12563	0.00921	727.12563	0.00774	727.12563	0.00489	727.12563	0.01817
726.16127	0.00867	726.16127	0.00771	726.16127	0.00452	726.16127	0.01747
725.19691	0.0081	725.19691	0.00748	725.19691	0.00438	725.19691	0.01703
724.23255	0.00808	724.23255	0.00724	724.23255	0.00433	724.23255	0.01656
723.2682	0.00831	723.2682	0.00709	723.2682	0.00425	723.2682	0.01593
722.30384	0.00809	722.30384	0.00709	722.30384	0.00413	722.30384	0.01525
721.33948	0.00759	721.33948	0.00725	721.33948	0.00401	721.33948	0.01465
720.37512	0.00715	720.37512	0.00746	720.37512	0.00391	720.37512	0.01421
719.41076	0.00675	719.41076	0.00759	719.41076	0.0039	719.41076	0.0139
718.44641	0.00661	718.44641	0.00757	718.44641	0.00394	718.44641	0.01358
717.48205	0.00669	717.48205	0.00743	717.48205	0.00389	717.48205	0.01305
716.51769	0.00659	716.51769	0.00724	716.51769	0.00364	716.51769	0.01212
715.55333	0.00632	715.55333	0.00711	715.55333	0.00319	715.55333	0.0108
714.58898	0.00604	714.58898	0.00709	714.58898	0.00264	714.58898	0.00927
713.62462	0.00565	713.62462	0.00718	713.62462	0.0021	713.62462	0.00774
712.66026	0.00507	712.66026	0.00734	712.66026	0.00165	712.66026	0.0063
711.6959	0.00446	711.6959	0.0075	711.6959	0.00129	711.6959	0.00499
710.73155	0.00404	710.73155	0.00758	710.73155	9.80E-04	710.73155	0.00384
709.76719	0.00374	709.76719	0.00758	709.76719	7.30E-04	709.76719	0.00289
708.80283	0.00334	708.80283	0.00763	708.80283	5.80E-04	708.80283	0.00212
707.83847	0.00291	707.83847	0.00779	707.83847	5.50E-04	707.83847	0.00149
706.87412	0.00272	706.87412	0.008	706.87412	6.30E-04	706.87412	0.00102
705.90976	0.00285	705.90976	0.00821	705.90976	7.70E-04	705.90976	8.00E-04
704.9454	0.00315	704.9454	0.00837	704.9454	9.60E-04	704.9454	8.00E-04



Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
703.98104	0.00344	703.98104	0.00848	703.98104	0.00113	703.98104	9.60E-04
703.01669	0.00373	703.01669	0.00856	703.01669	0.00131	703.01669	0.00122
702.05233	0.00409	702.05233	0.00865	702.05233	0.00153	702.05233	0.00154
701.08797	0.00445	701.08797	0.00879	701.08797	0.00182	701.08797	0.0019
700.12361	0.0048	700.12361	0.00895	700.12361	0.00215	700.12361	0.00232
699.15926	0.00517	699.15926	0.00909	699.15926	0.00248	699.15926	0.00283
698.1949	0.00551	698.1949	0.00916	698.1949	0.00277	698.1949	0.00346
697.23054	0.00586	697.23054	0.00917	697.23054	0.00295	697.23054	0.0041
696.26618	0.00626	696.26618	0.00912	696.26618	0.00303	696.26618	0.00467
695.30183	0.00646	695.30183	0.00901	695.30183	0.00307	695.30183	0.00514
694.33747	0.0063	694.33747	0.00889	694.33747	0.00314	694.33747	0.0055
693.37311	0.00606	693.37311	0.00883	693.37311	0.00324	693.37311	0.00576
692.40875	0.00598	692.40875	0.00884	692.40875	0.00333	692.40875	0.00598
691.44439	0.00599	691.44439	0.00887	691.44439	0.00338	691.44439	0.00617
690.48004	0.00597	690.48004	0.00889	690.48004	0.00339	690.48004	0.00625
689.51568	0.00588	689.51568	0.00888	689.51568	0.00337	689.51568	0.0062
688.55132	0.00583	688.55132	0.00886	688.55132	0.0033	688.55132	0.00605
687.58696	0.00596	687.58696	0.00887	687.58696	0.00322	687.58696	0.00583
686.62261	0.00608	686.62261	0.00897	686.62261	0.0031	686.62261	0.00552
685.65825	0.00588	685.65825	0.00917	685.65825	0.00294	685.65825	0.00509
684.69389	0.00542	684.69389	0.00942	684.69389	0.00274	684.69389	0.00456
683.72953	0.00493	683.72953	0.00967	683.72953	0.00251	683.72953	0.00392
682.76518	0.00452	682.76518	0.00985	682.76518	0.00227	682.76518	0.00323
681.80082	0.00422	681.80082	0.00989	681.80082	0.0021	681.80082	0.00257
680.83646	0.004	680.83646	0.00984	680.83646	0.00203	680.83646	0.00202
679.8721	0.00376	679.8721	0.0098	679.8721	0.00196	679.8721	0.00159
678.90775	0.00328	678.90775	0.00983	678.90775	0.00185	678.90775	0.00125
677.94339	0.00279	677.94339	0.00997	677.94339	0.00172	677.94339	9.50E-04
676.97903	0.00256	676.97903	0.01022	676.97903	0.00162	676.97903	6.90E-04
676.01467	0.00248	676.01467	0.01047	676.01467	0.00155	676.01467	4.90E-04
675.05032	0.00239	675.05032	0.01058	675.05032	0.00151	675.05032	3.90E-04
674.08596	0.00227	674.08596	0.01052	674.08596	0.00151	674.08596	3.80E-04
673.1216	0.00227	673.1216	0.01036	673.1216	0.0015	673.1216	4.20E-04
672.15724	0.00241	672.15724	0.01015	672.15724	0.00145	672.15724	4.60E-04
671.19289	0.00245	671.19289	0.00997	671.19289	0.00143	671.19289	4.10E-04
670.22853	0.00242	670.22853	0.00996	670.22853	0.00138	670.22853	3.30E-04
669.26417	0.0025	669.26417	0.01007	669.26417	0.00132	669.26417	2.70E-04
668.29981	0.00239	668.29981	0.01021	668.29981	0.00133	668.29981	2.70E-04
667.33545	0.00224	667.33545	0.01036	667.33545	0.00142	667.33545	3.50E-04
666.3711	0.00266	666.3711	0.01059	666.3711	0.00152	666.3711	5.30E-04
665.40674	0.00299	665.40674	0.01092	665.40674	0.0015	665.40674	7.50E-04

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
664.44238	0.0029	664.44238	0.01121	664.44238	0.00143	664.44238	9.20E-04
663.47802	0.00252	663.47802	0.0114	663.47802	0.00145	663.47802	9.70E-04
662.51367	0.0021	662.51367	0.01146	662.51367	0.00145	662.51367	9.80E-04
661.54931	0.00194	661.54931	0.01137	661.54931	0.00148	661.54931	0.00104
660.58495	0.00218	660.58495	0.01113	660.58495	0.00158	660.58495	0.00114
659.62059	0.00258	659.62059	0.01084	659.62059	0.00172	659.62059	0.00122
658.65624	0.00265	658.65624	0.01064	658.65624	0.00182	658.65624	0.0012
657.69188	0.00234	657.69188	0.01058	657.69188	0.00179	657.69188	0.0011
656.72752	0.00207	656.72752	0.01067	656.72752	0.00166	656.72752	9.10E-04
655.76316	0.00189	655.76316	0.01086	655.76316	0.00151	655.76316	6.90E-04
654.79881	0.00153	654.79881	0.01107	654.79881	0.00133	654.79881	5.10E-04
653.83445	0.00115	653.83445	0.01121	653.83445	0.00118	653.83445	4.10E-04
652.87009	0.0012	652.87009	0.01123	652.87009	0.00113	652.87009	3.80E-04
651.90573	0.00157	651.90573	0.01121	651.90573	0.00118	651.90573	3.70E-04
650.94138	0.00195	650.94138	0.01119	650.94138	0.00126	650.94138	3.60E-04
649.97702	0.00225	649.97702	0.01119	649.97702	0.00135	649.97702	4.00E-04
649.01266	0.00243	649.01266	0.01121	649.01266	0.00144	649.01266	5.20E-04
648.0483	0.00237	648.0483	0.01125	648.0483	0.00147	648.0483	7.50E-04
647.08395	0.00213	647.08395	0.01126	647.08395	0.00145	647.08395	0.00105
646.11959	0.00187	646.11959	0.0112	646.11959	0.00142	646.11959	0.00129
645.15523	0.00165	645.15523	0.01116	645.15523	0.0015	645.15523	0.0014
644.19087	0.00166	644.19087	0.01126	644.19087	0.00166	644.19087	0.00149
643.22652	0.00211	643.22652	0.01142	643.22652	0.00177	643.22652	0.00165
642.26216	0.00281	642.26216	0.01158	642.26216	0.00183	642.26216	0.00188
641.2978	0.00341	641.2978	0.01169	641.2978	0.00192	641.2978	0.00219
640.33344	0.00383	640.33344	0.01174	640.33344	0.00208	640.33344	0.00263
639.36908	0.00385	639.36908	0.01175	639.36908	0.00229	639.36908	0.00314
638.40473	0.00354	638.40473	0.01176	638.40473	0.00245	638.40473	0.00355
637.44037	0.00359	637.44037	0.01179	637.44037	0.00252	637.44037	0.00379
636.47601	0.00398	636.47601	0.01182	636.47601	0.0025	636.47601	0.0039
635.51165	0.00416	635.51165	0.01189	635.51165	0.00241	635.51165	0.00389
634.5473	0.00422	634.5473	0.01194	634.5473	0.00227	634.5473	0.00385
633.58294	0.00429	633.58294	0.01176	633.58294	0.00224	633.58294	0.00412
632.61858	0.00411	632.61858	0.01128	632.61858	0.0025	632.61858	0.00511
631.65422	0.00402	631.65422	0.01055	631.65422	0.00304	631.65422	0.00707
630.68987	0.00461	630.68987	0.00953	630.68987	0.00375	630.68987	0.01011
629.72551	0.00562	629.72551	0.00837	629.72551	0.0044	629.72551	0.01387
628.76115	0.00653	628.76115	0.00757	628.76115	0.00475	628.76115	0.01759
627.79679	0.00741	627.79679	0.00732	627.79679	0.00474	627.79679	0.02056
626.83244	0.00785	626.83244	0.0073	626.83244	0.00463	626.83244	0.02238
625.86808	0.00759	625.86808	0.00716	625.86808	0.0045	625.86808	0.02316

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
624.90372	0.00691	624.90372	0.00683	624.90372	0.00435	624.90372	0.02328
623.93936	0.00588	623.93936	0.00637	623.93936	0.00438	623.93936	0.02306
622.97501	0.00473	622.97501	0.00579	622.97501	0.00473	622.97501	0.02266
622.01065	0.00399	622.01065	0.00531	622.01065	0.00525	622.01065	0.02215
621.04629	0.00452	621.04629	0.00517	621.04629	0.00557	621.04629	0.02158
620.08193	0.00606	620.08193	0.00525	620.08193	0.00558	620.08193	0.02099
619.11758	0.00683	619.11758	0.00523	619.11758	0.00546	619.11758	0.02061
618.15322	0.00641	618.15322	0.00499	618.15322	0.00526	618.15322	0.02068
617.18886	0.00619	617.18886	0.00466	617.18886	0.00502	617.18886	0.02105
616.2245	0.0067	616.2245	0.0045	616.2245	0.00504	616.2245	0.02133
615.26014	0.00729	615.26014	0.00455	615.26014	0.00535	615.26014	0.0214
614.29579	0.00729	614.29579	0.00465	614.29579	0.00565	614.29579	0.02144
613.33143	0.00679	613.33143	0.00484	613.33143	0.00577	613.33143	0.02158
612.36707	0.00688	612.36707	0.00512	612.36707	0.0057	612.36707	0.02186
611.40271	0.00757	611.40271	0.00516	611.40271	0.00554	611.40271	0.02225
610.43836	0.00808	610.43836	0.00488	610.43836	0.00547	610.43836	0.02248
609.474	0.00833	609.474	0.0046	609.474	0.00561	609.474	0.02233
608.50964	0.00734	608.50964	0.00451	608.50964	0.00603	608.50964	0.02198
607.54528	0.00528	607.54528	0.00452	607.54528	0.00656	607.54528	0.02165
606.58093	0.00446	606.58093	0.00458	606.58093	0.00686	606.58093	0.02131
605.61657	0.00512	605.61657	0.0048	605.61657	0.00668	605.61657	0.02099
604.65221	0.00576	604.65221	0.00512	604.65221	0.00618	604.65221	0.02081
603.68785	0.00627	603.68785	0.00517	603.68785	0.0058	603.68785	0.02065
602.7235	0.00776	602.7235	0.00468	602.7235	0.00576	602.7235	0.02033
601.75914	0.00991	601.75914	0.00388	601.75914	0.00592	601.75914	0.02005
600.79478	0.01046	600.79478	0.0032	600.79478	0.00606	600.79478	0.0199
599.83042	0.00939	599.83042	0.00293	599.83042	0.00619	599.83042	0.01983
598.86607	0.00869	598.86607	0.00307	598.86607	0.00625	598.86607	0.01986
597.90171	0.00851	597.90171	0.00346	597.90171	0.00601	597.90171	0.01999
596.93735	0.00855	596.93735	0.0039	596.93735	0.00552	596.93735	0.02024
595.97299	0.00876	595.97299	0.00414	595.97299	0.00503	595.97299	0.0205
595.00864	0.00844	595.00864	0.00397	595.00864	0.00452	595.00864	0.02064
594.04428	0.00812	594.04428	0.00373	594.04428	0.00395	594.04428	0.02054
593.07992	0.00865	593.07992	0.00387	593.07992	0.00354	593.07992	0.02009
592.11556	0.00932	592.11556	0.00434	592.11556	0.00348	592.11556	0.01963
591.15121	0.00952	591.15121	0.00482	591.15121	0.00379	591.15121	0.01952
590.18685	0.00919	590.18685	0.00502	590.18685	0.00444	590.18685	0.01949
589.22249	0.0078	589.22249	0.00488	589.22249	0.00524	589.22249	0.01936
588.25813	0.00595	588.25813	0.00465	588.25813	0.00575	588.25813	0.01929
587.29377	0.00551	587.29377	0.00475	587.29377	0.00587	587.29377	0.0193
586.32942	0.00653	586.32942	0.0054	586.32942	0.00583	586.32942	0.01917

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
585.36506	0.00763	585.36506	0.00621	585.36506	0.00572	585.36506	0.01885
584.4007	0.00804	584.4007	0.00669	584.4007	0.00546	584.4007	0.01853
583.43634	0.00734	583.43634	0.00669	583.43634	0.00513	583.43634	0.01814
582.47199	0.00579	582.47199	0.00622	582.47199	0.00486	582.47199	0.01745
581.50763	0.00508	581.50763	0.00547	581.50763	0.00468	581.50763	0.01661
580.54327	0.00628	580.54327	0.00487	580.54327	0.00462	580.54327	0.01596
579.57891	0.00795	579.57891	0.00472	579.57891	0.00469	579.57891	0.0156
578.61456	0.00849	578.61456	0.00497	578.61456	0.00496	578.61456	0.01558
577.6502	0.00818	577.6502	0.00529	577.6502	0.00532	577.6502	0.01586
576.68584	0.00773	576.68584	0.00543	576.68584	0.0056	576.68584	0.01617
575.72148	0.00721	575.72148	0.00536	575.72148	0.0056	575.72148	0.01622
574.75713	0.00643	574.75713	0.00496	574.75713	0.00515	574.75713	0.01599
573.79277	0.0058	573.79277	0.00448	573.79277	0.00443	573.79277	0.0157
572.82841	0.00619	572.82841	0.00453	572.82841	0.00385	572.82841	0.01552
571.86405	0.0072	571.86405	0.005	571.86405	0.00358	571.86405	0.01564
570.8997	0.00816	570.8997	0.00541	570.8997	0.00389	570.8997	0.01616
569.93534	0.00952	569.93534	0.00555	569.93534	0.00475	569.93534	0.01656
568.97098	0.01036	568.97098	0.00547	568.97098	0.00562	568.97098	0.0162
568.00662	0.00937	568.00662	0.00543	568.00662	0.00613	568.00662	0.01524
567.04227	0.00749	567.04227	0.00562	567.04227	0.0063	567.04227	0.01437
566.07791	0.00632	566.07791	0.006	566.07791	0.00622	566.07791	0.01401
565.11355	0.00645	565.11355	0.0065	565.11355	0.00608	565.11355	0.01426
564.14919	0.00711	564.14919	0.00675	564.14919	0.00607	564.14919	0.0151
563.18483	0.00764	563.18483	0.00621	563.18483	0.00603	563.18483	0.01633
562.22048	0.00867	562.22048	0.00467	562.22048	0.00565	562.22048	0.01722
561.25612	0.00995	561.25612	0.00273	561.25612	0.00515	561.25612	0.01724
560.29176	0.01019	560.29176	0.00169	560.29176	0.00499	560.29176	0.01682
559.3274	0.00955	559.3274	0.0021	559.3274	0.00512	559.3274	0.01658
558.36305	0.009	558.36305	0.0033	558.36305	0.00537	558.36305	0.01674
557.39869	0.0081	557.39869	0.00477	557.39869	0.00587	557.39869	0.01725
556.43433	0.00681	556.43433	0.00636	556.43433	0.0066	556.43433	0.0176
555.46997	0.00665	555.46997	0.00772	555.46997	0.00698	555.46997	0.01735
554.50562	0.00718	554.50562	0.00846	554.50562	0.00675	554.50562	0.01669
553.54126	0.00717	553.54126	0.00858	553.54126	0.00674	553.54126	0.01577
552.5769	0.00676	552.5769	0.00831	552.5769	0.00741	552.5769	0.01445
551.61254	0.006	551.61254	0.00798	551.61254	0.00779	551.61254	0.01317
550.64819	0.00559	550.64819	0.00794	550.64819	0.00703	550.64819	0.01259
549.68383	0.0062	549.68383	0.00829	549.68383	0.00559	549.68383	0.01254
548.71947	0.00746	548.71947	0.00887	548.71947	0.00399	548.71947	0.01236
547.75511	0.00864	547.75511	0.00939	547.75511	0.00237	547.75511	0.01202
546.79076	0.00846	546.79076	0.00908	546.79076	0.00127	546.79076	0.01185

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
545.8264	0.00722	545.8264	0.00716	545.8264	0.00146	545.8264	0.01169
544.86204	0.0071	544.86204	0.00417	544.86204	0.00291	544.86204	0.01112
543.89768	0.00833	543.89768	0.00188	543.89768	0.00467	543.89768	0.01037
542.93333	0.00804	542.93333	0.00124	542.93333	0.00582	542.93333	0.00977
541.96897	0.00537	541.96897	0.00187	541.96897	0.00603	541.96897	0.00887
541.00461	0.00385	541.00461	0.00309	541.00461	0.00547	541.00461	0.00721
540.04025	0.00408	540.04025	0.00419	540.04025	0.00493	540.04025	0.00546
539.07589	0.0036	539.07589	0.00431	539.07589	0.00509	539.07589	0.00449
538.11154	0.00339	538.11154	0.00345	538.11154	0.00564	538.11154	0.00442
537.14718	0.00487	537.14718	0.00274	537.14718	0.00599	537.14718	0.00511
536.18282	0.00644	536.18282	0.003	536.18282	0.0061	536.18282	0.00656
535.21846	0.00607	535.21846	0.00394	535.21846	0.00585	535.21846	0.00868
534.25411	0.00397	534.25411	0.00502	534.25411	0.00498	534.25411	0.01042
533.28975	0.00269	533.28975	0.0058	533.28975	0.00376	533.28975	0.01062
532.32539	0.00353	532.32539	0.00578	532.32539	0.00306	532.32539	0.00978
531.36103	0.0049	531.36103	0.00479	531.36103	0.0032	531.36103	0.00907
530.39668	0.00524	530.39668	0.00321	530.39668	0.0035	530.39668	0.00866
529.43232	0.00466	529.43232	0.0016	529.43232	0.0032	529.43232	0.00841
528.46796	0.0033	528.46796	5.00E-04	528.46796	0.00259	528.46796	0.00831
527.5036	0.0019	527.5036	4.50E-04	527.5036	0.00247	527.5036	0.00815
526.53925	0.00219	526.53925	0.0016	526.53925	0.00308	526.53925	0.00742
525.57489	0.00376	525.57489	0.00327	525.57489	0.00397	525.57489	0.00608
524.61053	0.00497	524.61053	0.00457	524.61053	0.0047	524.61053	0.00482
523.64617	0.00518	523.64617	0.00507	523.64617	0.00514	523.64617	0.00412
522.68182	0.00464	522.68182	0.0046	522.68182	0.00517	522.68182	0.004
521.71746	0.00441	521.71746	0.00324	521.71746	0.00443	521.71746	0.00448
520.7531	0.004	520.7531	0.00173	520.7531	0.00309	520.7531	0.00525
519.78874	0.0027	519.78874	1.00E-03	519.78874	0.00184	519.78874	0.00583
518.82439	0.00235	518.82439	0.00114	518.82439	0.00106	518.82439	0.00597
517.86003	0.00349	517.86003	0.0017	517.86003	6.40E-04	517.86003	0.0058
516.89567	0.00423	516.89567	0.0025	516.89567	5.70E-04	516.89567	0.00555
515.93131	0.00422	515.93131	0.00347	515.93131	8.30E-04	515.93131	0.0051
514.96696	0.00436	514.96696	0.00401	514.96696	0.00115	514.96696	0.00455
514.0026	0.0042	514.0026	0.0036	514.0026	0.00125	514.0026	0.00415
513.03824	0.00416	513.03824	0.00252	513.03824	0.00117	513.03824	0.00395
512.07388	0.00503	512.07388	0.00137	512.07388	0.00111	512.07388	0.00405
511.10952	0.00572	511.10952	4.50E-04	511.10952	0.0012	511.10952	0.00426
510.14517	0.00579	510.14517	0	510.14517	0.00156	510.14517	0.00416
509.18081	0.00605	509.18081	2.20E-04	509.18081	0.00213	509.18081	0.00374
508.21645	0.00637	508.21645	8.30E-04	508.21645	0.00253	508.21645	0.00317
507.25209	0.00604	507.25209	0.00127	507.25209	0.00224	507.25209	0.00257

Virgin Membrane		Fouled by combined foulants (1:1:1:1, 100mg/L)		Cleaned with 0.5 mM EDTA, pH 5		Cleaned with 10 mM SDS, pH 11	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
506.28774	0.00484	506.28774	0.00138	506.28774	0.00138	506.28774	0.00209
505.32338	0.00325	505.32338	0.00133	505.32338	5.10E-04	505.32338	0.00184
504.35902	0.00143	504.35902	9.60E-04	504.35902	-1.60E-04	504.35902	0.00189
503.39466	0	503.39466	1.30E-04	503.39466	-5.90E-04	503.39466	0.00209
502.43031	-5.30E-04	502.43031	1.00E-04	502.43031	-5.90E-04	502.43031	0.00209
501.46595	7.60E-04	501.46595	7.00E-05	501.46595	-5.90E-04	501.46595	0.00209
500.50159	0.00119	500.50159	3.00E-05	500.50159	-5.90E-04	500.50159	0.00209
499.53723	0	499.53723	0	499.53723	-5.90E-04	499.53723	0.00209

**Figure 6.1**

Wastewater Effluent		0.1 g/L BSA		0.1 g/L SA	
pH	Acidity (meq/C)	pH	Acidity (meq/C)	pH	Acidity (meq/C)
3.00	0.00	3.00	0.00	3.00	0.00
3.01	0.00	3.02	1.53	3.05	1.37
3.10	0.43	3.20	3.82	3.10	2.92
3.20	0.87	3.40	5.34	3.19	4.27
3.30	1.30	3.70	6.10	3.30	5.85
3.40	1.73	4.01	6.86	3.45	7.30
3.50	2.16	4.50	7.63	3.60	8.77
3.60	2.60	5.00	8.39	3.75	10.22
3.70	2.60	5.64	9.15	3.95	11.70
3.80	2.60	6.35	9.91	4.21	13.68
3.90	3.03	7.70	10.67	4.50	15.50
4.00	3.46	9.08	11.43	4.68	16.44
4.12	3.90	9.41	11.43	4.95	17.54
4.18	3.68	9.70	11.43	5.40	18.15
4.30	3.90	10.00	11.43	5.95	18.42
4.40	3.90			6.45	18.63
4.67	4.33			6.95	18.71
4.84	4.55			7.45	18.77
5.00	4.76			8.00	18.86
5.24	5.06			8.50	19.12
5.63	5.71			9.00	19.40
5.92	6.49			9.50	19.64
6.23	7.71			10.00	19.82
6.60	9.78				
6.85	11.21				
7.00	12.34				
7.10	12.77				
7.25	13.55				

Wastewater Effluent		0.1 g/L BSA		0.1 g/L SA	
pH	Acidity (meq/C)	pH	Acidity (meq/C)	pH	Acidity (meq/C)
7.40	14.42				
7.66	15.71				
7.85	16.54				
8.00	17.32				
8.23	18.27				
8.44	19.35				
8.72	21.39				
8.84	22.73				
9.00	24.68				
9.33	29.00				
9.50	33.77				
9.60	35.93				
9.69	38.10				
9.82	39.83				
9.92	41.56				
10.00	43.29				

**Figure 6.2**

Time (h)	Permeate Flux (m/s)
0.00	0.00246
0.08	0.00246
0.17	0.00246
0.25	0.00245
0.33	0.00246
0.42	0.00245
0.50	0.00246
0.58	0.00242
0.58	0.00245
0.75	0.00244
0.83	0.00244
0.83	0.00243
0.92	0.00243
1.00	0.00243
1.08	0.00229
1.17	0.00227
1.25	0.00226
1.33	0.00224
1.33	0.00223
1.42	0.00221
1.58	0.00221

<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
1.58	0.00221
1.75	0.00221
1.83	0.00220
1.83	0.00220
2.00	0.00220
2.08	0.00218
2.17	0.00217
2.17	0.00217
2.33	0.00217
2.42	0.00216
2.50	0.00216
2.58	0.00216
2.58	0.00216
2.67	0.00216
2.75	0.00216
2.83	0.00215
2.83	0.00215
2.92	0.00215
3.00	0.00216
3.08	0.00215
3.17	0.00214
3.25	0.00213
3.25	0.00213
3.42	0.00214
3.50	0.00213
3.58	0.00213
3.67	0.00213
3.75	0.00212
3.83	0.00212
3.92	0.00212
4.00	0.00212
4.08	0.00211
4.17	0.00211
4.25	0.00211
4.33	0.00211
4.33	0.00211
4.42	0.00211
4.50	0.00211
4.58	0.00211
4.58	0.00210
4.67	0.00210
4.75	0.00210
4.83	0.00210



<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
4.92	0.00210
5.00	0.00209
5.00	0.00209
5.08	0.00209
5.17	0.00209
5.25	0.00208
5.25	0.00208
5.33	0.00208
5.42	0.00208
5.50	0.00208
5.50	0.00207
5.58	0.00207
5.67	0.00207
5.75	0.00207
5.83	0.00206
5.92	0.00207
5.92	0.00206
6.01	0.00206
6.09	0.00206
6.17	0.00206
6.26	0.00206
6.34	0.00206
6.42	0.00206
6.51	0.00206
6.51	0.00206
6.59	0.00205
6.67	0.00205
6.76	0.00205
6.84	0.00204
6.84	0.00204
6.92	0.00204
7.01	0.00204
7.09	0.00205
7.17	0.00203
7.18	0.00204
7.34	0.00203
7.42	0.00203
7.42	0.00202
7.59	0.00202
7.67	0.00202
7.76	0.00201
7.84	0.00201
7.84	0.00201

<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
7.92	0.00201
8.01	0.00201
8.09	0.00200
8.17	0.00201
8.26	0.00201
8.26	0.00201
8.34	0.00201
8.42	0.00201
8.51	0.00201
8.59	0.00200
8.67	0.00200
8.76	0.00200
8.84	0.00199
8.84	0.00199
8.92	0.00198
9.01	0.00198
9.01	0.00198
9.09	0.00198
9.17	0.00198
9.34	0.00198
9.42	0.00198
9.51	0.00198
9.59	0.00198
9.67	0.00196
9.76	0.00197
9.84	0.00197
9.92	0.00197
10.01	0.00196
10.09	0.00196
10.17	0.00196
10.17	0.00196
10.26	0.00196
10.34	0.00195
10.42	0.00196
10.51	0.00195
10.59	0.00195
10.59	0.00194
10.67	0.00194
10.76	0.00192
10.84	0.00195
10.92	0.00195
11.01	0.00194
11.09	0.00194

<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
11.17	0.00193
11.26	0.00194
11.34	0.00194
11.42	0.00193
11.51	0.00193
11.59	0.00193
11.67	0.00191
11.76	0.00192
11.84	0.00192
11.84	0.00192
11.92	0.00191
12.01	0.00192
12.09	0.00191
12.17	0.00191
12.26	0.00190
12.34	0.00191
12.42	0.00190
12.51	0.00191
12.51	0.00191
12.67	0.00190
12.76	0.00190
12.76	0.00190
12.92	0.00190
13.01	0.00190
13.09	0.00189
13.17	0.00189
13.26	0.00188
13.34	0.00189
13.42	0.00188
13.51	0.00186
13.51	0.00187
13.59	0.00187
13.67	0.00187
13.76	0.00187
13.84	0.00187
13.92	0.00187
14.01	0.00187
14.09	0.00186
14.09	0.00186
14.17	0.00186
14.26	0.00186
14.26	0.00186
14.34	0.00186

<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
14.42	0.00186
14.51	0.00185
14.59	0.00185
14.67	0.00185
14.76	0.00185
14.84	0.00185
14.84	0.00184
15.01	0.00185
15.01	0.00185
15.09	0.00184
15.17	0.00184
15.26	0.00184
15.34	0.00184
15.42	0.00183
15.51	0.00183
15.51	0.00182
15.59	0.00183
15.67	0.00183
15.76	0.00182
15.84	0.00182
15.84	0.00182
15.92	0.00182
16.01	0.00181
16.09	0.00181
16.17	0.00181
16.17	0.00181
16.26	0.00180
16.34	0.00181
16.42	0.00181
16.51	0.00181
16.67	0.00180
16.67	0.00180
16.76	0.00180
16.84	0.00179
16.92	0.00180
17.01	0.00179
17.09	0.00179
17.17	0.00179
17.26	0.00178
17.34	0.00177
17.42	0.00178
17.42	0.00176
17.51	0.00176

<b>Time (h)</b>	<b>Permeate Flux (m/s)</b>
17.59	0.00176
17.59	0.00177
17.67	0.00177
17.76	0.00176
17.84	0.00176
17.92	0.00177
18.01	0.00176
18.09	0.00176
18.34	0.00232
18.42	0.00232
18.51	0.00232
18.59	0.00232
18.67	0.00230
18.76	0.00230
18.84	0.00230
18.92	0.00230
19.01	0.00228
19.09	0.00228
19.17	0.00228
19.26	0.00228

**Figure 6.3**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
DI Water	31.93
NaOH (pH 11)	59.22
500 mM NaCl (unadjusted pH)	65.16
10 mM SDS (pH 11)	82.10
2 mM EDTA (pH 11)	79.49

**Figure 6.4a**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	44.22
15 min	59.22

**Figure 6.4b**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	73.58
15 min	82.11

**Figure 6.4c**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
NaOH/EDTA	78.89
EDTA/NaOH	92.77
EDTA (pH 11)	79.49

**Figure 6.5a**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	44.22
15 min	59.22

**Figure 6.5b**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	56.99
15 min	77.42

**Figure 6.5c**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
NaOH/SDS	91.09
SDS/NaOH	78.21
SDS (pH 11)	82.00

**Figure 6.6a**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	44.22
15 min	59.22

**Figure 6.6b**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	58.00
15 min	65.16

**Figure 6.6c**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
NaOH/NaCl	78.89
NaCl/NaOH	91.21
NaCl (pH 11)	94.00

**Figure 6.7a**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	73.58
15 min	82.11

**Figure 6.7b**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	56.99
15 min	77.42

**Figure 6.7c**

<b>Cleaning Agent</b>	<b>Cleaning Efficiency (%)</b>
EDTA/SDS	54.37
SDS/EDTA	65.45
EDTA + SDS (pH 7)	74.00

**Figure 6.8a**

<b>Cleaning Time</b>	<b>Cleaning Efficiency (%)</b>
7.5 min	58.00
15 min	65.16

**Figure 6.8b**

Cleaning Time	Cleaning Efficiency (%)
7.5 min	56.99
15 min	77.42

**Figure 6.8c**

Cleaning Agent	Cleaning Efficiency (%)
NaCl/SDS	65.59
SDS/NaCl	70.11
NaCl + SDS (pH 7)	80.22

**Figure 6.9a**

Cleaning Time	Cleaning Efficiency (%)
7.5 min	58.00
15 min	65.16

**Figure 6.9b**

Cleaning Time	Cleaning Efficiency (%)
7.5 min	73.58
15 min	82.11

**Figure 6.9c**

Cleaning Agent	Cleaning Efficiency (%)
NaCl/EDTA	91.55
EDTA/NaCl	67.75
NaCl+EDTA (pH 7)	81.58

**Figure 6.10**

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3998.22658	3.70E-04	3998.22658	7.00E-05	3998.22658	-1.30E-04
3997.26223	5.00E-04	3997.26223	7.00E-05	3997.26223	-1.30E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3996.29787	4.60E-04	3996.29787	7.00E-05	3996.29787	-1.30E-04
3995.33351	2.40E-04	3995.33351	7.00E-05	3995.33351	-1.30E-04
3994.36915	4.00E-05	3994.36915	7.00E-05	3994.36915	-1.30E-04
3993.4048	1.60E-04	3993.4048	6.00E-05	3993.4048	-1.30E-04
3992.44044	4.90E-04	3992.44044	5.00E-05	3992.44044	-1.30E-04
3991.47608	6.70E-04	3991.47608	3.00E-05	3991.47608	-1.20E-04
3990.51172	6.10E-04	3990.51172	2.00E-05	3990.51172	-1.20E-04
3989.54737	4.50E-04	3989.54737	2.00E-05	3989.54737	-1.10E-04
3988.58301	3.00E-04	3988.58301	3.00E-05	3988.58301	-1.10E-04
3987.61865	1.70E-04	3987.61865	3.00E-05	3987.61865	-1.00E-04
3986.65429	1.60E-04	3986.65429	5.00E-05	3986.65429	-1.00E-04
3985.68994	3.10E-04	3985.68994	6.00E-05	3985.68994	-9.00E-05
3984.72558	4.10E-04	3984.72558	6.00E-05	3984.72558	-8.00E-05
3983.76122	3.60E-04	3983.76122	5.00E-05	3983.76122	-7.00E-05
3982.79686	3.00E-04	3982.79686	5.00E-05	3982.79686	-6.00E-05
3981.8325	2.90E-04	3981.8325	6.00E-05	3981.8325	-6.00E-05
3980.86815	2.00E-04	3980.86815	5.00E-05	3980.86815	-6.00E-05
3979.90379	1.30E-04	3979.90379	4.00E-05	3979.90379	-7.00E-05
3978.93943	1.10E-04	3978.93943	4.00E-05	3978.93943	-7.00E-05
3977.97507	9.00E-05	3977.97507	4.00E-05	3977.97507	-5.00E-05
3977.01072	1.30E-04	3977.01072	5.00E-05	3977.01072	-2.00E-05
3976.04636	2.30E-04	3976.04636	6.00E-05	3976.04636	0
3975.082	2.80E-04	3975.082	7.00E-05	3975.082	2.00E-05
3974.11764	2.90E-04	3974.11764	8.00E-05	3974.11764	3.00E-05
3973.15329	2.40E-04	3973.15329	7.00E-05	3973.15329	3.00E-05
3972.18893	2.40E-04	3972.18893	6.00E-05	3972.18893	1.00E-05
3971.22457	3.90E-04	3971.22457	4.00E-05	3971.22457	0
3970.26021	4.20E-04	3970.26021	3.00E-05	3970.26021	-1.00E-05
3969.29586	2.30E-04	3969.29586	2.00E-05	3969.29586	0
3968.3315	1.20E-04	3968.3315	3.00E-05	3968.3315	0
3967.36714	1.60E-04	3967.36714	4.00E-05	3967.36714	0
3966.40278	1.90E-04	3966.40278	6.00E-05	3966.40278	1.00E-05
3965.43843	2.00E-04	3965.43843	8.00E-05	3965.43843	1.00E-05
3964.47407	2.10E-04	3964.47407	1.00E-04	3964.47407	1.00E-05
3963.50971	1.40E-04	3963.50971	1.00E-04	3963.50971	1.00E-05
3962.54535	1.00E-05	3962.54535	8.00E-05	3962.54535	2.00E-05
3961.581	2.00E-05	3961.581	5.00E-05	3961.581	3.00E-05
3960.61664	1.50E-04	3960.61664	3.00E-05	3960.61664	5.00E-05
3959.65228	2.70E-04	3959.65228	2.00E-05	3959.65228	7.00E-05
3958.68792	2.60E-04	3958.68792	4.00E-05	3958.68792	9.00E-05
3957.72357	1.40E-04	3957.72357	7.00E-05	3957.72357	1.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3956.75921	7.00E-05	3956.75921	9.00E-05	3956.75921	1.00E-04
3955.79485	1.10E-04	3955.79485	1.10E-04	3955.79485	1.10E-04
3954.83049	1.60E-04	3954.83049	1.20E-04	3954.83049	1.20E-04
3953.86613	1.70E-04	3953.86613	1.20E-04	3953.86613	1.30E-04
3952.90178	2.60E-04	3952.90178	1.20E-04	3952.90178	1.30E-04
3951.93742	3.90E-04	3951.93742	1.20E-04	3951.93742	1.20E-04
3950.97306	4.10E-04	3950.97306	1.30E-04	3950.97306	1.20E-04
3950.0087	4.00E-04	3950.0087	1.20E-04	3950.0087	1.30E-04
3949.04435	4.70E-04	3949.04435	1.10E-04	3949.04435	1.40E-04
3948.07999	4.90E-04	3948.07999	8.00E-05	3948.07999	1.60E-04
3947.11563	3.80E-04	3947.11563	6.00E-05	3947.11563	1.80E-04
3946.15127	1.70E-04	3946.15127	6.00E-05	3946.15127	1.80E-04
3945.18692	0	3945.18692	6.00E-05	3945.18692	1.60E-04
3944.22256	1.00E-04	3944.22256	7.00E-05	3944.22256	1.50E-04
3943.2582	2.60E-04	3943.2582	7.00E-05	3943.2582	1.70E-04
3942.29384	2.70E-04	3942.29384	6.00E-05	3942.29384	1.90E-04
3941.32949	3.80E-04	3941.32949	5.00E-05	3941.32949	2.10E-04
3940.36513	5.80E-04	3940.36513	3.00E-05	3940.36513	2.30E-04
3939.40077	5.70E-04	3939.40077	2.00E-05	3939.40077	2.40E-04
3938.43641	4.00E-04	3938.43641	4.00E-05	3938.43641	2.20E-04
3937.47206	2.50E-04	3937.47206	5.00E-05	3937.47206	2.00E-04
3936.5077	1.80E-04	3936.5077	7.00E-05	3936.5077	1.80E-04
3935.54334	1.40E-04	3935.54334	9.00E-05	3935.54334	1.60E-04
3934.57898	2.40E-04	3934.57898	1.10E-04	3934.57898	1.40E-04
3933.61463	4.30E-04	3933.61463	1.20E-04	3933.61463	1.50E-04
3932.65027	5.40E-04	3932.65027	1.10E-04	3932.65027	1.80E-04
3931.68591	6.30E-04	3931.68591	1.00E-04	3931.68591	2.20E-04
3930.72155	6.50E-04	3930.72155	8.00E-05	3930.72155	2.70E-04
3929.75719	4.40E-04	3929.75719	5.00E-05	3929.75719	3.10E-04
3928.79284	1.80E-04	3928.79284	5.00E-05	3928.79284	3.10E-04
3927.82848	1.50E-04	3927.82848	7.00E-05	3927.82848	2.80E-04
3926.86412	2.90E-04	3926.86412	9.00E-05	3926.86412	2.50E-04
3925.89976	3.50E-04	3925.89976	1.00E-04	3925.89976	2.70E-04
3924.93541	2.10E-04	3924.93541	1.10E-04	3924.93541	3.00E-04
3923.97105	1.10E-04	3923.97105	1.10E-04	3923.97105	3.30E-04
3923.00669	2.40E-04	3923.00669	1.20E-04	3923.00669	3.30E-04
3922.04233	3.60E-04	3922.04233	1.20E-04	3922.04233	3.30E-04
3921.07798	2.80E-04	3921.07798	1.30E-04	3921.07798	3.30E-04
3920.11362	1.80E-04	3920.11362	1.40E-04	3920.11362	2.90E-04
3919.14926	4.00E-04	3919.14926	1.60E-04	3919.14926	2.80E-04
3918.1849	6.60E-04	3918.1849	1.50E-04	3918.1849	3.30E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3917.22055	4.50E-04	3917.22055	1.30E-04	3917.22055	3.90E-04
3916.25619	1.40E-04	3916.25619	1.20E-04	3916.25619	4.20E-04
3915.29183	1.70E-04	3915.29183	1.00E-04	3915.29183	4.30E-04
3914.32747	3.30E-04	3914.32747	8.00E-05	3914.32747	4.30E-04
3913.36312	4.40E-04	3913.36312	6.00E-05	3913.36312	4.20E-04
3912.39876	5.30E-04	3912.39876	6.00E-05	3912.39876	3.90E-04
3911.4344	6.00E-04	3911.4344	5.00E-05	3911.4344	3.60E-04
3910.47004	5.70E-04	3910.47004	4.00E-05	3910.47004	3.60E-04
3909.50569	3.80E-04	3909.50569	4.00E-05	3909.50569	3.50E-04
3908.54133	2.00E-04	3908.54133	7.00E-05	3908.54133	3.20E-04
3907.57697	2.90E-04	3907.57697	1.20E-04	3907.57697	2.80E-04
3906.61261	5.30E-04	3906.61261	1.70E-04	3906.61261	2.70E-04
3905.64825	7.10E-04	3905.64825	2.30E-04	3905.64825	3.00E-04
3904.6839	6.50E-04	3904.6839	2.70E-04	3904.6839	3.50E-04
3903.71954	6.00E-04	3903.71954	2.80E-04	3903.71954	4.10E-04
3902.75518	6.70E-04	3902.75518	2.80E-04	3902.75518	4.70E-04
3901.79082	5.80E-04	3901.79082	2.70E-04	3901.79082	5.00E-04
3900.82647	5.80E-04	3900.82647	2.40E-04	3900.82647	5.30E-04
3899.86211	6.60E-04	3899.86211	2.00E-04	3899.86211	5.70E-04
3898.89775	4.30E-04	3898.89775	1.40E-04	3898.89775	6.10E-04
3897.93339	2.10E-04	3897.93339	1.00E-04	3897.93339	6.30E-04
3896.96904	1.50E-04	3896.96904	7.00E-05	3896.96904	6.20E-04
3896.00468	1.70E-04	3896.00468	5.00E-05	3896.00468	5.90E-04
3895.04032	2.50E-04	3895.04032	7.00E-05	3895.04032	5.10E-04
3894.07596	3.80E-04	3894.07596	1.20E-04	3894.07596	3.90E-04
3893.11161	6.40E-04	3893.11161	1.60E-04	3893.11161	3.60E-04
3892.14725	8.10E-04	3892.14725	1.70E-04	3892.14725	4.30E-04
3891.18289	6.30E-04	3891.18289	1.70E-04	3891.18289	5.30E-04
3890.21853	4.40E-04	3890.21853	1.60E-04	3890.21853	6.20E-04
3889.25418	4.20E-04	3889.25418	1.60E-04	3889.25418	6.20E-04
3888.28982	4.70E-04	3888.28982	1.50E-04	3888.28982	5.60E-04
3887.32546	6.10E-04	3887.32546	1.50E-04	3887.32546	4.90E-04
3886.3611	6.60E-04	3886.3611	1.50E-04	3886.3611	4.50E-04
3885.39675	6.90E-04	3885.39675	1.30E-04	3885.39675	4.90E-04
3884.43239	9.90E-04	3884.43239	1.20E-04	3884.43239	5.60E-04
3883.46803	0.0012	3883.46803	1.40E-04	3883.46803	6.10E-04
3882.50367	0.00122	3882.50367	1.60E-04	3882.50367	6.20E-04
3881.53932	0.00108	3881.53932	1.80E-04	3881.53932	6.00E-04
3880.57496	5.60E-04	3880.57496	1.70E-04	3880.57496	5.90E-04
3879.6106	1.90E-04	3879.6106	1.40E-04	3879.6106	6.30E-04
3878.64624	3.70E-04	3878.64624	1.10E-04	3878.64624	6.80E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3877.68188	5.60E-04	3877.68188	1.10E-04	3877.68188	6.80E-04
3876.71753	5.80E-04	3876.71753	1.40E-04	3876.71753	6.30E-04
3875.75317	5.70E-04	3875.75317	1.70E-04	3875.75317	5.90E-04
3874.78881	3.40E-04	3874.78881	1.80E-04	3874.78881	6.00E-04
3873.82445	7.00E-05	3873.82445	1.70E-04	3873.82445	6.30E-04
3872.8601	2.80E-04	3872.8601	1.80E-04	3872.8601	6.20E-04
3871.89574	6.80E-04	3871.89574	1.80E-04	3871.89574	6.20E-04
3870.93138	7.50E-04	3870.93138	1.50E-04	3870.93138	6.70E-04
3869.96702	3.50E-04	3869.96702	1.30E-04	3869.96702	7.40E-04
3869.00267	1.80E-04	3869.00267	1.30E-04	3869.00267	7.70E-04
3868.03831	5.10E-04	3868.03831	1.40E-04	3868.03831	7.70E-04
3867.07395	8.60E-04	3867.07395	1.50E-04	3867.07395	7.70E-04
3866.10959	8.40E-04	3866.10959	1.80E-04	3866.10959	7.40E-04
3865.14524	3.70E-04	3865.14524	2.40E-04	3865.14524	6.60E-04
3864.18088	1.90E-04	3864.18088	2.50E-04	3864.18088	6.20E-04
3863.21652	4.40E-04	3863.21652	2.10E-04	3863.21652	6.70E-04
3862.25216	4.10E-04	3862.25216	1.40E-04	3862.25216	7.60E-04
3861.28781	2.20E-04	3861.28781	9.00E-05	3861.28781	7.80E-04
3860.32345	3.30E-04	3860.32345	8.00E-05	3860.32345	7.40E-04
3859.35909	4.70E-04	3859.35909	7.00E-05	3859.35909	7.30E-04
3858.39473	4.50E-04	3858.39473	1.10E-04	3858.39473	7.40E-04
3857.43038	4.00E-04	3857.43038	2.00E-04	3857.43038	6.10E-04
3856.46602	5.50E-04	3856.46602	3.00E-04	3856.46602	4.20E-04
3855.50166	7.70E-04	3855.50166	3.60E-04	3855.50166	3.60E-04
3854.5373	5.20E-04	3854.5373	3.70E-04	3854.5373	4.60E-04
3853.57294	2.50E-04	3853.57294	3.30E-04	3853.57294	6.50E-04
3852.60859	6.00E-04	3852.60859	2.60E-04	3852.60859	8.80E-04
3851.64423	8.30E-04	3851.64423	1.60E-04	3851.64423	0.0011
3850.67987	9.20E-04	3850.67987	8.00E-05	3850.67987	0.00121
3849.71551	7.20E-04	3849.71551	5.00E-05	3849.71551	0.0011
3848.75116	3.00E-04	3848.75116	5.00E-05	3848.75116	9.00E-04
3847.7868	1.50E-04	3847.7868	7.00E-05	3847.7868	7.60E-04
3846.82244	2.50E-04	3846.82244	1.00E-04	3846.82244	6.70E-04
3845.85808	3.00E-04	3845.85808	1.30E-04	3845.85808	6.20E-04
3844.89373	2.70E-04	3844.89373	1.60E-04	3844.89373	6.30E-04
3843.92937	2.40E-04	3843.92937	2.00E-04	3843.92937	6.20E-04
3842.96501	4.30E-04	3842.96501	2.30E-04	3842.96501	6.40E-04
3842.00065	7.80E-04	3842.00065	2.60E-04	3842.00065	6.60E-04
3841.0363	9.00E-04	3841.0363	3.00E-04	3841.0363	6.50E-04
3840.07194	8.10E-04	3840.07194	3.10E-04	3840.07194	6.40E-04
3839.10758	7.80E-04	3839.10758	3.00E-04	3839.10758	6.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3838.14322	5.40E-04	3838.14322	2.60E-04	3838.14322	7.50E-04
3837.17887	4.60E-04	3837.17887	2.20E-04	3837.17887	8.20E-04
3836.21451	7.60E-04	3836.21451	1.70E-04	3836.21451	8.80E-04
3835.25015	6.80E-04	3835.25015	1.40E-04	3835.25015	9.10E-04
3834.28579	4.00E-04	3834.28579	1.50E-04	3834.28579	8.80E-04
3833.32144	5.40E-04	3833.32144	1.70E-04	3833.32144	8.00E-04
3832.35708	7.50E-04	3832.35708	1.60E-04	3832.35708	7.70E-04
3831.39272	7.10E-04	3831.39272	1.40E-04	3831.39272	7.80E-04
3830.42836	7.10E-04	3830.42836	1.30E-04	3830.42836	7.60E-04
3829.46401	7.60E-04	3829.46401	1.10E-04	3829.46401	7.10E-04
3828.49965	7.00E-04	3828.49965	1.10E-04	3828.49965	6.90E-04
3827.53529	6.30E-04	3827.53529	1.10E-04	3827.53529	6.90E-04
3826.57093	6.20E-04	3826.57093	1.10E-04	3826.57093	6.80E-04
3825.60657	5.90E-04	3825.60657	1.10E-04	3825.60657	6.80E-04
3824.64222	4.50E-04	3824.64222	1.60E-04	3824.64222	6.30E-04
3823.67786	3.80E-04	3823.67786	2.10E-04	3823.67786	5.40E-04
3822.7135	5.50E-04	3822.7135	2.50E-04	3822.7135	5.00E-04
3821.74914	6.80E-04	3821.74914	2.40E-04	3821.74914	5.50E-04
3820.78479	5.50E-04	3820.78479	2.10E-04	3820.78479	6.60E-04
3819.82043	5.70E-04	3819.82043	1.80E-04	3819.82043	7.40E-04
3818.85607	7.20E-04	3818.85607	1.70E-04	3818.85607	7.50E-04
3817.89171	8.40E-04	3817.89171	1.50E-04	3817.89171	7.20E-04
3816.92736	7.80E-04	3816.92736	1.60E-04	3816.92736	6.90E-04
3815.963	5.10E-04	3815.963	1.60E-04	3815.963	6.70E-04
3814.99864	4.90E-04	3814.99864	1.30E-04	3814.99864	7.20E-04
3814.03428	6.20E-04	3814.03428	8.00E-05	3814.03428	8.00E-04
3813.06993	6.60E-04	3813.06993	4.00E-05	3813.06993	8.60E-04
3812.10557	7.40E-04	3812.10557	4.00E-05	3812.10557	8.20E-04
3811.14121	7.30E-04	3811.14121	8.00E-05	3811.14121	6.90E-04
3810.17685	6.40E-04	3810.17685	1.30E-04	3810.17685	5.40E-04
3809.2125	7.10E-04	3809.2125	1.60E-04	3809.2125	4.70E-04
3808.24814	8.70E-04	3808.24814	1.60E-04	3808.24814	5.00E-04
3807.28378	7.70E-04	3807.28378	1.50E-04	3807.28378	5.90E-04
3806.31942	6.30E-04	3806.31942	1.30E-04	3806.31942	6.90E-04
3805.35507	7.90E-04	3805.35507	1.40E-04	3805.35507	7.40E-04
3804.39071	9.30E-04	3804.39071	1.70E-04	3804.39071	7.00E-04
3803.42635	9.50E-04	3803.42635	2.10E-04	3803.42635	6.40E-04
3802.46199	9.50E-04	3802.46199	2.40E-04	3802.46199	6.00E-04
3801.49763	7.50E-04	3801.49763	2.40E-04	3801.49763	6.40E-04
3800.53328	6.20E-04	3800.53328	2.10E-04	3800.53328	7.30E-04
3799.56892	7.00E-04	3799.56892	1.80E-04	3799.56892	8.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3798.60456	7.10E-04	3798.60456	1.50E-04	3798.60456	8.50E-04
3797.6402	6.50E-04	3797.6402	1.40E-04	3797.6402	8.20E-04
3796.67585	6.40E-04	3796.67585	1.40E-04	3796.67585	7.50E-04
3795.71149	6.60E-04	3795.71149	1.30E-04	3795.71149	7.10E-04
3794.74713	7.10E-04	3794.74713	9.00E-05	3794.74713	7.30E-04
3793.78277	7.20E-04	3793.78277	5.00E-05	3793.78277	7.40E-04
3792.81842	7.10E-04	3792.81842	3.00E-05	3792.81842	7.00E-04
3791.85406	5.70E-04	3791.85406	3.00E-05	3791.85406	6.30E-04
3790.8897	3.20E-04	3790.8897	3.00E-05	3790.8897	5.90E-04
3789.92534	2.10E-04	3789.92534	2.00E-05	3789.92534	5.90E-04
3788.96099	2.60E-04	3788.96099	3.00E-05	3788.96099	6.10E-04
3787.99663	3.50E-04	3787.99663	5.00E-05	3787.99663	6.10E-04
3787.03227	4.60E-04	3787.03227	8.00E-05	3787.03227	6.00E-04
3786.06791	4.80E-04	3786.06791	1.10E-04	3786.06791	6.10E-04
3785.10356	4.20E-04	3785.10356	1.30E-04	3785.10356	6.30E-04
3784.1392	4.60E-04	3784.1392	1.30E-04	3784.1392	6.40E-04
3783.17484	5.40E-04	3783.17484	1.20E-04	3783.17484	6.30E-04
3782.21048	5.30E-04	3782.21048	1.10E-04	3782.21048	6.00E-04
3781.24613	4.80E-04	3781.24613	1.00E-04	3781.24613	5.80E-04
3780.28177	4.10E-04	3780.28177	9.00E-05	3780.28177	5.80E-04
3779.31741	3.00E-04	3779.31741	8.00E-05	3779.31741	6.00E-04
3778.35305	3.20E-04	3778.35305	5.00E-05	3778.35305	6.40E-04
3777.38869	3.80E-04	3777.38869	2.00E-05	3777.38869	6.70E-04
3776.42434	4.30E-04	3776.42434	1.00E-05	3776.42434	6.80E-04
3775.45998	5.00E-04	3775.45998	2.00E-05	3775.45998	6.50E-04
3774.49562	4.80E-04	3774.49562	5.00E-05	3774.49562	6.00E-04
3773.53126	4.10E-04	3773.53126	1.00E-04	3773.53126	5.50E-04
3772.56691	4.50E-04	3772.56691	1.40E-04	3772.56691	5.20E-04
3771.60255	5.40E-04	3771.60255	1.60E-04	3771.60255	5.30E-04
3770.63819	4.90E-04	3770.63819	1.60E-04	3770.63819	5.90E-04
3769.67383	3.80E-04	3769.67383	1.60E-04	3769.67383	6.40E-04
3768.70948	5.20E-04	3768.70948	1.50E-04	3768.70948	6.50E-04
3767.74512	7.50E-04	3767.74512	1.30E-04	3767.74512	6.60E-04
3766.78076	8.10E-04	3766.78076	1.00E-04	3766.78076	6.80E-04
3765.8164	6.60E-04	3765.8164	9.00E-05	3765.8164	6.70E-04
3764.85205	6.70E-04	3764.85205	7.00E-05	3764.85205	6.30E-04
3763.88769	8.20E-04	3763.88769	7.00E-05	3763.88769	6.20E-04
3762.92333	7.60E-04	3762.92333	9.00E-05	3762.92333	6.00E-04
3761.95897	6.80E-04	3761.95897	1.20E-04	3761.95897	5.50E-04
3760.99462	7.30E-04	3760.99462	1.50E-04	3760.99462	5.10E-04
3760.03026	7.20E-04	3760.03026	1.70E-04	3760.03026	5.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3759.0659	7.60E-04	3759.0659	1.70E-04	3759.0659	5.40E-04
3758.10154	8.50E-04	3758.10154	1.40E-04	3758.10154	6.10E-04
3757.13719	7.60E-04	3757.13719	1.20E-04	3757.13719	6.80E-04
3756.17283	6.60E-04	3756.17283	1.30E-04	3756.17283	6.80E-04
3755.20847	6.80E-04	3755.20847	1.90E-04	3755.20847	5.60E-04
3754.24411	6.70E-04	3754.24411	2.40E-04	3754.24411	4.70E-04
3753.27976	6.20E-04	3753.27976	3.10E-04	3753.27976	4.80E-04
3752.3154	5.70E-04	3752.3154	3.90E-04	3752.3154	4.90E-04
3751.35104	8.20E-04	3751.35104	4.10E-04	3751.35104	5.40E-04
3750.38668	9.70E-04	3750.38668	3.40E-04	3750.38668	7.20E-04
3749.42232	4.60E-04	3749.42232	2.50E-04	3749.42232	9.40E-04
3748.45797	2.90E-04	3748.45797	2.30E-04	3748.45797	9.70E-04
3747.49361	7.70E-04	3747.49361	2.80E-04	3747.49361	7.30E-04
3746.52925	0.00113	3746.52925	3.00E-04	3746.52925	5.60E-04
3745.56489	9.10E-04	3745.56489	3.00E-04	3745.56489	5.50E-04
3744.60054	0	3744.60054	2.90E-04	3744.60054	5.90E-04
3743.63618	5.00E-05	3743.63618	2.40E-04	3743.63618	6.80E-04
3742.67182	7.60E-04	3742.67182	1.60E-04	3742.67182	8.40E-04
3741.70746	9.80E-04	3741.70746	9.00E-05	3741.70746	9.80E-04
3740.74311	8.80E-04	3740.74311	1.10E-04	3740.74311	9.30E-04
3739.77875	8.50E-04	3739.77875	1.90E-04	3739.77875	6.80E-04
3738.81439	9.00E-04	3738.81439	2.60E-04	3738.81439	5.00E-04
3737.85003	9.80E-04	3737.85003	3.20E-04	3737.85003	4.60E-04
3736.88568	9.90E-04	3736.88568	3.60E-04	3736.88568	5.10E-04
3735.92132	8.10E-04	3735.92132	4.00E-04	3735.92132	6.00E-04
3734.95696	6.00E-04	3734.95696	4.00E-04	3734.95696	6.70E-04
3733.9926	8.40E-04	3733.9926	3.60E-04	3733.9926	7.30E-04
3733.02825	0.00106	3733.02825	2.80E-04	3733.02825	7.90E-04
3732.06389	7.50E-04	3732.06389	1.90E-04	3732.06389	8.10E-04
3731.09953	6.10E-04	3731.09953	1.30E-04	3731.09953	7.70E-04
3730.13517	7.90E-04	3730.13517	1.00E-04	3730.13517	7.00E-04
3729.17082	8.80E-04	3729.17082	1.10E-04	3729.17082	6.50E-04
3728.20646	8.90E-04	3728.20646	1.40E-04	3728.20646	6.10E-04
3727.2421	8.20E-04	3727.2421	1.70E-04	3727.2421	5.80E-04
3726.27774	6.70E-04	3726.27774	1.90E-04	3726.27774	5.90E-04
3725.31338	7.20E-04	3725.31338	2.00E-04	3725.31338	6.30E-04
3724.34903	9.20E-04	3724.34903	1.90E-04	3724.34903	6.70E-04
3723.38467	9.50E-04	3723.38467	1.80E-04	3723.38467	7.10E-04
3722.42031	7.40E-04	3722.42031	1.90E-04	3722.42031	7.00E-04
3721.45595	6.40E-04	3721.45595	1.90E-04	3721.45595	6.70E-04
3720.4916	7.30E-04	3720.4916	1.60E-04	3720.4916	6.60E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3719.52724	6.80E-04	3719.52724	1.10E-04	3719.52724	6.60E-04
3718.56288	4.80E-04	3718.56288	8.00E-05	3718.56288	6.50E-04
3717.59852	3.40E-04	3717.59852	6.00E-05	3717.59852	6.10E-04
3716.63417	2.80E-04	3716.63417	7.00E-05	3716.63417	5.80E-04
3715.66981	2.80E-04	3715.66981	1.20E-04	3715.66981	5.30E-04
3714.70545	4.10E-04	3714.70545	2.10E-04	3714.70545	4.60E-04
3713.74109	6.10E-04	3713.74109	2.70E-04	3713.74109	4.50E-04
3712.77674	6.00E-04	3712.77674	3.10E-04	3712.77674	5.00E-04
3711.81238	4.40E-04	3711.81238	3.10E-04	3711.81238	5.70E-04
3710.84802	5.80E-04	3710.84802	2.80E-04	3710.84802	6.60E-04
3709.88366	6.10E-04	3709.88366	2.10E-04	3709.88366	7.60E-04
3708.91931	4.40E-04	3708.91931	1.50E-04	3708.91931	8.20E-04
3707.95495	5.60E-04	3707.95495	1.10E-04	3707.95495	7.80E-04
3706.99059	8.10E-04	3706.99059	8.00E-05	3706.99059	7.00E-04
3706.02623	8.90E-04	3706.02623	7.00E-05	3706.02623	6.60E-04
3705.06188	8.60E-04	3705.06188	8.00E-05	3705.06188	6.00E-04
3704.09752	8.80E-04	3704.09752	1.00E-04	3704.09752	5.40E-04
3703.13316	9.50E-04	3703.13316	1.20E-04	3703.13316	5.50E-04
3702.1688	8.40E-04	3702.1688	1.20E-04	3702.1688	6.00E-04
3701.20445	6.40E-04	3701.20445	1.10E-04	3701.20445	6.50E-04
3700.24009	6.60E-04	3700.24009	9.00E-05	3700.24009	6.80E-04
3699.27573	6.70E-04	3699.27573	7.00E-05	3699.27573	7.00E-04
3698.31137	5.50E-04	3698.31137	5.00E-05	3698.31137	6.90E-04
3697.34701	5.30E-04	3697.34701	5.00E-05	3697.34701	6.50E-04
3696.38266	6.60E-04	3696.38266	5.00E-05	3696.38266	6.00E-04
3695.4183	6.90E-04	3695.4183	7.00E-05	3695.4183	5.80E-04
3694.45394	6.10E-04	3694.45394	1.10E-04	3694.45394	5.40E-04
3693.48958	5.60E-04	3693.48958	1.60E-04	3693.48958	5.10E-04
3692.52523	6.20E-04	3692.52523	2.20E-04	3692.52523	5.10E-04
3691.56087	7.10E-04	3691.56087	2.90E-04	3691.56087	4.90E-04
3690.59651	8.10E-04	3690.59651	3.10E-04	3690.59651	5.00E-04
3689.63215	8.40E-04	3689.63215	2.80E-04	3689.63215	5.80E-04
3688.6678	5.00E-04	3688.6678	2.20E-04	3688.6678	7.10E-04
3687.70344	2.50E-04	3687.70344	1.60E-04	3687.70344	7.80E-04
3686.73908	4.60E-04	3686.73908	1.10E-04	3686.73908	8.00E-04
3685.77472	6.20E-04	3685.77472	6.00E-05	3685.77472	7.90E-04
3684.81037	7.30E-04	3684.81037	4.00E-05	3684.81037	7.50E-04
3683.84601	9.40E-04	3683.84601	6.00E-05	3683.84601	6.50E-04
3682.88165	0.00104	3682.88165	8.00E-05	3682.88165	5.50E-04
3681.91729	9.90E-04	3681.91729	9.00E-05	3681.91729	5.30E-04
3680.95294	9.90E-04	3680.95294	1.20E-04	3680.95294	5.60E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3679.98858	0.00102	3679.98858	1.70E-04	3679.98858	5.80E-04
3679.02422	9.70E-04	3679.02422	2.50E-04	3679.02422	5.10E-04
3678.05986	9.60E-04	3678.05986	3.30E-04	3678.05986	4.10E-04
3677.09551	8.90E-04	3677.09551	3.70E-04	3677.09551	4.00E-04
3676.13115	6.20E-04	3676.13115	3.50E-04	3676.13115	5.10E-04
3675.16679	5.00E-04	3675.16679	3.10E-04	3675.16679	6.40E-04
3674.20243	7.20E-04	3674.20243	2.70E-04	3674.20243	7.20E-04
3673.23807	9.50E-04	3673.23807	2.30E-04	3673.23807	7.60E-04
3672.27372	0.00106	3672.27372	2.20E-04	3672.27372	7.70E-04
3671.30936	9.00E-04	3671.30936	2.50E-04	3671.30936	7.10E-04
3670.345	8.40E-04	3670.345	2.70E-04	3670.345	6.60E-04
3669.38064	0.00114	3669.38064	2.50E-04	3669.38064	7.30E-04
3668.41629	0.00114	3668.41629	1.90E-04	3668.41629	8.40E-04
3667.45193	8.80E-04	3667.45193	1.40E-04	3667.45193	9.00E-04
3666.48757	8.10E-04	3666.48757	1.00E-04	3666.48757	8.40E-04
3665.52321	9.40E-04	3665.52321	1.00E-04	3665.52321	7.30E-04
3664.55886	0.00107	3664.55886	1.00E-04	3664.55886	6.40E-04
3663.5945	0.00102	3663.5945	1.10E-04	3663.5945	5.90E-04
3662.63014	8.80E-04	3662.63014	1.20E-04	3662.63014	5.70E-04
3661.66578	8.60E-04	3661.66578	1.30E-04	3661.66578	5.80E-04
3660.70143	9.60E-04	3660.70143	1.50E-04	3660.70143	5.80E-04
3659.73707	0.00108	3659.73707	1.90E-04	3659.73707	5.40E-04
3658.77271	0.00115	3658.77271	2.30E-04	3658.77271	4.90E-04
3657.80835	0.00124	3657.80835	2.40E-04	3657.80835	5.00E-04
3656.844	0.00113	3656.844	2.30E-04	3656.844	5.60E-04
3655.87964	9.20E-04	3655.87964	2.10E-04	3655.87964	6.30E-04
3654.91528	0.00101	3654.91528	2.10E-04	3654.91528	6.80E-04
3653.95092	0.00119	3653.95092	2.30E-04	3653.95092	6.70E-04
3652.98657	0.00129	3652.98657	3.00E-04	3652.98657	6.10E-04
3652.02221	0.00145	3652.02221	3.90E-04	3652.02221	5.40E-04
3651.05785	0.00174	3651.05785	4.60E-04	3651.05785	5.30E-04
3650.09349	0.00198	3650.09349	5.10E-04	3650.09349	6.10E-04
3649.12913	0.00201	3649.12913	5.00E-04	3649.12913	7.50E-04
3648.16478	0.00194	3648.16478	4.40E-04	3648.16478	9.20E-04
3647.20042	0.00168	3647.20042	3.50E-04	3647.20042	0.00101
3646.23606	0.00143	3646.23606	2.80E-04	3646.23606	1.00E-03
3645.2717	0.00144	3645.2717	2.20E-04	3645.2717	9.20E-04
3644.30735	0.0015	3644.30735	1.80E-04	3644.30735	8.30E-04
3643.34299	0.00148	3643.34299	1.60E-04	3643.34299	7.50E-04
3642.37863	0.00144	3642.37863	1.80E-04	3642.37863	6.70E-04
3641.41427	0.00142	3641.41427	1.90E-04	3641.41427	6.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3640.44992	0.00139	3640.44992	1.90E-04	3640.44992	6.40E-04
3639.48556	0.00138	3639.48556	1.80E-04	3639.48556	6.60E-04
3638.5212	0.0014	3638.5212	1.70E-04	3638.5212	6.70E-04
3637.55684	0.00141	3637.55684	1.80E-04	3637.55684	6.70E-04
3636.59249	0.00146	3636.59249	2.00E-04	3636.59249	6.50E-04
3635.62813	0.00157	3635.62813	2.20E-04	3635.62813	6.40E-04
3634.66377	0.00162	3634.66377	2.40E-04	3634.66377	6.50E-04
3633.69941	0.00151	3633.69941	2.60E-04	3633.69941	6.70E-04
3632.73506	0.00147	3632.73506	3.10E-04	3632.73506	6.30E-04
3631.7707	0.00163	3631.7707	3.70E-04	3631.7707	5.50E-04
3630.80634	0.00175	3630.80634	4.10E-04	3630.80634	5.40E-04
3629.84198	0.00154	3629.84198	4.30E-04	3629.84198	6.10E-04
3628.87763	0.00122	3628.87763	4.20E-04	3628.87763	7.10E-04
3627.91327	0.00136	3627.91327	3.80E-04	3627.91327	8.30E-04
3626.94891	0.00154	3626.94891	3.10E-04	3626.94891	9.40E-04
3625.98455	0.00146	3625.98455	2.60E-04	3625.98455	9.80E-04
3625.0202	0.00144	3625.0202	2.50E-04	3625.0202	8.90E-04
3624.05584	0.00165	3624.05584	2.80E-04	3624.05584	7.40E-04
3623.09148	0.00187	3623.09148	3.10E-04	3623.09148	6.30E-04
3622.12712	0.00199	3622.12712	3.60E-04	3622.12712	5.70E-04
3621.16276	0.002	3621.16276	4.20E-04	3621.16276	5.60E-04
3620.19841	0.00185	3620.19841	4.40E-04	3620.19841	6.00E-04
3619.23405	0.00165	3619.23405	4.40E-04	3619.23405	6.80E-04
3618.26969	0.00155	3618.26969	4.30E-04	3618.26969	7.70E-04
3617.30533	0.00153	3617.30533	4.10E-04	3617.30533	8.40E-04
3616.34098	0.0016	3616.34098	4.00E-04	3616.34098	8.50E-04
3615.37662	0.00174	3615.37662	4.00E-04	3615.37662	8.10E-04
3614.41226	0.00198	3614.41226	4.00E-04	3614.41226	7.80E-04
3613.4479	0.00214	3613.4479	3.90E-04	3613.4479	7.70E-04
3612.48355	0.00193	3612.48355	3.80E-04	3612.48355	7.60E-04
3611.51919	0.00186	3611.51919	3.80E-04	3611.51919	7.60E-04
3610.55483	0.00211	3610.55483	3.70E-04	3610.55483	7.80E-04
3609.59047	0.00208	3609.59047	3.80E-04	3609.59047	8.00E-04
3608.62612	0.00188	3608.62612	3.80E-04	3608.62612	8.10E-04
3607.66176	0.00196	3607.66176	3.60E-04	3607.66176	8.30E-04
3606.6974	0.00207	3606.6974	3.20E-04	3606.6974	8.60E-04
3605.73304	0.00203	3605.73304	2.90E-04	3605.73304	8.90E-04
3604.76869	0.00198	3604.76869	3.00E-04	3604.76869	8.60E-04
3603.80433	0.00201	3603.80433	3.20E-04	3603.80433	8.20E-04
3602.83997	0.00218	3602.83997	3.40E-04	3602.83997	8.10E-04
3601.87561	0.0024	3601.87561	3.50E-04	3601.87561	8.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3600.91126	0.00243	3600.91126	3.60E-04	3600.91126	8.10E-04
3599.9469	0.00231	3599.9469	3.50E-04	3599.9469	8.20E-04
3598.98254	0.00224	3598.98254	3.40E-04	3598.98254	8.20E-04
3598.01818	0.00233	3598.01818	3.50E-04	3598.01818	8.10E-04
3597.05382	0.00256	3597.05382	3.70E-04	3597.05382	8.10E-04
3596.08947	0.00261	3596.08947	3.90E-04	3596.08947	8.10E-04
3595.12511	0.00243	3595.12511	3.90E-04	3595.12511	8.30E-04
3594.16075	0.0023	3594.16075	3.80E-04	3594.16075	8.50E-04
3593.19639	0.00226	3593.19639	3.60E-04	3593.19639	8.70E-04
3592.23204	0.00233	3592.23204	3.60E-04	3592.23204	8.50E-04
3591.26768	0.00247	3591.26768	3.80E-04	3591.26768	8.10E-04
3590.30332	0.00252	3590.30332	4.10E-04	3590.30332	7.70E-04
3589.33896	0.00245	3589.33896	4.50E-04	3589.33896	7.70E-04
3588.37461	0.00244	3588.37461	4.60E-04	3588.37461	8.20E-04
3587.41025	0.00246	3587.41025	4.30E-04	3587.41025	9.00E-04
3586.44589	0.00218	3586.44589	3.90E-04	3586.44589	9.90E-04
3585.48153	0.00193	3585.48153	3.50E-04	3585.48153	0.00103
3584.51718	0.00203	3584.51718	3.20E-04	3584.51718	0.00101
3583.55282	0.00216	3583.55282	3.10E-04	3583.55282	9.50E-04
3582.58846	0.00204	3582.58846	3.20E-04	3582.58846	8.70E-04
3581.6241	0.00188	3581.6241	3.40E-04	3581.6241	8.10E-04
3580.65975	0.002	3580.65975	3.50E-04	3580.65975	7.90E-04
3579.69539	0.00231	3579.69539	3.60E-04	3579.69539	8.00E-04
3578.73103	0.00257	3578.73103	3.60E-04	3578.73103	8.10E-04
3577.76667	0.00263	3577.76667	3.60E-04	3577.76667	8.20E-04
3576.80232	0.00252	3576.80232	3.60E-04	3576.80232	8.20E-04
3575.83796	0.00241	3575.83796	3.50E-04	3575.83796	8.30E-04
3574.8736	0.00238	3574.8736	3.50E-04	3574.8736	8.30E-04
3573.90924	0.00234	3573.90924	3.50E-04	3573.90924	8.30E-04
3572.94489	0.00228	3572.94489	3.50E-04	3572.94489	8.40E-04
3571.98053	0.00225	3571.98053	3.60E-04	3571.98053	8.50E-04
3571.01617	0.00231	3571.01617	4.00E-04	3571.01617	8.50E-04
3570.05181	0.00248	3570.05181	4.60E-04	3570.05181	8.40E-04
3569.08745	0.00272	3569.08745	5.00E-04	3569.08745	8.50E-04
3568.1231	0.00292	3568.1231	5.30E-04	3568.1231	8.90E-04
3567.15874	0.00303	3567.15874	5.30E-04	3567.15874	9.50E-04
3566.19438	0.00299	3566.19438	5.10E-04	3566.19438	0.00101
3565.23002	0.00292	3565.23002	4.90E-04	3565.23002	0.00105
3564.26567	0.00288	3564.26567	4.60E-04	3564.26567	0.00105
3563.30131	0.00274	3563.30131	4.50E-04	3563.30131	0.00102
3562.33695	0.00256	3562.33695	4.50E-04	3562.33695	9.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3561.37259	0.00255	3561.37259	4.50E-04	3561.37259	9.40E-04
3560.40824	0.00265	3560.40824	4.50E-04	3560.40824	9.40E-04
3559.44388	0.00269	3559.44388	4.40E-04	3559.44388	9.40E-04
3558.47952	0.00259	3558.47952	4.30E-04	3558.47952	9.40E-04
3557.51516	0.00242	3557.51516	4.10E-04	3557.51516	9.30E-04
3556.55081	0.00235	3556.55081	4.10E-04	3556.55081	9.20E-04
3555.58645	0.00243	3555.58645	4.20E-04	3555.58645	9.10E-04
3554.62209	0.0026	3554.62209	4.30E-04	3554.62209	9.10E-04
3553.65773	0.00283	3553.65773	4.50E-04	3553.65773	9.20E-04
3552.69338	0.00301	3552.69338	4.60E-04	3552.69338	9.50E-04
3551.72902	0.00303	3551.72902	4.70E-04	3551.72902	9.80E-04
3550.76466	0.00303	3550.76466	4.70E-04	3550.76466	9.90E-04
3549.8003	0.00308	3549.8003	4.70E-04	3549.8003	9.70E-04
3548.83595	0.00313	3548.83595	4.80E-04	3548.83595	9.40E-04
3547.87159	0.00327	3547.87159	5.00E-04	3547.87159	9.10E-04
3546.90723	0.0035	3546.90723	5.10E-04	3546.90723	9.10E-04
3545.94287	0.00359	3545.94287	5.10E-04	3545.94287	9.40E-04
3544.97851	0.00341	3544.97851	5.00E-04	3544.97851	9.90E-04
3544.01416	0.00311	3544.01416	4.80E-04	3544.01416	0.00104
3543.0498	0.00293	3543.0498	4.60E-04	3543.0498	0.00107
3542.08544	0.00296	3542.08544	4.60E-04	3542.08544	0.00107
3541.12108	0.00308	3541.12108	4.70E-04	3541.12108	0.00106
3540.15673	0.00309	3540.15673	5.00E-04	3540.15673	0.00105
3539.19237	0.00305	3539.19237	5.30E-04	3539.19237	0.00103
3538.22801	0.00317	3538.22801	5.60E-04	3538.22801	0.00102
3537.26365	0.00345	3537.26365	5.70E-04	3537.26365	0.00102
3536.2993	0.00368	3536.2993	5.60E-04	3536.2993	0.00102
3535.33494	0.00366	3535.33494	5.30E-04	3535.33494	0.00104
3534.37058	0.00349	3534.37058	5.00E-04	3534.37058	0.00106
3533.40622	0.00344	3533.40622	4.80E-04	3533.40622	0.00108
3532.44187	0.00352	3532.44187	4.90E-04	3532.44187	0.00108
3531.47751	0.00354	3531.47751	5.20E-04	3531.47751	0.00106
3530.51315	0.00355	3530.51315	5.60E-04	3530.51315	0.00105
3529.54879	0.00357	3529.54879	5.80E-04	3529.54879	0.00104
3528.58444	0.0035	3528.58444	5.90E-04	3528.58444	0.00104
3527.62008	0.00339	3527.62008	5.80E-04	3527.62008	0.00104
3526.65572	0.0034	3526.65572	5.80E-04	3526.65572	0.00105
3525.69136	0.00358	3525.69136	5.70E-04	3525.69136	0.00105
3524.72701	0.00377	3524.72701	5.70E-04	3524.72701	0.00105
3523.76265	0.00382	3523.76265	5.60E-04	3523.76265	0.00105
3522.79829	0.00386	3522.79829	5.50E-04	3522.79829	0.00104

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3521.83393	0.004	3521.83393	5.30E-04	3521.83393	0.00104
3520.86958	0.00404	3520.86958	5.30E-04	3520.86958	0.00105
3519.90522	0.00383	3519.90522	5.50E-04	3519.90522	0.00107
3518.94086	0.00366	3518.94086	5.80E-04	3518.94086	0.00108
3517.9765	0.00373	3517.9765	6.10E-04	3517.9765	0.0011
3517.01214	0.00391	3517.01214	6.30E-04	3517.01214	0.00111
3516.04779	0.00406	3516.04779	6.40E-04	3516.04779	0.00112
3515.08343	0.00414	3515.08343	6.30E-04	3515.08343	0.00111
3514.11907	0.00412	3514.11907	6.30E-04	3514.11907	0.00111
3513.15471	0.00399	3513.15471	6.40E-04	3513.15471	0.00112
3512.19036	0.00393	3512.19036	6.50E-04	3512.19036	0.00112
3511.226	0.00415	3511.226	6.60E-04	3511.226	0.00113
3510.26164	0.00442	3510.26164	6.60E-04	3510.26164	0.00114
3509.29728	0.00439	3509.29728	6.60E-04	3509.29728	0.00115
3508.33293	0.00425	3508.33293	6.50E-04	3508.33293	0.00116
3507.36857	0.00423	3507.36857	6.60E-04	3507.36857	0.00116
3506.40421	0.00424	3506.40421	6.80E-04	3506.40421	0.00116
3505.43985	0.00427	3505.43985	7.20E-04	3505.43985	0.00114
3504.4755	0.00427	3504.4755	7.40E-04	3504.4755	0.00113
3503.51114	0.00415	3503.51114	7.40E-04	3503.51114	0.00114
3502.54678	0.00416	3502.54678	7.20E-04	3502.54678	0.00116
3501.58242	0.00435	3501.58242	7.00E-04	3501.58242	0.00118
3500.61807	0.00446	3500.61807	6.90E-04	3500.61807	0.0012
3499.65371	0.00436	3499.65371	7.00E-04	3499.65371	0.00121
3498.68935	0.00416	3498.68935	7.10E-04	3498.68935	0.00121
3497.72499	0.00409	3497.72499	7.30E-04	3497.72499	0.00119
3496.76064	0.00418	3496.76064	7.30E-04	3496.76064	0.00118
3495.79628	0.00429	3495.79628	7.20E-04	3495.79628	0.00119
3494.83192	0.00435	3494.83192	7.10E-04	3494.83192	0.0012
3493.86756	0.00439	3493.86756	7.10E-04	3493.86756	0.0012
3492.9032	0.00434	3492.9032	7.10E-04	3492.9032	0.00119
3491.93885	0.00424	3491.93885	7.30E-04	3491.93885	0.00117
3490.97449	0.00431	3490.97449	7.50E-04	3490.97449	0.00116
3490.01013	0.00451	3490.01013	7.70E-04	3490.01013	0.00117
3489.04577	0.00458	3489.04577	7.70E-04	3489.04577	0.0012
3488.08142	0.00452	3488.08142	7.60E-04	3488.08142	0.00124
3487.11706	0.00445	3487.11706	7.50E-04	3487.11706	0.00127
3486.1527	0.00439	3486.1527	7.50E-04	3486.1527	0.00127
3485.18834	0.00444	3485.18834	7.60E-04	3485.18834	0.00126
3484.22399	0.00462	3484.22399	7.70E-04	3484.22399	0.00124
3483.25963	0.00468	3483.25963	7.80E-04	3483.25963	0.00124

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3482.29527	0.00466	3482.29527	7.90E-04	3482.29527	0.00125
3481.33091	0.00478	3481.33091	7.90E-04	3481.33091	0.00127
3480.36656	0.0049	3480.36656	7.80E-04	3480.36656	0.00129
3479.4022	0.0048	3479.4022	7.80E-04	3479.4022	0.0013
3478.43784	0.0047	3478.43784	7.90E-04	3478.43784	0.00129
3477.47348	0.00477	3477.47348	8.00E-04	3477.47348	0.00128
3476.50913	0.00481	3476.50913	8.20E-04	3476.50913	0.00127
3475.54477	0.00474	3475.54477	8.50E-04	3475.54477	0.00126
3474.58041	0.00476	3474.58041	8.60E-04	3474.58041	0.00126
3473.61605	0.00494	3473.61605	8.70E-04	3473.61605	0.00127
3472.6517	0.00511	3472.6517	8.60E-04	3472.6517	0.00128
3471.68734	0.00519	3471.68734	8.60E-04	3471.68734	0.00128
3470.72298	0.00522	3470.72298	8.60E-04	3470.72298	0.00129
3469.75862	0.00522	3469.75862	8.80E-04	3469.75862	0.00131
3468.79426	0.0052	3468.79426	9.00E-04	3468.79426	0.00133
3467.82991	0.0051	3467.82991	9.10E-04	3467.82991	0.00134
3466.86555	0.00506	3466.86555	9.20E-04	3466.86555	0.00135
3465.90119	0.00515	3465.90119	9.20E-04	3465.90119	0.00135
3464.93683	0.00517	3464.93683	9.10E-04	3464.93683	0.00133
3463.97248	0.00514	3463.97248	9.00E-04	3463.97248	0.00132
3463.00812	0.00524	3463.00812	9.00E-04	3463.00812	0.00132
3462.04376	0.0054	3462.04376	8.80E-04	3462.04376	0.00132
3461.0794	0.00542	3461.0794	8.70E-04	3461.0794	0.00133
3460.11505	0.00531	3460.11505	8.60E-04	3460.11505	0.00134
3459.15069	0.0052	3459.15069	8.60E-04	3459.15069	0.00135
3458.18633	0.0051	3458.18633	8.60E-04	3458.18633	0.00136
3457.22197	0.00509	3457.22197	8.70E-04	3457.22197	0.00137
3456.25762	0.00521	3456.25762	8.80E-04	3456.25762	0.00137
3455.29326	0.0054	3455.29326	9.10E-04	3455.29326	0.00137
3454.3289	0.0056	3454.3289	9.40E-04	3454.3289	0.00138
3453.36454	0.00572	3453.36454	9.60E-04	3453.36454	0.00139
3452.40019	0.00564	3452.40019	9.70E-04	3452.40019	0.00139
3451.43583	0.00543	3451.43583	9.70E-04	3451.43583	0.00139
3450.47147	0.00537	3450.47147	9.50E-04	3450.47147	0.00139
3449.50711	0.00557	3449.50711	9.40E-04	3449.50711	0.00139
3448.54276	0.00584	3448.54276	9.30E-04	3448.54276	0.00139
3447.5784	0.00594	3447.5784	9.40E-04	3447.5784	0.0014
3446.61404	0.00592	3446.61404	9.50E-04	3446.61404	0.0014
3445.64968	0.00587	3445.64968	9.60E-04	3445.64968	0.00141
3444.68533	0.00578	3444.68533	9.60E-04	3444.68533	0.00142
3443.72097	0.00571	3443.72097	9.60E-04	3443.72097	0.00142

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3442.75661	0.00569	3442.75661	9.50E-04	3442.75661	0.00143
3441.79225	0.00564	3441.79225	9.60E-04	3441.79225	0.00144
3440.82789	0.00572	3440.82789	9.60E-04	3440.82789	0.00144
3439.86354	0.00605	3439.86354	9.60E-04	3439.86354	0.00144
3438.89918	0.00627	3438.89918	9.50E-04	3438.89918	0.00144
3437.93482	0.00632	3437.93482	9.50E-04	3437.93482	0.00143
3436.97046	0.00636	3436.97046	9.60E-04	3436.97046	0.00143
3436.00611	0.00625	3436.00611	9.70E-04	3436.00611	0.00144
3435.04175	0.00605	3435.04175	9.80E-04	3435.04175	0.00146
3434.07739	0.00598	3434.07739	1.00E-03	3434.07739	0.00148
3433.11303	0.00599	3433.11303	1.00E-03	3433.11303	0.00148
3432.14868	0.00608	3432.14868	1.00E-03	3432.14868	0.00148
3431.18432	0.00626	3431.18432	1.00E-03	3431.18432	0.00147
3430.21996	0.00631	3430.21996	0.00101	3430.21996	0.00145
3429.2556	0.00617	3429.2556	0.00102	3429.2556	0.00144
3428.29125	0.0061	3428.29125	0.00103	3428.29125	0.00144
3427.32689	0.00617	3427.32689	0.00104	3427.32689	0.00145
3426.36253	0.00632	3426.36253	0.00105	3426.36253	0.00147
3425.39817	0.00648	3425.39817	0.00105	3425.39817	0.00149
3424.43382	0.00657	3424.43382	0.00106	3424.43382	0.00151
3423.46946	0.00653	3423.46946	0.00108	3423.46946	0.00152
3422.5051	0.00647	3422.5051	0.0011	3422.5051	0.00151
3421.54074	0.00643	3421.54074	0.00111	3421.54074	0.0015
3420.57639	0.00638	3420.57639	0.00112	3420.57639	0.0015
3419.61203	0.00638	3419.61203	0.00112	3419.61203	0.0015
3418.64767	0.00641	3418.64767	0.00112	3418.64767	0.00151
3417.68331	0.0065	3417.68331	0.0011	3417.68331	0.00153
3416.71895	0.0067	3416.71895	0.00108	3416.71895	0.00155
3415.7546	0.00682	3415.7546	0.00107	3415.7546	0.00155
3414.79024	0.00673	3414.79024	0.00105	3414.79024	0.00155
3413.82588	0.00662	3413.82588	0.00105	3413.82588	0.00155
3412.86152	0.00665	3412.86152	0.00105	3412.86152	0.00155
3411.89717	0.00674	3411.89717	0.00107	3411.89717	0.00154
3410.93281	0.00676	3410.93281	0.0011	3410.93281	0.00154
3409.96845	0.00677	3409.96845	0.00112	3409.96845	0.00154
3409.00409	0.00691	3409.00409	0.00113	3409.00409	0.00154
3408.03974	0.00708	3408.03974	0.00113	3408.03974	0.00154
3407.07538	0.00708	3407.07538	0.00114	3407.07538	0.00154
3406.11102	0.00686	3406.11102	0.00114	3406.11102	0.00154
3405.14666	0.00673	3405.14666	0.00114	3405.14666	0.00154
3404.18231	0.00685	3404.18231	0.00115	3404.18231	0.00154

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3403.21795	0.007	3403.21795	0.00116	3403.21795	0.00156
3402.25359	0.00704	3402.25359	0.00117	3402.25359	0.00158
3401.28923	0.00711	3401.28923	0.00119	3401.28923	0.00161
3400.32488	0.00722	3400.32488	0.0012	3400.32488	0.00162
3399.36052	0.00719	3399.36052	0.00121	3399.36052	0.00162
3398.39616	0.00709	3398.39616	0.00121	3398.39616	0.00161
3397.4318	0.00709	3397.4318	0.00121	3397.4318	0.0016
3396.46745	0.00714	3396.46745	0.00121	3396.46745	0.00158
3395.50309	0.00715	3395.50309	0.00121	3395.50309	0.00158
3394.53873	0.00716	3394.53873	0.00121	3394.53873	0.00159
3393.57437	0.00719	3393.57437	0.00121	3393.57437	0.00161
3392.61002	0.00718	3392.61002	0.0012	3392.61002	0.00162
3391.64566	0.00715	3391.64566	0.00118	3391.64566	0.00163
3390.6813	0.00723	3390.6813	0.00118	3390.6813	0.00162
3389.71694	0.00733	3389.71694	0.00118	3389.71694	0.00161
3388.75258	0.00737	3388.75258	0.00119	3388.75258	0.0016
3387.78823	0.00745	3387.78823	0.00122	3387.78823	0.00159
3386.82387	0.00752	3386.82387	0.00124	3386.82387	0.0016
3385.85951	0.00749	3385.85951	0.00126	3385.85951	0.00161
3384.89515	0.00743	3384.89515	0.00128	3384.89515	0.00162
3383.9308	0.00744	3383.9308	0.00129	3383.9308	0.00163
3382.96644	0.00756	3382.96644	0.00129	3382.96644	0.00163
3382.00208	0.00773	3382.00208	0.00127	3382.00208	0.00163
3381.03772	0.00783	3381.03772	0.00126	3381.03772	0.00164
3380.07337	0.00779	3380.07337	0.00125	3380.07337	0.00165
3379.10901	0.00767	3379.10901	0.00125	3379.10901	0.00166
3378.14465	0.00758	3378.14465	0.00127	3378.14465	0.00168
3377.18029	0.00749	3377.18029	0.00129	3377.18029	0.00169
3376.21594	0.00734	3376.21594	0.0013	3376.21594	0.00169
3375.25158	0.0073	3375.25158	0.00131	3375.25158	0.0017
3374.28722	0.00755	3374.28722	0.0013	3374.28722	0.0017
3373.32286	0.00779	3373.32286	0.00129	3373.32286	0.00169
3372.35851	0.00781	3372.35851	0.00128	3372.35851	0.00169
3371.39415	0.00775	3371.39415	0.00128	3371.39415	0.00169
3370.42979	0.00768	3370.42979	0.00128	3370.42979	0.00169
3369.46543	0.0076	3369.46543	0.00129	3369.46543	0.00169
3368.50108	0.00753	3368.50108	0.0013	3368.50108	0.00169
3367.53672	0.00757	3367.53672	0.00131	3367.53672	0.0017
3366.57236	0.0077	3366.57236	0.00132	3366.57236	0.00171
3365.608	0.0078	3365.608	0.00132	3365.608	0.00172
3364.64364	0.00784	3364.64364	0.00133	3364.64364	0.00173



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3363.67929	0.00789	3363.67929	0.00134	3363.67929	0.00173
3362.71493	0.00786	3362.71493	0.00135	3362.71493	0.00172
3361.75057	0.00777	3361.75057	0.00136	3361.75057	0.0017
3360.78621	0.00774	3360.78621	0.00137	3360.78621	0.00169
3359.82186	0.0078	3359.82186	0.00138	3359.82186	0.00169
3358.8575	0.0079	3358.8575	0.00139	3358.8575	0.00169
3357.89314	0.00804	3357.89314	0.00138	3357.89314	0.00169
3356.92878	0.00811	3356.92878	0.00137	3356.92878	0.0017
3355.96443	0.00803	3355.96443	0.00136	3355.96443	0.0017
3355.00007	0.00796	3355.00007	0.00134	3355.00007	0.00171
3354.03571	0.00798	3354.03571	0.00134	3354.03571	0.00171
3353.07135	0.008	3353.07135	0.00135	3353.07135	0.00171
3352.107	0.00788	3352.107	0.00137	3352.107	0.00172
3351.14264	0.00778	3351.14264	0.00139	3351.14264	0.00173
3350.17828	0.00789	3350.17828	0.00141	3350.17828	0.00174
3349.21392	0.00806	3349.21392	0.00142	3349.21392	0.00173
3348.24957	0.00813	3348.24957	0.00142	3348.24957	0.00173
3347.28521	0.00814	3347.28521	0.00142	3347.28521	0.00173
3346.32085	0.00814	3346.32085	0.00143	3346.32085	0.00174
3345.35649	0.00815	3345.35649	0.00143	3345.35649	0.00175
3344.39214	0.00817	3344.39214	0.00143	3344.39214	0.00178
3343.42778	0.00814	3343.42778	0.00142	3343.42778	0.00179
3342.46342	0.00811	3342.46342	0.00141	3342.46342	0.0018
3341.49906	0.00815	3341.49906	0.00141	3341.49906	0.00179
3340.5347	0.00823	3340.5347	0.00141	3340.5347	0.00179
3339.57035	0.0082	3339.57035	0.00141	3339.57035	0.00179
3338.60599	0.00817	3338.60599	0.00142	3338.60599	0.0018
3337.64163	0.0082	3337.64163	0.00144	3337.64163	0.00181
3336.67727	0.0082	3336.67727	0.00145	3336.67727	0.00183
3335.71292	0.00813	3335.71292	0.00144	3335.71292	0.00183
3334.74856	0.00805	3334.74856	0.00144	3334.74856	0.00183
3333.7842	0.008	3333.7842	0.00143	3333.7842	0.00183
3332.81984	0.00807	3332.81984	0.00143	3332.81984	0.00183
3331.85549	0.00816	3331.85549	0.00143	3331.85549	0.00183
3330.89113	0.00819	3330.89113	0.00143	3330.89113	0.00184
3329.92677	0.00822	3329.92677	0.00142	3329.92677	0.00185
3328.96241	0.00829	3328.96241	0.00142	3328.96241	0.00185
3327.99806	0.00828	3327.99806	0.00142	3327.99806	0.00185
3327.0337	0.00823	3327.0337	0.00142	3327.0337	0.00185
3326.06934	0.00819	3326.06934	0.00143	3326.06934	0.00186
3325.10498	0.00809	3325.10498	0.00145	3325.10498	0.00186

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3324.14063	0.00799	3324.14063	0.00146	3324.14063	0.00186
3323.17627	0.008	3323.17627	0.00147	3323.17627	0.00185
3322.21191	0.00803	3322.21191	0.00147	3322.21191	0.00185
3321.24755	0.008	3321.24755	0.00145	3321.24755	0.00184
3320.2832	0.00804	3320.2832	0.00144	3320.2832	0.00184
3319.31884	0.0082	3319.31884	0.00143	3319.31884	0.00184
3318.35448	0.00827	3318.35448	0.00143	3318.35448	0.00185
3317.39012	0.0082	3317.39012	0.00144	3317.39012	0.00185
3316.42577	0.00814	3316.42577	0.00146	3316.42577	0.00186
3315.46141	0.00819	3315.46141	0.00148	3315.46141	0.00186
3314.49705	0.00832	3314.49705	0.00148	3314.49705	0.00186
3313.53269	0.00836	3313.53269	0.00147	3313.53269	0.00186
3312.56833	0.00827	3312.56833	0.00147	3312.56833	0.00186
3311.60398	0.00814	3311.60398	0.00147	3311.60398	0.00187
3310.63962	0.00814	3310.63962	0.00147	3310.63962	0.00188
3309.67526	0.00826	3309.67526	0.00148	3309.67526	0.00188
3308.7109	0.00831	3308.7109	0.00149	3308.7109	0.00188
3307.74655	0.0083	3307.74655	0.00149	3307.74655	0.00189
3306.78219	0.0083	3306.78219	0.00148	3306.78219	0.00191
3305.81783	0.00831	3305.81783	0.00146	3305.81783	0.00193
3304.85347	0.00823	3304.85347	0.00146	3304.85347	0.00194
3303.88912	0.0081	3303.88912	0.00146	3303.88912	0.00194
3302.92476	0.00806	3302.92476	0.00145	3302.92476	0.00194
3301.9604	0.0081	3301.9604	0.00144	3301.9604	0.00193
3300.99604	0.00806	3300.99604	0.00143	3300.99604	0.00193
3300.03169	0.00794	3300.03169	0.00142	3300.03169	0.00193
3299.06733	0.00789	3299.06733	0.00141	3299.06733	0.00194
3298.10297	0.00789	3298.10297	0.0014	3298.10297	0.00194
3297.13861	0.00773	3297.13861	0.0014	3297.13861	0.00194
3296.17426	0.00755	3296.17426	0.00141	3296.17426	0.00193
3295.2099	0.00761	3295.2099	0.00142	3295.2099	0.00193
3294.24554	0.00783	3294.24554	0.00143	3294.24554	0.00194
3293.28118	0.008	3293.28118	0.00144	3293.28118	0.00195
3292.31683	0.00802	3292.31683	0.00145	3292.31683	0.00195
3291.35247	0.00791	3291.35247	0.00144	3291.35247	0.00195
3290.38811	0.00783	3290.38811	0.00143	3290.38811	0.00194
3289.42375	0.00785	3289.42375	0.00142	3289.42375	0.00192
3288.45939	0.00794	3288.45939	0.00141	3288.45939	0.00191
3287.49504	0.00803	3287.49504	0.00142	3287.49504	0.0019
3286.53068	0.00799	3286.53068	0.00143	3286.53068	0.0019
3285.56632	0.00778	3285.56632	0.00144	3285.56632	0.0019

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3284.60196	0.00751	3284.60196	0.00145	3284.60196	0.0019
3283.63761	0.00745	3283.63761	0.00144	3283.63761	0.00191
3282.67325	0.00759	3282.67325	0.00143	3282.67325	0.0019
3281.70889	0.0077	3281.70889	0.00141	3281.70889	0.0019
3280.74453	0.00774	3280.74453	0.00141	3280.74453	0.0019
3279.78018	0.00777	3279.78018	0.0014	3279.78018	0.00189
3278.81582	0.00775	3278.81582	0.0014	3278.81582	0.00188
3277.85146	0.00765	3277.85146	0.00141	3277.85146	0.00188
3276.8871	0.00754	3276.8871	0.00141	3276.8871	0.00188
3275.92275	0.00757	3275.92275	0.00141	3275.92275	0.00189
3274.95839	0.00766	3274.95839	0.0014	3274.95839	0.00191
3273.99403	0.00767	3273.99403	0.0014	3273.99403	0.00193
3273.02967	0.00768	3273.02967	0.0014	3273.02967	0.00195
3272.06532	0.00773	3272.06532	0.0014	3272.06532	0.00195
3271.10096	0.00764	3271.10096	0.0014	3271.10096	0.00193
3270.1366	0.00741	3270.1366	0.00139	3270.1366	0.00191
3269.17224	0.00727	3269.17224	0.00137	3269.17224	0.00187
3268.20789	0.00726	3268.20789	0.00135	3268.20789	0.00184
3267.24353	0.00729	3267.24353	0.00134	3267.24353	0.00182
3266.27917	0.00735	3266.27917	0.00134	3266.27917	0.00181
3265.31481	0.00734	3265.31481	0.00134	3265.31481	0.00181
3264.35046	0.00721	3264.35046	0.00133	3264.35046	0.00182
3263.3861	0.0071	3263.3861	0.00133	3263.3861	0.00181
3262.42174	0.0071	3262.42174	0.00132	3262.42174	0.0018
3261.45738	0.00713	3261.45738	0.00131	3261.45738	0.00179
3260.49302	0.00716	3260.49302	0.0013	3260.49302	0.00177
3259.52867	0.00716	3259.52867	0.0013	3259.52867	0.00175
3258.56431	0.00714	3258.56431	0.00131	3258.56431	0.00174
3257.59995	0.00713	3257.59995	0.00131	3257.59995	0.00174
3256.63559	0.0071	3256.63559	0.00129	3256.63559	0.00174
3255.67124	0.00707	3255.67124	0.00128	3255.67124	0.00174
3254.70688	0.00705	3254.70688	0.00127	3254.70688	0.00174
3253.74252	0.00703	3253.74252	0.00126	3253.74252	0.00173
3252.77816	0.00697	3252.77816	0.00126	3252.77816	0.00172
3251.81381	0.00686	3251.81381	0.00126	3251.81381	0.00172
3250.84945	0.00678	3250.84945	0.00127	3250.84945	0.00171
3249.88509	0.00684	3249.88509	0.00128	3249.88509	0.00171
3248.92073	0.0069	3248.92073	0.00128	3248.92073	0.0017
3247.95638	0.00685	3247.95638	0.00128	3247.95638	0.00169
3246.99202	0.00677	3246.99202	0.00127	3246.99202	0.00168
3246.02766	0.00669	3246.02766	0.00126	3246.02766	0.00166

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3245.0633	0.0066	3245.0633	0.00126	3245.0633	0.00166
3244.09895	0.00659	3244.09895	0.00125	3244.09895	0.00165
3243.13459	0.00661	3243.13459	0.00125	3243.13459	0.00165
3242.17023	0.00652	3242.17023	0.00125	3242.17023	0.00165
3241.20587	0.00634	3241.20587	0.00125	3241.20587	0.00165
3240.24152	0.00623	3240.24152	0.00125	3240.24152	0.00164
3239.27716	0.00633	3239.27716	0.00124	3239.27716	0.00163
3238.3128	0.00652	3238.3128	0.00123	3238.3128	0.00162
3237.34844	0.00652	3237.34844	0.00122	3237.34844	0.00162
3236.38408	0.00645	3236.38408	0.00121	3236.38408	0.00162
3235.41973	0.00645	3235.41973	0.0012	3235.41973	0.00161
3234.45537	0.00633	3234.45537	0.00119	3234.45537	0.00161
3233.49101	0.0061	3233.49101	0.00118	3233.49101	0.0016
3232.52665	0.00601	3232.52665	0.00117	3232.52665	0.00159
3231.5623	0.00611	3231.5623	0.00117	3231.5623	0.00158
3230.59794	0.00621	3230.59794	0.00116	3230.59794	0.00157
3229.63358	0.00622	3229.63358	0.00115	3229.63358	0.00157
3228.66922	0.00614	3228.66922	0.00114	3228.66922	0.00156
3227.70487	0.00603	3227.70487	0.00113	3227.70487	0.00156
3226.74051	0.00594	3226.74051	0.00113	3226.74051	0.00157
3225.77615	0.00589	3225.77615	0.00113	3225.77615	0.00158
3224.81179	0.00585	3224.81179	0.00114	3224.81179	0.00159
3223.84744	0.00585	3223.84744	0.00114	3223.84744	0.00159
3222.88308	0.00587	3222.88308	0.00114	3222.88308	0.00157
3221.91872	0.00589	3221.91872	0.00112	3221.91872	0.00154
3220.95436	0.00586	3220.95436	0.00111	3220.95436	0.00152
3219.99001	0.0058	3219.99001	0.00109	3219.99001	0.0015
3219.02565	0.00579	3219.02565	0.00108	3219.02565	0.0015
3218.06129	0.00585	3218.06129	0.00108	3218.06129	0.0015
3217.09693	0.00584	3217.09693	0.00108	3217.09693	0.0015
3216.13258	0.00578	3216.13258	0.00109	3216.13258	0.0015
3215.16822	0.00575	3215.16822	0.00108	3215.16822	0.00149
3214.20386	0.00571	3214.20386	0.00107	3214.20386	0.00149
3213.2395	0.00566	3213.2395	0.00106	3213.2395	0.00149
3212.27514	0.00563	3212.27514	0.00106	3212.27514	0.00149
3211.31079	0.0056	3211.31079	0.00107	3211.31079	0.00149
3210.34643	0.00558	3210.34643	0.00108	3210.34643	0.00149
3209.38207	0.00556	3209.38207	0.00108	3209.38207	0.00149
3208.41771	0.00551	3208.41771	0.00108	3208.41771	0.00149
3207.45336	0.00543	3207.45336	0.00108	3207.45336	0.00149
3206.489	0.00537	3206.489	0.00107	3206.489	0.00149

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3205.52464	0.00533	3205.52464	0.00105	3205.52464	0.00148
3204.56028	0.00532	3204.56028	0.00104	3204.56028	0.00146
3203.59593	0.00536	3203.59593	0.00102	3203.59593	0.00145
3202.63157	0.00537	3202.63157	0.00101	3202.63157	0.00144
3201.66721	0.0053	3201.66721	1.00E-03	3201.66721	0.00144
3200.70285	0.00521	3200.70285	1.00E-03	3200.70285	0.00144
3199.7385	0.00519	3199.7385	0.00101	3199.7385	0.00145
3198.77414	0.00522	3198.77414	0.00101	3198.77414	0.00145
3197.80978	0.00521	3197.80978	1.00E-03	3197.80978	0.00145
3196.84542	0.00521	3196.84542	9.90E-04	3196.84542	0.00146
3195.88107	0.00522	3195.88107	9.80E-04	3195.88107	0.00146
3194.91671	0.00517	3194.91671	9.80E-04	3194.91671	0.00147
3193.95235	0.00515	3193.95235	9.70E-04	3193.95235	0.00147
3192.98799	0.00517	3192.98799	9.70E-04	3192.98799	0.00146
3192.02364	0.00515	3192.02364	9.70E-04	3192.02364	0.00145
3191.05928	0.0051	3191.05928	9.60E-04	3191.05928	0.00142
3190.09492	0.00505	3190.09492	9.50E-04	3190.09492	0.0014
3189.13056	0.00497	3189.13056	9.30E-04	3189.13056	0.00139
3188.16621	0.00485	3188.16621	9.10E-04	3188.16621	0.00138
3187.20185	0.00479	3187.20185	9.00E-04	3187.20185	0.00138
3186.23749	0.00485	3186.23749	9.00E-04	3186.23749	0.00139
3185.27313	0.00483	3185.27313	8.90E-04	3185.27313	0.00138
3184.30877	0.00466	3184.30877	8.90E-04	3184.30877	0.00138
3183.34442	0.00454	3183.34442	8.80E-04	3183.34442	0.00137
3182.38006	0.00451	3182.38006	8.60E-04	3182.38006	0.00136
3181.4157	0.00451	3181.4157	8.40E-04	3181.4157	0.00135
3180.45134	0.0045	3180.45134	8.30E-04	3180.45134	0.00135
3179.48699	0.00446	3179.48699	8.30E-04	3179.48699	0.00134
3178.52263	0.00437	3178.52263	8.20E-04	3178.52263	0.00134
3177.55827	0.00427	3177.55827	8.20E-04	3177.55827	0.00133
3176.59391	0.00423	3176.59391	8.20E-04	3176.59391	0.00133
3175.62956	0.00424	3175.62956	8.20E-04	3175.62956	0.00133
3174.6652	0.00424	3174.6652	8.20E-04	3174.6652	0.00132
3173.70084	0.00426	3173.70084	8.20E-04	3173.70084	0.00132
3172.73648	0.00427	3172.73648	8.20E-04	3172.73648	0.00132
3171.77213	0.0042	3171.77213	8.10E-04	3171.77213	0.00131
3170.80777	0.00411	3170.80777	8.00E-04	3170.80777	0.00131
3169.84341	0.00406	3169.84341	8.00E-04	3169.84341	0.00131
3168.87905	0.00402	3168.87905	8.00E-04	3168.87905	0.00131
3167.9147	0.00399	3167.9147	8.00E-04	3167.9147	0.00131
3166.95034	0.00404	3166.95034	8.00E-04	3166.95034	0.00132

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3165.98598	0.00409	3165.98598	8.00E-04	3165.98598	0.00132
3165.02162	0.00408	3165.02162	8.00E-04	3165.02162	0.00131
3164.05727	0.00404	3164.05727	7.90E-04	3164.05727	0.00128
3163.09291	0.00395	3163.09291	7.90E-04	3163.09291	0.00126
3162.12855	0.00388	3162.12855	7.80E-04	3162.12855	0.00124
3161.16419	0.00389	3161.16419	7.80E-04	3161.16419	0.00122
3160.19983	0.00399	3160.19983	7.90E-04	3160.19983	0.00122
3159.23548	0.00418	3159.23548	8.00E-04	3159.23548	0.00122
3158.27112	0.00438	3158.27112	8.10E-04	3158.27112	0.00123
3157.30676	0.00445	3157.30676	8.10E-04	3157.30676	0.00123
3156.3424	0.00432	3156.3424	8.00E-04	3156.3424	0.00124
3155.37805	0.00414	3155.37805	7.80E-04	3155.37805	0.00124
3154.41369	0.00411	3154.41369	7.70E-04	3154.41369	0.00124
3153.44933	0.00422	3153.44933	7.50E-04	3153.44933	0.00124
3152.48497	0.00425	3152.48497	7.60E-04	3152.48497	0.00124
3151.52062	0.00412	3151.52062	7.70E-04	3151.52062	0.00125
3150.55626	0.00398	3150.55626	7.70E-04	3150.55626	0.00125
3149.5919	0.00386	3149.5919	7.60E-04	3149.5919	0.00124
3148.62754	0.00378	3148.62754	7.50E-04	3148.62754	0.00124
3147.66319	0.00381	3147.66319	7.40E-04	3147.66319	0.00122
3146.69883	0.00385	3146.69883	7.40E-04	3146.69883	0.0012
3145.73447	0.00381	3145.73447	7.30E-04	3145.73447	0.00119
3144.77011	0.00381	3144.77011	7.30E-04	3144.77011	0.00117
3143.80576	0.00387	3143.80576	7.20E-04	3143.80576	0.00116
3142.8414	0.00386	3142.8414	7.10E-04	3142.8414	0.00115
3141.87704	0.00379	3141.87704	6.90E-04	3141.87704	0.00115
3140.91268	0.00371	3140.91268	6.90E-04	3140.91268	0.00116
3139.94833	0.00368	3139.94833	7.00E-04	3139.94833	0.00117
3138.98397	0.00372	3138.98397	7.10E-04	3138.98397	0.00117
3138.01961	0.00377	3138.01961	7.10E-04	3138.01961	0.00118
3137.05525	0.00381	3137.05525	7.10E-04	3137.05525	0.00118
3136.0909	0.00377	3136.0909	7.10E-04	3136.0909	0.00118
3135.12654	0.00362	3135.12654	7.00E-04	3135.12654	0.00118
3134.16218	0.00352	3134.16218	6.90E-04	3134.16218	0.00117
3133.19782	0.00352	3133.19782	6.80E-04	3133.19782	0.00116
3132.23346	0.00356	3132.23346	6.80E-04	3132.23346	0.00114
3131.26911	0.00361	3131.26911	6.80E-04	3131.26911	0.00112
3130.30475	0.00359	3130.30475	6.80E-04	3130.30475	0.0011
3129.34039	0.00349	3129.34039	6.90E-04	3129.34039	0.00108
3128.37603	0.00343	3128.37603	7.00E-04	3128.37603	0.00107
3127.41168	0.00345	3127.41168	6.90E-04	3127.41168	0.00107

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3126.44732	0.00342	3126.44732	6.80E-04	3126.44732	0.00108
3125.48296	0.00326	3125.48296	6.70E-04	3125.48296	0.00109
3124.5186	0.00311	3124.5186	6.60E-04	3124.5186	0.00109
3123.55425	0.00312	3123.55425	6.40E-04	3123.55425	0.0011
3122.58989	0.00325	3122.58989	6.40E-04	3122.58989	0.0011
3121.62553	0.00337	3121.62553	6.40E-04	3121.62553	0.0011
3120.66117	0.00347	3120.66117	6.30E-04	3120.66117	0.00111
3119.69682	0.00354	3119.69682	6.30E-04	3119.69682	0.00112
3118.73246	0.0035	3118.73246	6.30E-04	3118.73246	0.00113
3117.7681	0.00345	3117.7681	6.40E-04	3117.7681	0.00113
3116.80374	0.00346	3116.80374	6.50E-04	3116.80374	0.00112
3115.83939	0.00343	3115.83939	6.50E-04	3115.83939	0.00111
3114.87503	0.00338	3114.87503	6.60E-04	3114.87503	0.0011
3113.91067	0.00342	3113.91067	6.50E-04	3113.91067	0.00108
3112.94631	0.00349	3112.94631	6.50E-04	3112.94631	0.00106
3111.98196	0.00346	3111.98196	6.40E-04	3111.98196	0.00106
3111.0176	0.00336	3111.0176	6.30E-04	3111.0176	0.00106
3110.05324	0.00329	3110.05324	6.30E-04	3110.05324	0.00107
3109.08888	0.00323	3109.08888	6.40E-04	3109.08888	0.00107
3108.12452	0.00314	3108.12452	6.50E-04	3108.12452	0.00108
3107.16017	0.00301	3107.16017	6.50E-04	3107.16017	0.00107
3106.19581	0.00297	3106.19581	6.50E-04	3106.19581	0.00106
3105.23145	0.00309	3105.23145	6.50E-04	3105.23145	0.00105
3104.26709	0.00323	3104.26709	6.40E-04	3104.26709	0.00106
3103.30274	0.00322	3103.30274	6.40E-04	3103.30274	0.00107
3102.33838	0.00316	3102.33838	6.30E-04	3102.33838	0.00108
3101.37402	0.00317	3101.37402	6.30E-04	3101.37402	0.00108
3100.40966	0.00322	3100.40966	6.40E-04	3100.40966	0.00108
3099.44531	0.00328	3099.44531	6.40E-04	3099.44531	0.00107
3098.48095	0.00333	3098.48095	6.50E-04	3098.48095	0.00106
3097.51659	0.00334	3097.51659	6.50E-04	3097.51659	0.00105
3096.55223	0.00335	3096.55223	6.50E-04	3096.55223	0.00105
3095.58788	0.00339	3095.58788	6.50E-04	3095.58788	0.00105
3094.62352	0.00334	3094.62352	6.40E-04	3094.62352	0.00106
3093.65916	0.00324	3093.65916	6.20E-04	3093.65916	0.00106
3092.6948	0.0032	3092.6948	6.20E-04	3092.6948	0.00107
3091.73045	0.0032	3091.73045	6.10E-04	3091.73045	0.00107
3090.76609	0.0032	3090.76609	6.20E-04	3090.76609	0.00107
3089.80173	0.00325	3089.80173	6.30E-04	3089.80173	0.00107
3088.83737	0.00332	3088.83737	6.50E-04	3088.83737	0.00106
3087.87302	0.00327	3087.87302	6.60E-04	3087.87302	0.00105

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3086.90866	0.00319	3086.90866	6.60E-04	3086.90866	0.00104
3085.9443	0.00324	3085.9443	6.50E-04	3085.9443	0.00103
3084.97994	0.0033	3084.97994	6.50E-04	3084.97994	0.00103
3084.01559	0.00331	3084.01559	6.40E-04	3084.01559	0.00103
3083.05123	0.00332	3083.05123	6.40E-04	3083.05123	0.00104
3082.08687	0.00335	3082.08687	6.40E-04	3082.08687	0.00104
3081.12251	0.00333	3081.12251	6.40E-04	3081.12251	0.00104
3080.15815	0.00327	3080.15815	6.40E-04	3080.15815	0.00105
3079.1938	0.00322	3079.1938	6.30E-04	3079.1938	0.00105
3078.22944	0.00319	3078.22944	6.40E-04	3078.22944	0.00104
3077.26508	0.0032	3077.26508	6.40E-04	3077.26508	0.00104
3076.30072	0.00321	3076.30072	6.50E-04	3076.30072	0.00104
3075.33637	0.00317	3075.33637	6.60E-04	3075.33637	0.00104
3074.37201	0.00316	3074.37201	6.70E-04	3074.37201	0.00104
3073.40765	0.0032	3073.40765	6.70E-04	3073.40765	0.00104
3072.44329	0.00323	3072.44329	6.50E-04	3072.44329	0.00104
3071.47894	0.00321	3071.47894	6.40E-04	3071.47894	0.00104
3070.51458	0.00315	3070.51458	6.40E-04	3070.51458	0.00104
3069.55022	0.00306	3069.55022	6.40E-04	3069.55022	0.00104
3068.58586	0.00302	3068.58586	6.50E-04	3068.58586	0.00104
3067.62151	0.00305	3067.62151	6.60E-04	3067.62151	0.00104
3066.65715	0.00316	3066.65715	6.60E-04	3066.65715	0.00103
3065.69279	0.00328	3065.69279	6.50E-04	3065.69279	0.00103
3064.72843	0.00327	3064.72843	6.40E-04	3064.72843	0.00103
3063.76408	0.00315	3063.76408	6.20E-04	3063.76408	0.00102
3062.79972	0.00298	3062.79972	6.10E-04	3062.79972	0.00101
3061.83536	0.00285	3061.83536	6.00E-04	3061.83536	0.00101
3060.871	0.0028	3060.871	5.90E-04	3060.871	0.00101
3059.90665	0.00278	3059.90665	5.90E-04	3059.90665	0.00101
3058.94229	0.00274	3058.94229	5.80E-04	3058.94229	0.00101
3057.97793	0.00266	3057.97793	5.80E-04	3057.97793	0.00101
3057.01357	0.00264	3057.01357	5.80E-04	3057.01357	1.00E-03
3056.04921	0.00276	3056.04921	5.80E-04	3056.04921	9.90E-04
3055.08486	0.00285	3055.08486	5.80E-04	3055.08486	9.80E-04
3054.1205	0.00281	3054.1205	5.70E-04	3054.1205	9.80E-04
3053.15614	0.00272	3053.15614	5.60E-04	3053.15614	9.80E-04
3052.19178	0.00266	3052.19178	5.50E-04	3052.19178	9.80E-04
3051.22743	0.00265	3051.22743	5.50E-04	3051.22743	9.70E-04
3050.26307	0.00269	3050.26307	5.50E-04	3050.26307	9.50E-04
3049.29871	0.00269	3049.29871	5.50E-04	3049.29871	9.40E-04
3048.33435	0.00265	3048.33435	5.50E-04	3048.33435	9.20E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3047.37	0.00263	3047.37	5.50E-04	3047.37	9.20E-04
3046.40564	0.00264	3046.40564	5.40E-04	3046.40564	9.20E-04
3045.44128	0.00263	3045.44128	5.20E-04	3045.44128	9.20E-04
3044.47692	0.00262	3044.47692	5.10E-04	3044.47692	9.30E-04
3043.51257	0.00263	3043.51257	5.00E-04	3043.51257	9.30E-04
3042.54821	0.00263	3042.54821	4.90E-04	3042.54821	9.10E-04
3041.58385	0.0026	3041.58385	4.80E-04	3041.58385	9.00E-04
3040.61949	0.00257	3040.61949	4.80E-04	3040.61949	8.80E-04
3039.65514	0.00257	3039.65514	4.70E-04	3039.65514	8.70E-04
3038.69078	0.0026	3038.69078	4.60E-04	3038.69078	8.60E-04
3037.72642	0.0026	3037.72642	4.50E-04	3037.72642	8.60E-04
3036.76206	0.00261	3036.76206	4.50E-04	3036.76206	8.60E-04
3035.79771	0.00265	3035.79771	4.50E-04	3035.79771	8.60E-04
3034.83335	0.00258	3034.83335	4.50E-04	3034.83335	8.60E-04
3033.86899	0.00246	3033.86899	4.50E-04	3033.86899	8.60E-04
3032.90463	0.00247	3032.90463	4.50E-04	3032.90463	8.60E-04
3031.94027	0.00253	3031.94027	4.50E-04	3031.94027	8.70E-04
3030.97592	0.0025	3030.97592	4.50E-04	3030.97592	8.60E-04
3030.01156	0.00245	3030.01156	4.50E-04	3030.01156	8.50E-04
3029.0472	0.00249	3029.0472	4.50E-04	3029.0472	8.50E-04
3028.08284	0.00256	3028.08284	4.40E-04	3028.08284	8.50E-04
3027.11849	0.00254	3027.11849	4.40E-04	3027.11849	8.40E-04
3026.15413	0.00239	3026.15413	4.30E-04	3026.15413	8.30E-04
3025.18977	0.00225	3025.18977	4.20E-04	3025.18977	8.20E-04
3024.22541	0.00222	3024.22541	4.20E-04	3024.22541	8.20E-04
3023.26106	0.00225	3023.26106	4.10E-04	3023.26106	8.10E-04
3022.2967	0.00225	3022.2967	4.10E-04	3022.2967	8.00E-04
3021.33234	0.00224	3021.33234	4.00E-04	3021.33234	8.00E-04
3020.36798	0.00226	3020.36798	4.00E-04	3020.36798	8.10E-04
3019.40363	0.00225	3019.40363	3.80E-04	3019.40363	7.90E-04
3018.43927	0.00217	3018.43927	3.40E-04	3018.43927	7.30E-04
3017.47491	0.00211	3017.47491	2.80E-04	3017.47491	6.60E-04
3016.51055	0.00216	3016.51055	2.30E-04	3016.51055	6.00E-04
3015.5462	0.00218	3015.5462	2.10E-04	3015.5462	5.90E-04
3014.58184	0.0021	3014.58184	2.20E-04	3014.58184	6.20E-04
3013.61748	0.00201	3013.61748	2.50E-04	3013.61748	6.80E-04
3012.65312	0.00197	3012.65312	3.00E-04	3012.65312	7.60E-04
3011.68877	0.00201	3011.68877	3.40E-04	3011.68877	8.20E-04
3010.72441	0.00206	3010.72441	3.40E-04	3010.72441	8.20E-04
3009.76005	0.00208	3009.76005	3.30E-04	3009.76005	8.00E-04
3008.79569	0.00208	3008.79569	3.10E-04	3008.79569	7.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3007.83134	0.00208	3007.83134	3.00E-04	3007.83134	7.50E-04
3006.86698	0.0021	3006.86698	3.00E-04	3006.86698	7.50E-04
3005.90262	0.00209	3005.90262	3.00E-04	3005.90262	7.50E-04
3004.93826	0.00204	3004.93826	2.90E-04	3004.93826	7.60E-04
3003.9739	0.00202	3003.9739	2.80E-04	3003.9739	7.70E-04
3003.00955	0.00203	3003.00955	2.70E-04	3003.00955	7.70E-04
3002.04519	0.00205	3002.04519	2.50E-04	3002.04519	7.60E-04
3001.08083	0.00205	3001.08083	2.40E-04	3001.08083	7.50E-04
3000.11647	0.00203	3000.11647	2.40E-04	3000.11647	7.50E-04
2999.15212	0.00196	2999.15212	2.40E-04	2999.15212	7.40E-04
2998.18776	0.00191	2998.18776	2.50E-04	2998.18776	7.40E-04
2997.2234	0.00197	2997.2234	2.60E-04	2997.2234	7.40E-04
2996.25904	0.0021	2996.25904	2.70E-04	2996.25904	7.40E-04
2995.29469	0.00219	2995.29469	2.80E-04	2995.29469	7.40E-04
2994.33033	0.00222	2994.33033	2.70E-04	2994.33033	7.40E-04
2993.36597	0.00222	2993.36597	2.70E-04	2993.36597	7.50E-04
2992.40161	0.00222	2992.40161	2.70E-04	2992.40161	7.70E-04
2991.43726	0.0022	2991.43726	2.80E-04	2991.43726	7.80E-04
2990.4729	0.00216	2990.4729	2.90E-04	2990.4729	7.90E-04
2989.50854	0.00212	2989.50854	2.90E-04	2989.50854	8.00E-04
2988.54418	0.00212	2988.54418	3.00E-04	2988.54418	8.00E-04
2987.57983	0.00214	2987.57983	3.00E-04	2987.57983	8.10E-04
2986.61547	0.00219	2986.61547	3.10E-04	2986.61547	8.20E-04
2985.65111	0.00226	2985.65111	3.20E-04	2985.65111	8.30E-04
2984.68675	0.00228	2984.68675	3.40E-04	2984.68675	8.40E-04
2983.7224	0.00227	2983.7224	3.60E-04	2983.7224	8.50E-04
2982.75804	0.00232	2982.75804	3.80E-04	2982.75804	8.70E-04
2981.79368	0.0024	2981.79368	4.00E-04	2981.79368	8.90E-04
2980.82932	0.00247	2980.82932	4.10E-04	2980.82932	9.10E-04
2979.86496	0.00254	2979.86496	4.20E-04	2979.86496	9.20E-04
2978.90061	0.00259	2978.90061	4.00E-04	2978.90061	8.90E-04
2977.93625	0.00263	2977.93625	3.30E-04	2977.93625	8.10E-04
2976.97189	0.00272	2976.97189	2.40E-04	2976.97189	7.20E-04
2976.00753	0.00285	2976.00753	1.60E-04	2976.00753	6.60E-04
2975.04318	0.00295	2975.04318	1.30E-04	2975.04318	6.50E-04
2974.07882	0.00299	2974.07882	1.40E-04	2974.07882	7.00E-04
2973.11446	0.00306	2973.11446	2.00E-04	2973.11446	7.90E-04
2972.1501	0.0032	2972.1501	3.00E-04	2972.1501	9.00E-04
2971.18575	0.00333	2971.18575	4.00E-04	2971.18575	9.90E-04
2970.22139	0.00338	2970.22139	4.50E-04	2970.22139	0.00103
2969.25703	0.00343	2969.25703	4.70E-04	2969.25703	0.00105

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2968.29267	0.00348	2968.29267	4.80E-04	2968.29267	0.00106
2967.32832	0.00353	2967.32832	4.70E-04	2967.32832	0.00106
2966.36396	0.00363	2966.36396	4.50E-04	2966.36396	0.00107
2965.3996	0.00379	2965.3996	4.40E-04	2965.3996	0.00107
2964.43524	0.00397	2964.43524	4.30E-04	2964.43524	0.00107
2963.47089	0.0041	2963.47089	4.40E-04	2963.47089	0.00108
2962.50653	0.00419	2962.50653	4.60E-04	2962.50653	0.00109
2961.54217	0.00425	2961.54217	4.70E-04	2961.54217	0.00111
2960.57781	0.00429	2960.57781	4.80E-04	2960.57781	0.00112
2959.61346	0.00435	2959.61346	4.90E-04	2959.61346	0.00113
2958.6491	0.00446	2958.6491	4.90E-04	2958.6491	0.00114
2957.68474	0.00462	2957.68474	4.90E-04	2957.68474	0.00115
2956.72038	0.00474	2956.72038	4.90E-04	2956.72038	0.00115
2955.75603	0.0048	2955.75603	5.10E-04	2955.75603	0.00114
2954.79167	0.00491	2954.79167	5.30E-04	2954.79167	0.00115
2953.82731	0.00507	2953.82731	5.50E-04	2953.82731	0.00115
2952.86295	0.00517	2952.86295	5.70E-04	2952.86295	0.00115
2951.89859	0.0052	2951.89859	5.80E-04	2951.89859	0.00116
2950.93424	0.00523	2950.93424	5.90E-04	2950.93424	0.00117
2949.96988	0.00528	2949.96988	6.00E-04	2949.96988	0.00118
2949.00552	0.00527	2949.00552	6.10E-04	2949.00552	0.00118
2948.04116	0.00524	2948.04116	6.40E-04	2948.04116	0.00118
2947.07681	0.00525	2947.07681	6.60E-04	2947.07681	0.00119
2946.11245	0.00531	2946.11245	6.80E-04	2946.11245	0.00119
2945.14809	0.00542	2945.14809	6.90E-04	2945.14809	0.0012
2944.18373	0.00552	2944.18373	6.90E-04	2944.18373	0.00121
2943.21938	0.00556	2943.21938	6.90E-04	2943.21938	0.00122
2942.25502	0.00553	2942.25502	6.80E-04	2942.25502	0.00124
2941.29066	0.00545	2941.29066	6.80E-04	2941.29066	0.00126
2940.3263	0.00541	2940.3263	6.70E-04	2940.3263	0.00127
2939.36195	0.00549	2939.36195	6.70E-04	2939.36195	0.00129
2938.39759	0.00563	2938.39759	6.70E-04	2938.39759	0.00131
2937.43323	0.00574	2937.43323	6.70E-04	2937.43323	0.00133
2936.46887	0.00581	2936.46887	6.80E-04	2936.46887	0.00136
2935.50452	0.00585	2935.50452	6.80E-04	2935.50452	0.00138
2934.54016	0.00594	2934.54016	6.70E-04	2934.54016	0.00141
2933.5758	0.0061	2933.5758	6.70E-04	2933.5758	0.00144
2932.61144	0.0063	2932.61144	6.60E-04	2932.61144	0.00147
2931.64709	0.00645	2931.64709	6.50E-04	2931.64709	0.00149
2930.68273	0.00654	2930.68273	6.50E-04	2930.68273	0.0015
2929.71837	0.00663	2929.71837	6.40E-04	2929.71837	0.00151

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2928.75401	0.00675	2928.75401	6.40E-04	2928.75401	0.00152
2927.78965	0.00682	2927.78965	6.40E-04	2927.78965	0.00153
2926.8253	0.00682	2926.8253	6.50E-04	2926.8253	0.00155
2925.86094	0.00686	2925.86094	6.60E-04	2925.86094	0.00156
2924.89658	0.00693	2924.89658	6.60E-04	2924.89658	0.00157
2923.93222	0.00692	2923.93222	6.60E-04	2923.93222	0.00158
2922.96787	0.00689	2922.96787	6.60E-04	2922.96787	0.00158
2922.00351	0.00685	2922.00351	6.50E-04	2922.00351	0.00159
2921.03915	0.00672	2921.03915	6.40E-04	2921.03915	0.00159
2920.07479	0.00658	2920.07479	6.40E-04	2920.07479	0.00158
2919.11044	0.00653	2919.11044	6.50E-04	2919.11044	0.00156
2918.14608	0.00645	2918.14608	6.50E-04	2918.14608	0.00152
2917.18172	0.00631	2917.18172	6.50E-04	2917.18172	0.00148
2916.21736	0.00619	2916.21736	6.50E-04	2916.21736	0.00144
2915.25301	0.0061	2915.25301	6.50E-04	2915.25301	0.00141
2914.28865	0.00595	2914.28865	6.40E-04	2914.28865	0.00138
2913.32429	0.00579	2913.32429	6.40E-04	2913.32429	0.00136
2912.35993	0.00566	2912.35993	6.30E-04	2912.35993	0.00132
2911.39558	0.00555	2911.39558	6.30E-04	2911.39558	0.00129
2910.43122	0.00544	2910.43122	6.20E-04	2910.43122	0.00126
2909.46686	0.0054	2909.46686	6.10E-04	2909.46686	0.00124
2908.5025	0.0054	2908.5025	6.10E-04	2908.5025	0.00122
2907.53815	0.00532	2907.53815	6.20E-04	2907.53815	0.00122
2906.57379	0.00519	2906.57379	6.20E-04	2906.57379	0.00121
2905.60943	0.0051	2905.60943	6.20E-04	2905.60943	0.0012
2904.64507	0.00505	2904.64507	6.20E-04	2904.64507	0.00118
2903.68071	0.00492	2903.68071	6.10E-04	2903.68071	0.00117
2902.71636	0.00473	2902.71636	5.90E-04	2902.71636	0.00115
2901.752	0.00459	2901.752	5.80E-04	2901.752	0.00114
2900.78764	0.00453	2900.78764	5.60E-04	2900.78764	0.00113
2899.82328	0.0045	2899.82328	5.50E-04	2899.82328	0.00112
2898.85893	0.00441	2898.85893	5.40E-04	2898.85893	0.00111
2897.89457	0.00427	2897.89457	5.30E-04	2897.89457	0.0011
2896.93021	0.00422	2896.93021	5.30E-04	2896.93021	0.00109
2895.96585	0.00425	2895.96585	5.20E-04	2895.96585	0.00107
2895.0015	0.00421	2895.0015	5.20E-04	2895.0015	0.00106
2894.03714	0.00407	2894.03714	5.10E-04	2894.03714	0.00105
2893.07278	0.00391	2893.07278	5.00E-04	2893.07278	0.00105
2892.10842	0.00381	2892.10842	4.90E-04	2892.10842	0.00105
2891.14407	0.00375	2891.14407	4.80E-04	2891.14407	0.00105
2890.17971	0.00367	2890.17971	4.70E-04	2890.17971	0.00104

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2889.21535	0.00359	2889.21535	4.60E-04	2889.21535	0.00103
2888.25099	0.00355	2888.25099	4.50E-04	2888.25099	0.00102
2887.28664	0.00352	2887.28664	4.50E-04	2887.28664	0.00101
2886.32228	0.00348	2886.32228	4.50E-04	2886.32228	1.00E-03
2885.35792	0.00345	2885.35792	4.40E-04	2885.35792	1.00E-03
2884.39356	0.00334	2884.39356	4.40E-04	2884.39356	1.00E-03
2883.42921	0.0032	2883.42921	4.40E-04	2883.42921	1.00E-03
2882.46485	0.00314	2882.46485	4.40E-04	2882.46485	1.00E-03
2881.50049	0.00317	2881.50049	4.50E-04	2881.50049	1.00E-03
2880.53613	0.00322	2880.53613	4.50E-04	2880.53613	0.00101
2879.57178	0.00329	2879.57178	4.50E-04	2879.57178	0.00101
2878.60742	0.00336	2878.60742	4.40E-04	2878.60742	0.00101
2877.64306	0.00339	2877.64306	4.30E-04	2877.64306	0.00101
2876.6787	0.00341	2876.6787	4.20E-04	2876.6787	0.00101
2875.71434	0.00342	2875.71434	4.10E-04	2875.71434	0.00101
2874.74999	0.0034	2874.74999	4.00E-04	2874.74999	1.00E-03
2873.78563	0.0033	2873.78563	4.00E-04	2873.78563	1.00E-03
2872.82127	0.00321	2872.82127	4.00E-04	2872.82127	1.00E-03
2871.85691	0.00323	2871.85691	4.00E-04	2871.85691	1.00E-03
2870.89256	0.00333	2870.89256	4.10E-04	2870.89256	1.00E-03
2869.9282	0.00338	2869.9282	4.20E-04	2869.9282	9.90E-04
2868.96384	0.00339	2868.96384	4.20E-04	2868.96384	9.80E-04
2867.99948	0.00346	2867.99948	4.10E-04	2867.99948	9.60E-04
2867.03513	0.0035	2867.03513	4.00E-04	2867.03513	9.40E-04
2866.07077	0.00343	2866.07077	3.80E-04	2866.07077	9.30E-04
2865.10641	0.00334	2865.10641	3.70E-04	2865.10641	9.40E-04
2864.14205	0.00335	2864.14205	3.60E-04	2864.14205	9.50E-04
2863.1777	0.00345	2863.1777	3.70E-04	2863.1777	9.80E-04
2862.21334	0.00353	2862.21334	3.70E-04	2862.21334	1.00E-03
2861.24898	0.00356	2861.24898	3.80E-04	2861.24898	0.00101
2860.28462	0.00357	2860.28462	3.80E-04	2860.28462	0.00101
2859.32027	0.00357	2859.32027	3.90E-04	2859.32027	1.00E-03
2858.35591	0.00359	2858.35591	3.90E-04	2858.35591	1.00E-03
2857.39155	0.00364	2857.39155	3.90E-04	2857.39155	0.00101
2856.42719	0.00371	2856.42719	3.90E-04	2856.42719	0.00101
2855.46284	0.0038	2855.46284	3.90E-04	2855.46284	0.00103
2854.49848	0.00384	2854.49848	3.80E-04	2854.49848	0.00104
2853.53412	0.00376	2853.53412	3.70E-04	2853.53412	0.00104
2852.56976	0.00364	2852.56976	3.60E-04	2852.56976	0.00105
2851.6054	0.0036	2851.6054	3.60E-04	2851.6054	0.00105
2850.64105	0.00359	2850.64105	3.60E-04	2850.64105	0.00105

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2849.67669	0.00355	2849.67669	3.50E-04	2849.67669	0.00104
2848.71233	0.00349	2848.71233	3.50E-04	2848.71233	0.00103
2847.74797	0.00343	2847.74797	3.40E-04	2847.74797	1.00E-03
2846.78362	0.00331	2846.78362	3.40E-04	2846.78362	9.60E-04
2845.81926	0.00315	2845.81926	3.30E-04	2845.81926	9.20E-04
2844.8549	0.00302	2844.8549	3.20E-04	2844.8549	8.80E-04
2843.89054	0.00295	2843.89054	3.10E-04	2843.89054	8.50E-04
2842.92619	0.00289	2842.92619	3.10E-04	2842.92619	8.40E-04
2841.96183	0.00282	2841.96183	3.00E-04	2841.96183	8.20E-04
2840.99747	0.00274	2840.99747	3.00E-04	2840.99747	8.10E-04
2840.03311	0.00261	2840.03311	3.00E-04	2840.03311	7.90E-04
2839.06876	0.00241	2839.06876	3.00E-04	2839.06876	7.80E-04
2838.1044	0.00225	2838.1044	3.00E-04	2838.1044	7.60E-04
2837.14004	0.00216	2837.14004	3.00E-04	2837.14004	7.50E-04
2836.17568	0.00214	2836.17568	3.00E-04	2836.17568	7.30E-04
2835.21133	0.00215	2835.21133	3.00E-04	2835.21133	7.20E-04
2834.24697	0.00214	2834.24697	3.00E-04	2834.24697	7.10E-04
2833.28261	0.00205	2833.28261	3.00E-04	2833.28261	7.00E-04
2832.31825	0.00191	2832.31825	3.00E-04	2832.31825	6.90E-04
2831.3539	0.0018	2831.3539	2.90E-04	2831.3539	6.80E-04
2830.38954	0.00178	2830.38954	2.70E-04	2830.38954	6.70E-04
2829.42518	0.00181	2829.42518	2.60E-04	2829.42518	6.80E-04
2828.46082	0.00181	2828.46082	2.50E-04	2828.46082	6.80E-04
2827.49647	0.00176	2827.49647	2.50E-04	2827.49647	6.90E-04
2826.53211	0.00171	2826.53211	2.60E-04	2826.53211	6.90E-04
2825.56775	0.00168	2825.56775	2.70E-04	2825.56775	6.80E-04
2824.60339	0.00167	2824.60339	2.70E-04	2824.60339	6.80E-04
2823.63903	0.00171	2823.63903	2.70E-04	2823.63903	6.70E-04
2822.67468	0.00174	2822.67468	2.60E-04	2822.67468	6.60E-04
2821.71032	0.00174	2821.71032	2.50E-04	2821.71032	6.40E-04
2820.74596	0.00174	2820.74596	2.50E-04	2820.74596	6.30E-04
2819.7816	0.00175	2819.7816	2.60E-04	2819.7816	6.20E-04
2818.81725	0.00174	2818.81725	2.70E-04	2818.81725	6.20E-04
2817.85289	0.00167	2817.85289	2.80E-04	2817.85289	6.10E-04
2816.88853	0.0016	2816.88853	2.90E-04	2816.88853	6.10E-04
2815.92417	0.0016	2815.92417	2.90E-04	2815.92417	6.10E-04
2814.95982	0.00164	2814.95982	2.80E-04	2814.95982	6.00E-04
2813.99546	0.00163	2813.99546	2.70E-04	2813.99546	6.00E-04
2813.0311	0.00153	2813.0311	2.70E-04	2813.0311	5.90E-04
2812.06674	0.00144	2812.06674	2.70E-04	2812.06674	5.80E-04
2811.10239	0.00144	2811.10239	2.70E-04	2811.10239	5.80E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2810.13803	0.00154	2810.13803	2.70E-04	2810.13803	5.70E-04
2809.17367	0.00159	2809.17367	2.80E-04	2809.17367	5.70E-04
2808.20931	0.00154	2808.20931	2.70E-04	2808.20931	5.70E-04
2807.24496	0.00148	2807.24496	2.60E-04	2807.24496	5.80E-04
2806.2806	0.00146	2806.2806	2.40E-04	2806.2806	5.80E-04
2805.31624	0.00144	2805.31624	2.20E-04	2805.31624	5.80E-04
2804.35188	0.00141	2804.35188	2.10E-04	2804.35188	5.70E-04
2803.38753	0.00143	2803.38753	2.10E-04	2803.38753	5.70E-04
2802.42317	0.00147	2802.42317	2.20E-04	2802.42317	5.60E-04
2801.45881	0.00148	2801.45881	2.30E-04	2801.45881	5.60E-04
2800.49445	0.00146	2800.49445	2.30E-04	2800.49445	5.60E-04
2799.53009	0.00144	2799.53009	2.40E-04	2799.53009	5.60E-04
2798.56574	0.00145	2798.56574	2.40E-04	2798.56574	5.70E-04
2797.60138	0.00149	2797.60138	2.40E-04	2797.60138	5.70E-04
2796.63702	0.00148	2796.63702	2.40E-04	2796.63702	5.70E-04
2795.67266	0.00142	2795.67266	2.40E-04	2795.67266	5.70E-04
2794.70831	0.00138	2794.70831	2.40E-04	2794.70831	5.50E-04
2793.74395	0.00138	2793.74395	2.40E-04	2793.74395	5.40E-04
2792.77959	0.00135	2792.77959	2.40E-04	2792.77959	5.30E-04
2791.81523	0.00132	2791.81523	2.40E-04	2791.81523	5.20E-04
2790.85088	0.0013	2790.85088	2.40E-04	2790.85088	5.20E-04
2789.88652	0.00127	2789.88652	2.40E-04	2789.88652	5.10E-04
2788.92216	0.00121	2788.92216	2.30E-04	2788.92216	5.00E-04
2787.9578	0.00116	2787.9578	2.30E-04	2787.9578	5.00E-04
2786.99345	0.00118	2786.99345	2.20E-04	2786.99345	5.00E-04
2786.02909	0.00122	2786.02909	2.10E-04	2786.02909	5.00E-04
2785.06473	0.00125	2785.06473	2.00E-04	2785.06473	5.00E-04
2784.10037	0.00128	2784.10037	2.00E-04	2784.10037	4.90E-04
2783.13602	0.00126	2783.13602	2.10E-04	2783.13602	4.90E-04
2782.17166	0.00117	2782.17166	2.20E-04	2782.17166	4.80E-04
2781.2073	0.00107	2781.2073	2.20E-04	2781.2073	4.80E-04
2780.24294	0.00105	2780.24294	2.20E-04	2780.24294	4.70E-04
2779.27859	0.0011	2779.27859	2.10E-04	2779.27859	4.70E-04
2778.31423	0.00113	2778.31423	2.00E-04	2778.31423	4.70E-04
2777.34987	0.00109	2777.34987	1.90E-04	2777.34987	4.70E-04
2776.38551	0.00109	2776.38551	1.90E-04	2776.38551	4.80E-04
2775.42115	0.00114	2775.42115	1.90E-04	2775.42115	4.80E-04
2774.4568	0.00122	2774.4568	1.90E-04	2774.4568	4.80E-04
2773.49244	0.00125	2773.49244	1.90E-04	2773.49244	4.80E-04
2772.52808	0.0012	2772.52808	1.90E-04	2772.52808	4.70E-04
2771.56372	0.00115	2771.56372	1.90E-04	2771.56372	4.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2770.59937	0.00113	2770.59937	1.90E-04	2770.59937	4.70E-04
2769.63501	0.00112	2769.63501	1.90E-04	2769.63501	4.70E-04
2768.67065	0.00108	2768.67065	1.90E-04	2768.67065	4.80E-04
2767.70629	0.00106	2767.70629	1.90E-04	2767.70629	4.80E-04
2766.74194	0.00108	2766.74194	1.90E-04	2766.74194	4.80E-04
2765.77758	0.00112	2765.77758	1.90E-04	2765.77758	4.80E-04
2764.81322	0.00114	2764.81322	1.90E-04	2764.81322	4.80E-04
2763.84886	0.00111	2763.84886	2.00E-04	2763.84886	4.80E-04
2762.88451	0.00104	2762.88451	2.00E-04	2762.88451	4.80E-04
2761.92015	1.00E-03	2761.92015	2.00E-04	2761.92015	4.80E-04
2760.95579	0.00102	2760.95579	2.00E-04	2760.95579	4.80E-04
2759.99143	0.00105	2759.99143	2.00E-04	2759.99143	4.80E-04
2759.02708	0.00105	2759.02708	1.90E-04	2759.02708	4.80E-04
2758.06272	0.00103	2758.06272	1.80E-04	2758.06272	4.70E-04
2757.09836	0.00103	2757.09836	1.80E-04	2757.09836	4.60E-04
2756.134	0.00105	2756.134	1.80E-04	2756.134	4.50E-04
2755.16965	0.00103	2755.16965	1.80E-04	2755.16965	4.50E-04
2754.20529	0.00104	2754.20529	1.80E-04	2754.20529	4.50E-04
2753.24093	0.0011	2753.24093	1.80E-04	2753.24093	4.50E-04
2752.27657	0.00113	2752.27657	1.80E-04	2752.27657	4.50E-04
2751.31222	0.00111	2751.31222	1.80E-04	2751.31222	4.40E-04
2750.34786	0.00112	2750.34786	1.80E-04	2750.34786	4.40E-04
2749.3835	0.00113	2749.3835	1.80E-04	2749.3835	4.30E-04
2748.41914	0.00111	2748.41914	1.90E-04	2748.41914	4.20E-04
2747.45478	0.00113	2747.45478	2.00E-04	2747.45478	4.20E-04
2746.49043	0.00118	2746.49043	2.00E-04	2746.49043	4.30E-04
2745.52607	0.0012	2745.52607	2.00E-04	2745.52607	4.40E-04
2744.56171	0.00115	2744.56171	2.00E-04	2744.56171	4.40E-04
2743.59735	0.00107	2743.59735	2.00E-04	2743.59735	4.50E-04
2742.633	0.00104	2742.633	2.00E-04	2742.633	4.50E-04
2741.66864	0.00103	2741.66864	2.00E-04	2741.66864	4.50E-04
2740.70428	0.00103	2740.70428	2.00E-04	2740.70428	4.40E-04
2739.73992	0.00104	2739.73992	2.00E-04	2739.73992	4.40E-04
2738.77557	0.00101	2738.77557	2.00E-04	2738.77557	4.40E-04
2737.81121	9.90E-04	2737.81121	1.90E-04	2737.81121	4.40E-04
2736.84685	0.00101	2736.84685	1.80E-04	2736.84685	4.40E-04
2735.88249	0.00106	2735.88249	1.70E-04	2735.88249	4.30E-04
2734.91814	0.0011	2734.91814	1.70E-04	2734.91814	4.20E-04
2733.95378	0.0011	2733.95378	1.70E-04	2733.95378	4.10E-04
2732.98942	0.00109	2732.98942	1.70E-04	2732.98942	4.10E-04
2732.02506	0.00112	2732.02506	1.80E-04	2732.02506	4.10E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2731.06071	0.0011	2731.06071	1.80E-04	2731.06071	4.10E-04
2730.09635	0.00103	2730.09635	1.80E-04	2730.09635	4.10E-04
2729.13199	0.00101	2729.13199	1.70E-04	2729.13199	4.10E-04
2728.16763	0.00103	2728.16763	1.60E-04	2728.16763	4.00E-04
2727.20328	0.00101	2727.20328	1.50E-04	2727.20328	3.90E-04
2726.23892	9.80E-04	2726.23892	1.40E-04	2726.23892	3.90E-04
2725.27456	1.00E-03	2725.27456	1.40E-04	2725.27456	3.90E-04
2724.3102	0.00103	2724.3102	1.40E-04	2724.3102	3.90E-04
2723.34584	0.00104	2723.34584	1.50E-04	2723.34584	4.00E-04
2722.38149	0.00103	2722.38149	1.60E-04	2722.38149	4.10E-04
2721.41713	0.00101	2721.41713	1.60E-04	2721.41713	4.10E-04
2720.45277	9.80E-04	2720.45277	1.60E-04	2720.45277	4.10E-04
2719.48841	9.20E-04	2719.48841	1.50E-04	2719.48841	4.00E-04
2718.52406	8.50E-04	2718.52406	1.60E-04	2718.52406	3.90E-04
2717.5597	8.10E-04	2717.5597	1.60E-04	2717.5597	3.80E-04
2716.59534	8.20E-04	2716.59534	1.70E-04	2716.59534	3.70E-04
2715.63098	8.70E-04	2715.63098	1.70E-04	2715.63098	3.60E-04
2714.66663	9.10E-04	2714.66663	1.80E-04	2714.66663	3.70E-04
2713.70227	8.90E-04	2713.70227	1.80E-04	2713.70227	3.70E-04
2712.73791	8.50E-04	2712.73791	1.70E-04	2712.73791	3.80E-04
2711.77355	8.20E-04	2711.77355	1.60E-04	2711.77355	3.80E-04
2710.8092	7.80E-04	2710.8092	1.60E-04	2710.8092	3.80E-04
2709.84484	7.40E-04	2709.84484	1.60E-04	2709.84484	3.80E-04
2708.88048	7.40E-04	2708.88048	1.60E-04	2708.88048	3.80E-04
2707.91612	8.10E-04	2707.91612	1.70E-04	2707.91612	3.80E-04
2706.95177	8.80E-04	2706.95177	1.60E-04	2706.95177	3.70E-04
2705.98741	9.10E-04	2705.98741	1.60E-04	2705.98741	3.70E-04
2705.02305	9.10E-04	2705.02305	1.50E-04	2705.02305	3.70E-04
2704.05869	9.00E-04	2704.05869	1.50E-04	2704.05869	3.60E-04
2703.09434	8.90E-04	2703.09434	1.50E-04	2703.09434	3.60E-04
2702.12998	8.60E-04	2702.12998	1.40E-04	2702.12998	3.50E-04
2701.16562	8.40E-04	2701.16562	1.40E-04	2701.16562	3.50E-04
2700.20126	8.40E-04	2700.20126	1.40E-04	2700.20126	3.50E-04
2699.23691	8.40E-04	2699.23691	1.40E-04	2699.23691	3.50E-04
2698.27255	8.20E-04	2698.27255	1.40E-04	2698.27255	3.50E-04
2697.30819	7.90E-04	2697.30819	1.50E-04	2697.30819	3.50E-04
2696.34383	7.50E-04	2696.34383	1.50E-04	2696.34383	3.50E-04
2695.37947	7.20E-04	2695.37947	1.50E-04	2695.37947	3.50E-04
2694.41512	7.70E-04	2694.41512	1.60E-04	2694.41512	3.50E-04
2693.45076	8.30E-04	2693.45076	1.60E-04	2693.45076	3.50E-04
2692.4864	8.50E-04	2692.4864	1.50E-04	2692.4864	3.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2691.52204	8.70E-04	2691.52204	1.50E-04	2691.52204	3.40E-04
2690.55769	8.80E-04	2690.55769	1.40E-04	2690.55769	3.40E-04
2689.59333	8.40E-04	2689.59333	1.40E-04	2689.59333	3.40E-04
2688.62897	8.00E-04	2688.62897	1.40E-04	2688.62897	3.40E-04
2687.66461	8.10E-04	2687.66461	1.50E-04	2687.66461	3.40E-04
2686.70026	8.30E-04	2686.70026	1.70E-04	2686.70026	3.40E-04
2685.7359	8.40E-04	2685.7359	1.80E-04	2685.7359	3.40E-04
2684.77154	8.60E-04	2684.77154	1.80E-04	2684.77154	3.40E-04
2683.80718	8.90E-04	2683.80718	1.70E-04	2683.80718	3.40E-04
2682.84283	8.90E-04	2682.84283	1.70E-04	2682.84283	3.40E-04
2681.87847	8.90E-04	2681.87847	1.60E-04	2681.87847	3.30E-04
2680.91411	9.00E-04	2680.91411	1.60E-04	2680.91411	3.30E-04
2679.94975	9.20E-04	2679.94975	1.50E-04	2679.94975	3.30E-04
2678.9854	9.10E-04	2678.9854	1.50E-04	2678.9854	3.40E-04
2678.02104	8.60E-04	2678.02104	1.50E-04	2678.02104	3.40E-04
2677.05668	8.40E-04	2677.05668	1.40E-04	2677.05668	3.40E-04
2676.09232	8.10E-04	2676.09232	1.40E-04	2676.09232	3.40E-04
2675.12797	8.00E-04	2675.12797	1.50E-04	2675.12797	3.40E-04
2674.16361	8.40E-04	2674.16361	1.50E-04	2674.16361	3.40E-04
2673.19925	8.80E-04	2673.19925	1.50E-04	2673.19925	3.40E-04
2672.23489	8.70E-04	2672.23489	1.50E-04	2672.23489	3.40E-04
2671.27053	8.10E-04	2671.27053	1.50E-04	2671.27053	3.30E-04
2670.30618	7.80E-04	2670.30618	1.50E-04	2670.30618	3.20E-04
2669.34182	8.00E-04	2669.34182	1.50E-04	2669.34182	3.10E-04
2668.37746	8.30E-04	2668.37746	1.50E-04	2668.37746	3.10E-04
2667.4131	8.30E-04	2667.4131	1.50E-04	2667.4131	3.10E-04
2666.44875	8.30E-04	2666.44875	1.50E-04	2666.44875	3.20E-04
2665.48439	8.20E-04	2665.48439	1.50E-04	2665.48439	3.20E-04
2664.52003	8.20E-04	2664.52003	1.50E-04	2664.52003	3.20E-04
2663.55567	8.30E-04	2663.55567	1.50E-04	2663.55567	3.20E-04
2662.59132	8.30E-04	2662.59132	1.40E-04	2662.59132	3.20E-04
2661.62696	8.10E-04	2661.62696	1.50E-04	2661.62696	3.20E-04
2660.6626	7.90E-04	2660.6626	1.50E-04	2660.6626	3.20E-04
2659.69824	7.80E-04	2659.69824	1.50E-04	2659.69824	3.20E-04
2658.73389	7.70E-04	2658.73389	1.50E-04	2658.73389	3.20E-04
2657.76953	7.70E-04	2657.76953	1.50E-04	2657.76953	3.10E-04
2656.80517	7.80E-04	2656.80517	1.40E-04	2656.80517	3.00E-04
2655.84081	7.80E-04	2655.84081	1.40E-04	2655.84081	3.00E-04
2654.87646	8.00E-04	2654.87646	1.30E-04	2654.87646	3.00E-04
2653.9121	8.10E-04	2653.9121	1.30E-04	2653.9121	3.00E-04
2652.94774	7.70E-04	2652.94774	1.40E-04	2652.94774	3.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2651.98338	7.10E-04	2651.98338	1.40E-04	2651.98338	3.00E-04
2651.01903	6.60E-04	2651.01903	1.40E-04	2651.01903	3.00E-04
2650.05467	6.40E-04	2650.05467	1.30E-04	2650.05467	2.90E-04
2649.09031	6.70E-04	2649.09031	1.30E-04	2649.09031	2.90E-04
2648.12595	7.50E-04	2648.12595	1.30E-04	2648.12595	3.00E-04
2647.1616	8.40E-04	2647.1616	1.30E-04	2647.1616	3.00E-04
2646.19724	8.60E-04	2646.19724	1.40E-04	2646.19724	3.10E-04
2645.23288	7.70E-04	2645.23288	1.50E-04	2645.23288	3.10E-04
2644.26852	7.00E-04	2644.26852	1.50E-04	2644.26852	3.10E-04
2643.30416	6.90E-04	2643.30416	1.50E-04	2643.30416	3.10E-04
2642.33981	6.80E-04	2642.33981	1.50E-04	2642.33981	3.00E-04
2641.37545	6.80E-04	2641.37545	1.40E-04	2641.37545	3.00E-04
2640.41109	7.00E-04	2640.41109	1.30E-04	2640.41109	3.00E-04
2639.44673	7.50E-04	2639.44673	1.30E-04	2639.44673	3.00E-04
2638.48238	7.70E-04	2638.48238	1.30E-04	2638.48238	3.10E-04
2637.51802	7.60E-04	2637.51802	1.30E-04	2637.51802	3.10E-04
2636.55366	7.70E-04	2636.55366	1.30E-04	2636.55366	3.00E-04
2635.5893	7.90E-04	2635.5893	1.20E-04	2635.5893	3.00E-04
2634.62495	8.10E-04	2634.62495	1.20E-04	2634.62495	3.00E-04
2633.66059	8.30E-04	2633.66059	1.20E-04	2633.66059	3.00E-04
2632.69623	8.10E-04	2632.69623	1.20E-04	2632.69623	3.00E-04
2631.73187	7.40E-04	2631.73187	1.30E-04	2631.73187	3.00E-04
2630.76752	6.90E-04	2630.76752	1.40E-04	2630.76752	3.00E-04
2629.80316	7.00E-04	2629.80316	1.50E-04	2629.80316	2.90E-04
2628.8388	6.90E-04	2628.8388	1.60E-04	2628.8388	2.90E-04
2627.87444	6.80E-04	2627.87444	1.60E-04	2627.87444	3.00E-04
2626.91009	7.20E-04	2626.91009	1.60E-04	2626.91009	3.00E-04
2625.94573	8.10E-04	2625.94573	1.50E-04	2625.94573	3.00E-04
2624.98137	8.50E-04	2624.98137	1.40E-04	2624.98137	2.90E-04
2624.01701	8.30E-04	2624.01701	1.40E-04	2624.01701	2.80E-04
2623.05266	8.00E-04	2623.05266	1.40E-04	2623.05266	2.70E-04
2622.0883	8.00E-04	2622.0883	1.50E-04	2622.0883	2.70E-04
2621.12394	8.00E-04	2621.12394	1.50E-04	2621.12394	2.70E-04
2620.15958	7.90E-04	2620.15958	1.50E-04	2620.15958	2.70E-04
2619.19522	7.70E-04	2619.19522	1.50E-04	2619.19522	2.70E-04
2618.23087	7.90E-04	2618.23087	1.50E-04	2618.23087	2.70E-04
2617.26651	7.80E-04	2617.26651	1.50E-04	2617.26651	2.70E-04
2616.30215	7.50E-04	2616.30215	1.50E-04	2616.30215	2.70E-04
2615.33779	7.70E-04	2615.33779	1.50E-04	2615.33779	2.70E-04
2614.37344	8.00E-04	2614.37344	1.50E-04	2614.37344	2.70E-04
2613.40908	8.40E-04	2613.40908	1.40E-04	2613.40908	2.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2612.44472	8.60E-04	2612.44472	1.40E-04	2612.44472	2.60E-04
2611.48036	8.40E-04	2611.48036	1.30E-04	2611.48036	2.60E-04
2610.51601	7.50E-04	2610.51601	1.30E-04	2610.51601	2.50E-04
2609.55165	6.70E-04	2609.55165	1.20E-04	2609.55165	2.40E-04
2608.58729	6.30E-04	2608.58729	1.20E-04	2608.58729	2.40E-04
2607.62293	6.40E-04	2607.62293	1.20E-04	2607.62293	2.50E-04
2606.65858	6.90E-04	2606.65858	1.20E-04	2606.65858	2.60E-04
2605.69422	7.40E-04	2605.69422	1.30E-04	2605.69422	2.60E-04
2604.72986	7.70E-04	2604.72986	1.30E-04	2604.72986	2.60E-04
2603.7655	7.60E-04	2603.7655	1.30E-04	2603.7655	2.60E-04
2602.80115	7.20E-04	2602.80115	1.30E-04	2602.80115	2.50E-04
2601.83679	6.90E-04	2601.83679	1.20E-04	2601.83679	2.40E-04
2600.87243	6.90E-04	2600.87243	1.20E-04	2600.87243	2.40E-04
2599.90807	7.20E-04	2599.90807	1.20E-04	2599.90807	2.40E-04
2598.94372	7.40E-04	2598.94372	1.20E-04	2598.94372	2.40E-04
2597.97936	7.20E-04	2597.97936	1.20E-04	2597.97936	2.30E-04
2597.015	7.10E-04	2597.015	1.10E-04	2597.015	2.30E-04
2596.05064	7.50E-04	2596.05064	1.00E-04	2596.05064	2.40E-04
2595.08628	7.60E-04	2595.08628	1.00E-04	2595.08628	2.40E-04
2594.12193	7.50E-04	2594.12193	1.00E-04	2594.12193	2.40E-04
2593.15757	7.50E-04	2593.15757	1.10E-04	2593.15757	2.40E-04
2592.19321	7.20E-04	2592.19321	1.20E-04	2592.19321	2.40E-04
2591.22885	6.70E-04	2591.22885	1.30E-04	2591.22885	2.40E-04
2590.2645	6.60E-04	2590.2645	1.30E-04	2590.2645	2.40E-04
2589.30014	6.80E-04	2589.30014	1.40E-04	2589.30014	2.40E-04
2588.33578	6.80E-04	2588.33578	1.30E-04	2588.33578	2.50E-04
2587.37142	6.50E-04	2587.37142	1.30E-04	2587.37142	2.50E-04
2586.40707	6.30E-04	2586.40707	1.20E-04	2586.40707	2.50E-04
2585.44271	6.70E-04	2585.44271	1.20E-04	2585.44271	2.50E-04
2584.47835	7.20E-04	2584.47835	1.20E-04	2584.47835	2.50E-04
2583.51399	7.00E-04	2583.51399	1.30E-04	2583.51399	2.40E-04
2582.54964	6.40E-04	2582.54964	1.30E-04	2582.54964	2.40E-04
2581.58528	5.80E-04	2581.58528	1.20E-04	2581.58528	2.40E-04
2580.62092	5.80E-04	2580.62092	1.20E-04	2580.62092	2.40E-04
2579.65656	6.00E-04	2579.65656	1.10E-04	2579.65656	2.30E-04
2578.69221	6.10E-04	2578.69221	1.10E-04	2578.69221	2.30E-04
2577.72785	6.00E-04	2577.72785	1.10E-04	2577.72785	2.30E-04
2576.76349	6.20E-04	2576.76349	1.00E-04	2576.76349	2.30E-04
2575.79913	6.80E-04	2575.79913	1.00E-04	2575.79913	2.20E-04
2574.83478	7.20E-04	2574.83478	1.10E-04	2574.83478	2.20E-04
2573.87042	6.80E-04	2573.87042	1.10E-04	2573.87042	2.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2572.90606	6.20E-04	2572.90606	1.00E-04	2572.90606	2.10E-04
2571.9417	6.00E-04	2571.9417	1.00E-04	2571.9417	2.10E-04
2570.97735	6.20E-04	2570.97735	1.00E-04	2570.97735	2.10E-04
2570.01299	6.20E-04	2570.01299	1.00E-04	2570.01299	2.10E-04
2569.04863	5.90E-04	2569.04863	1.00E-04	2569.04863	2.10E-04
2568.08427	5.50E-04	2568.08427	1.00E-04	2568.08427	2.10E-04
2567.11991	5.50E-04	2567.11991	1.00E-04	2567.11991	2.00E-04
2566.15556	5.90E-04	2566.15556	1.00E-04	2566.15556	2.00E-04
2565.1912	6.20E-04	2565.1912	1.00E-04	2565.1912	2.00E-04
2564.22684	6.50E-04	2564.22684	1.00E-04	2564.22684	2.00E-04
2563.26248	6.80E-04	2563.26248	1.10E-04	2563.26248	2.10E-04
2562.29813	7.00E-04	2562.29813	1.10E-04	2562.29813	2.10E-04
2561.33377	7.20E-04	2561.33377	1.10E-04	2561.33377	2.10E-04
2560.36941	7.30E-04	2560.36941	1.10E-04	2560.36941	2.10E-04
2559.40505	7.00E-04	2559.40505	1.10E-04	2559.40505	2.10E-04
2558.4407	6.10E-04	2558.4407	1.10E-04	2558.4407	2.10E-04
2557.47634	5.00E-04	2557.47634	1.10E-04	2557.47634	2.10E-04
2556.51198	4.70E-04	2556.51198	1.10E-04	2556.51198	2.10E-04
2555.54762	5.50E-04	2555.54762	1.00E-04	2555.54762	2.00E-04
2554.58327	6.70E-04	2554.58327	9.00E-05	2554.58327	2.00E-04
2553.61891	7.40E-04	2553.61891	9.00E-05	2553.61891	2.00E-04
2552.65455	7.30E-04	2552.65455	8.00E-05	2552.65455	2.00E-04
2551.69019	7.00E-04	2551.69019	9.00E-05	2551.69019	2.00E-04
2550.72584	6.70E-04	2550.72584	9.00E-05	2550.72584	1.90E-04
2549.76148	6.70E-04	2549.76148	9.00E-05	2549.76148	1.90E-04
2548.79712	6.50E-04	2548.79712	9.00E-05	2548.79712	1.90E-04
2547.83276	6.10E-04	2547.83276	9.00E-05	2547.83276	1.90E-04
2546.86841	5.70E-04	2546.86841	8.00E-05	2546.86841	1.90E-04
2545.90405	5.50E-04	2545.90405	8.00E-05	2545.90405	1.90E-04
2544.93969	4.90E-04	2544.93969	8.00E-05	2544.93969	1.90E-04
2543.97533	4.70E-04	2543.97533	8.00E-05	2543.97533	1.90E-04
2543.01097	5.40E-04	2543.01097	9.00E-05	2543.01097	1.90E-04
2542.04662	5.90E-04	2542.04662	9.00E-05	2542.04662	1.90E-04
2541.08226	6.00E-04	2541.08226	9.00E-05	2541.08226	1.90E-04
2540.1179	5.70E-04	2540.1179	9.00E-05	2540.1179	1.90E-04
2539.15354	5.50E-04	2539.15354	9.00E-05	2539.15354	1.80E-04
2538.18919	5.70E-04	2538.18919	9.00E-05	2538.18919	1.80E-04
2537.22483	5.80E-04	2537.22483	9.00E-05	2537.22483	1.80E-04
2536.26047	5.30E-04	2536.26047	9.00E-05	2536.26047	1.80E-04
2535.29611	4.80E-04	2535.29611	9.00E-05	2535.29611	1.80E-04
2534.33176	4.80E-04	2534.33176	9.00E-05	2534.33176	1.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2533.3674	4.70E-04	2533.3674	9.00E-05	2533.3674	1.80E-04
2532.40304	4.40E-04	2532.40304	8.00E-05	2532.40304	1.80E-04
2531.43868	4.30E-04	2531.43868	8.00E-05	2531.43868	1.70E-04
2530.47433	4.40E-04	2530.47433	8.00E-05	2530.47433	1.60E-04
2529.50997	4.40E-04	2529.50997	8.00E-05	2529.50997	1.50E-04
2528.54561	4.40E-04	2528.54561	7.00E-05	2528.54561	1.50E-04
2527.58125	4.30E-04	2527.58125	7.00E-05	2527.58125	1.60E-04
2526.6169	4.30E-04	2526.6169	7.00E-05	2526.6169	1.60E-04
2525.65254	4.40E-04	2525.65254	6.00E-05	2525.65254	1.70E-04
2524.68818	4.40E-04	2524.68818	6.00E-05	2524.68818	1.70E-04
2523.72382	4.20E-04	2523.72382	6.00E-05	2523.72382	1.70E-04
2522.75947	4.30E-04	2522.75947	7.00E-05	2522.75947	1.60E-04
2521.79511	4.70E-04	2521.79511	8.00E-05	2521.79511	1.50E-04
2520.83075	4.90E-04	2520.83075	9.00E-05	2520.83075	1.50E-04
2519.86639	4.90E-04	2519.86639	9.00E-05	2519.86639	1.50E-04
2518.90204	4.80E-04	2518.90204	1.00E-04	2518.90204	1.50E-04
2517.93768	4.40E-04	2517.93768	1.00E-04	2517.93768	1.50E-04
2516.97332	4.20E-04	2516.97332	9.00E-05	2516.97332	1.50E-04
2516.00896	4.40E-04	2516.00896	9.00E-05	2516.00896	1.60E-04
2515.0446	4.50E-04	2515.0446	9.00E-05	2515.0446	1.60E-04
2514.08025	4.40E-04	2514.08025	9.00E-05	2514.08025	1.60E-04
2513.11589	4.20E-04	2513.11589	9.00E-05	2513.11589	1.60E-04
2512.15153	3.70E-04	2512.15153	9.00E-05	2512.15153	1.60E-04
2511.18717	3.20E-04	2511.18717	9.00E-05	2511.18717	1.60E-04
2510.22282	3.50E-04	2510.22282	9.00E-05	2510.22282	1.60E-04
2509.25846	4.10E-04	2509.25846	8.00E-05	2509.25846	1.60E-04
2508.2941	4.00E-04	2508.2941	7.00E-05	2508.2941	1.60E-04
2507.32974	3.50E-04	2507.32974	7.00E-05	2507.32974	1.50E-04
2506.36539	3.70E-04	2506.36539	6.00E-05	2506.36539	1.50E-04
2505.40103	4.10E-04	2505.40103	6.00E-05	2505.40103	1.40E-04
2504.43667	4.30E-04	2504.43667	6.00E-05	2504.43667	1.40E-04
2503.47231	4.60E-04	2503.47231	6.00E-05	2503.47231	1.30E-04
2502.50796	5.10E-04	2502.50796	6.00E-05	2502.50796	1.30E-04
2501.5436	5.30E-04	2501.5436	7.00E-05	2501.5436	1.30E-04
2500.57924	5.00E-04	2500.57924	8.00E-05	2500.57924	1.40E-04
2499.61488	4.60E-04	2499.61488	8.00E-05	2499.61488	1.40E-04
2498.65053	4.30E-04	2498.65053	8.00E-05	2498.65053	1.50E-04
2497.68617	4.10E-04	2497.68617	7.00E-05	2497.68617	1.50E-04
2496.72181	4.20E-04	2496.72181	5.00E-05	2496.72181	1.50E-04
2495.75745	4.40E-04	2495.75745	4.00E-05	2495.75745	1.50E-04
2494.7931	4.40E-04	2494.7931	3.00E-05	2494.7931	1.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2493.82874	4.10E-04	2493.82874	3.00E-05	2493.82874	1.50E-04
2492.86438	3.50E-04	2492.86438	4.00E-05	2492.86438	1.40E-04
2491.90002	3.50E-04	2491.90002	6.00E-05	2491.90002	1.30E-04
2490.93566	4.10E-04	2490.93566	7.00E-05	2490.93566	1.30E-04
2489.97131	4.40E-04	2489.97131	8.00E-05	2489.97131	1.20E-04
2489.00695	4.10E-04	2489.00695	9.00E-05	2489.00695	1.20E-04
2488.04259	3.80E-04	2488.04259	9.00E-05	2488.04259	1.20E-04
2487.07823	4.10E-04	2487.07823	8.00E-05	2487.07823	1.30E-04
2486.11388	4.70E-04	2486.11388	7.00E-05	2486.11388	1.30E-04
2485.14952	5.00E-04	2485.14952	7.00E-05	2485.14952	1.30E-04
2484.18516	4.70E-04	2484.18516	7.00E-05	2484.18516	1.40E-04
2483.2208	4.30E-04	2483.2208	7.00E-05	2483.2208	1.40E-04
2482.25645	4.00E-04	2482.25645	6.00E-05	2482.25645	1.30E-04
2481.29209	3.60E-04	2481.29209	6.00E-05	2481.29209	1.30E-04
2480.32773	3.50E-04	2480.32773	6.00E-05	2480.32773	1.20E-04
2479.36337	3.90E-04	2479.36337	6.00E-05	2479.36337	1.20E-04
2478.39902	4.30E-04	2478.39902	7.00E-05	2478.39902	1.10E-04
2477.43466	4.20E-04	2477.43466	8.00E-05	2477.43466	1.10E-04
2476.4703	4.20E-04	2476.4703	8.00E-05	2476.4703	1.20E-04
2475.50594	4.10E-04	2475.50594	7.00E-05	2475.50594	1.20E-04
2474.54159	3.90E-04	2474.54159	7.00E-05	2474.54159	1.20E-04
2473.57723	4.20E-04	2473.57723	6.00E-05	2473.57723	1.20E-04
2472.61287	5.00E-04	2472.61287	6.00E-05	2472.61287	1.20E-04
2471.64851	5.50E-04	2471.64851	6.00E-05	2471.64851	1.20E-04
2470.68416	5.20E-04	2470.68416	6.00E-05	2470.68416	1.20E-04
2469.7198	4.50E-04	2469.7198	7.00E-05	2469.7198	1.20E-04
2468.75544	4.10E-04	2468.75544	7.00E-05	2468.75544	1.20E-04
2467.79108	3.70E-04	2467.79108	7.00E-05	2467.79108	1.20E-04
2466.82672	3.50E-04	2466.82672	6.00E-05	2466.82672	1.20E-04
2465.86237	3.80E-04	2465.86237	6.00E-05	2465.86237	1.20E-04
2464.89801	4.20E-04	2464.89801	5.00E-05	2464.89801	1.20E-04
2463.93365	4.50E-04	2463.93365	5.00E-05	2463.93365	1.20E-04
2462.96929	4.70E-04	2462.96929	6.00E-05	2462.96929	1.20E-04
2462.00494	4.60E-04	2462.00494	7.00E-05	2462.00494	1.20E-04
2461.04058	4.60E-04	2461.04058	7.00E-05	2461.04058	1.10E-04
2460.07622	4.60E-04	2460.07622	8.00E-05	2460.07622	1.20E-04
2459.11186	4.30E-04	2459.11186	8.00E-05	2459.11186	1.20E-04
2458.14751	3.90E-04	2458.14751	7.00E-05	2458.14751	1.20E-04
2457.18315	3.90E-04	2457.18315	6.00E-05	2457.18315	1.20E-04
2456.21879	4.40E-04	2456.21879	6.00E-05	2456.21879	1.20E-04
2455.25443	4.80E-04	2455.25443	5.00E-05	2455.25443	1.20E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2454.29008	4.80E-04	2454.29008	6.00E-05	2454.29008	1.20E-04
2453.32572	4.30E-04	2453.32572	6.00E-05	2453.32572	1.10E-04
2452.36136	4.20E-04	2452.36136	7.00E-05	2452.36136	1.20E-04
2451.397	4.30E-04	2451.397	7.00E-05	2451.397	1.20E-04
2450.43265	4.20E-04	2450.43265	7.00E-05	2450.43265	1.20E-04
2449.46829	4.10E-04	2449.46829	7.00E-05	2449.46829	1.20E-04
2448.50393	4.30E-04	2448.50393	7.00E-05	2448.50393	1.30E-04
2447.53957	4.80E-04	2447.53957	8.00E-05	2447.53957	1.30E-04
2446.57522	5.20E-04	2446.57522	8.00E-05	2446.57522	1.40E-04
2445.61086	5.00E-04	2445.61086	8.00E-05	2445.61086	1.40E-04
2444.6465	4.40E-04	2444.6465	8.00E-05	2444.6465	1.40E-04
2443.68214	4.00E-04	2443.68214	7.00E-05	2443.68214	1.40E-04
2442.71779	4.10E-04	2442.71779	7.00E-05	2442.71779	1.30E-04
2441.75343	4.10E-04	2441.75343	7.00E-05	2441.75343	1.30E-04
2440.78907	4.10E-04	2440.78907	7.00E-05	2440.78907	1.20E-04
2439.82471	4.50E-04	2439.82471	7.00E-05	2439.82471	1.20E-04
2438.86035	4.50E-04	2438.86035	7.00E-05	2438.86035	1.20E-04
2437.896	3.90E-04	2437.896	7.00E-05	2437.896	1.20E-04
2436.93164	3.50E-04	2436.93164	6.00E-05	2436.93164	1.20E-04
2435.96728	3.70E-04	2435.96728	6.00E-05	2435.96728	1.20E-04
2435.00292	4.20E-04	2435.00292	6.00E-05	2435.00292	1.10E-04
2434.03857	4.40E-04	2434.03857	7.00E-05	2434.03857	1.10E-04
2433.07421	4.30E-04	2433.07421	7.00E-05	2433.07421	1.00E-04
2432.10985	4.10E-04	2432.10985	6.00E-05	2432.10985	1.10E-04
2431.14549	3.90E-04	2431.14549	6.00E-05	2431.14549	1.20E-04
2430.18114	3.90E-04	2430.18114	6.00E-05	2430.18114	1.40E-04
2429.21678	4.10E-04	2429.21678	7.00E-05	2429.21678	1.40E-04
2428.25242	4.30E-04	2428.25242	6.00E-05	2428.25242	1.40E-04
2427.28806	4.40E-04	2427.28806	6.00E-05	2427.28806	1.30E-04
2426.32371	4.20E-04	2426.32371	6.00E-05	2426.32371	1.20E-04
2425.35935	4.00E-04	2425.35935	5.00E-05	2425.35935	1.10E-04
2424.39499	3.90E-04	2424.39499	5.00E-05	2424.39499	1.00E-04
2423.43063	4.00E-04	2423.43063	6.00E-05	2423.43063	1.00E-04
2422.46628	4.50E-04	2422.46628	6.00E-05	2422.46628	1.10E-04
2421.50192	4.90E-04	2421.50192	7.00E-05	2421.50192	1.10E-04
2420.53756	4.90E-04	2420.53756	7.00E-05	2420.53756	1.10E-04
2419.5732	4.40E-04	2419.5732	6.00E-05	2419.5732	1.10E-04
2418.60885	4.10E-04	2418.60885	5.00E-05	2418.60885	1.00E-04
2417.64449	3.90E-04	2417.64449	5.00E-05	2417.64449	1.00E-04
2416.68013	3.70E-04	2416.68013	5.00E-05	2416.68013	1.10E-04
2415.71577	3.80E-04	2415.71577	5.00E-05	2415.71577	1.10E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2414.75141	4.00E-04	2414.75141	5.00E-05	2414.75141	1.10E-04
2413.78706	3.80E-04	2413.78706	5.00E-05	2413.78706	1.10E-04
2412.8227	3.60E-04	2412.8227	5.00E-05	2412.8227	1.10E-04
2411.85834	3.40E-04	2411.85834	6.00E-05	2411.85834	1.10E-04
2410.89398	3.00E-04	2410.89398	6.00E-05	2410.89398	1.10E-04
2409.92963	2.60E-04	2409.92963	6.00E-05	2409.92963	1.20E-04
2408.96527	2.80E-04	2408.96527	6.00E-05	2408.96527	1.30E-04
2408.00091	3.20E-04	2408.00091	6.00E-05	2408.00091	1.30E-04
2407.03655	3.60E-04	2407.03655	6.00E-05	2407.03655	1.20E-04
2406.0722	3.80E-04	2406.0722	5.00E-05	2406.0722	1.10E-04
2405.10784	3.60E-04	2405.10784	5.00E-05	2405.10784	1.10E-04
2404.14348	3.10E-04	2404.14348	5.00E-05	2404.14348	1.10E-04
2403.17912	3.10E-04	2403.17912	6.00E-05	2403.17912	1.10E-04
2402.21477	3.30E-04	2402.21477	6.00E-05	2402.21477	1.20E-04
2401.25041	3.30E-04	2401.25041	6.00E-05	2401.25041	1.20E-04
2400.28605	3.10E-04	2400.28605	7.00E-05	2400.28605	1.20E-04
2399.32169	3.10E-04	2399.32169	7.00E-05	2399.32169	1.20E-04
2398.35734	3.20E-04	2398.35734	7.00E-05	2398.35734	1.10E-04
2397.39298	3.40E-04	2397.39298	7.00E-05	2397.39298	1.00E-04
2396.42862	3.70E-04	2396.42862	6.00E-05	2396.42862	1.00E-04
2395.46426	3.90E-04	2395.46426	5.00E-05	2395.46426	9.00E-05
2394.49991	4.00E-04	2394.49991	5.00E-05	2394.49991	9.00E-05
2393.53555	4.20E-04	2393.53555	5.00E-05	2393.53555	9.00E-05
2392.57119	4.10E-04	2392.57119	5.00E-05	2392.57119	9.00E-05
2391.60683	3.70E-04	2391.60683	5.00E-05	2391.60683	9.00E-05
2390.64248	3.20E-04	2390.64248	6.00E-05	2390.64248	9.00E-05
2389.67812	2.80E-04	2389.67812	6.00E-05	2389.67812	9.00E-05
2388.71376	2.90E-04	2388.71376	6.00E-05	2388.71376	9.00E-05
2387.7494	3.30E-04	2387.7494	6.00E-05	2387.7494	9.00E-05
2386.78504	3.70E-04	2386.78504	7.00E-05	2386.78504	9.00E-05
2385.82069	3.90E-04	2385.82069	8.00E-05	2385.82069	9.00E-05
2384.85633	3.80E-04	2384.85633	9.00E-05	2384.85633	7.00E-05
2383.89197	4.10E-04	2383.89197	1.10E-04	2383.89197	6.00E-05
2382.92761	4.90E-04	2382.92761	1.20E-04	2382.92761	5.00E-05
2381.96326	5.40E-04	2381.96326	1.30E-04	2381.96326	4.00E-05
2380.9989	5.80E-04	2380.9989	1.40E-04	2380.9989	4.00E-05
2380.03454	6.90E-04	2380.03454	1.60E-04	2380.03454	4.00E-05
2379.07018	8.10E-04	2379.07018	1.70E-04	2379.07018	5.00E-05
2378.10583	8.40E-04	2378.10583	2.00E-04	2378.10583	7.00E-05
2377.14147	8.00E-04	2377.14147	2.40E-04	2377.14147	9.00E-05
2376.17711	9.20E-04	2376.17711	2.70E-04	2376.17711	1.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2375.21275	0.00125	2375.21275	3.10E-04	2375.21275	1.10E-04
2374.2484	0.00148	2374.2484	3.40E-04	2374.2484	1.30E-04
2373.28404	0.00142	2373.28404	3.70E-04	2373.28404	1.40E-04
2372.31968	0.00138	2372.31968	3.80E-04	2372.31968	1.50E-04
2371.35532	0.00154	2371.35532	4.00E-04	2371.35532	1.40E-04
2370.39097	0.00175	2370.39097	4.20E-04	2370.39097	1.50E-04
2369.42661	0.00202	2369.42661	4.50E-04	2369.42661	1.90E-04
2368.46225	0.00227	2368.46225	5.00E-04	2368.46225	2.50E-04
2367.49789	0.00226	2367.49789	5.70E-04	2367.49789	3.20E-04
2366.53354	0.00216	2366.53354	6.50E-04	2366.53354	3.70E-04
2365.56918	0.00227	2365.56918	7.10E-04	2365.56918	4.00E-04
2364.60482	0.00245	2364.60482	7.60E-04	2364.60482	4.20E-04
2363.64046	0.00249	2363.64046	7.90E-04	2363.64046	4.50E-04
2362.6761	0.00243	2362.6761	8.00E-04	2362.6761	4.90E-04
2361.71175	0.00231	2361.71175	7.60E-04	2361.71175	5.60E-04
2360.74739	0.00208	2360.74739	7.20E-04	2360.74739	6.20E-04
2359.78303	0.00199	2359.78303	6.70E-04	2359.78303	6.50E-04
2358.81867	0.00219	2358.81867	6.10E-04	2358.81867	6.40E-04
2357.85432	0.00243	2357.85432	5.40E-04	2357.85432	6.20E-04
2356.88996	0.00241	2356.88996	5.00E-04	2356.88996	6.10E-04
2355.9256	0.00216	2355.9256	4.90E-04	2355.9256	6.20E-04
2354.96124	0.00192	2354.96124	4.70E-04	2354.96124	6.30E-04
2353.99689	0.00187	2353.99689	4.30E-04	2353.99689	6.30E-04
2353.03253	0.00189	2353.03253	3.60E-04	2353.03253	6.20E-04
2352.06817	0.0017	2352.06817	2.90E-04	2352.06817	6.10E-04
2351.10381	0.00137	2351.10381	2.30E-04	2351.10381	5.70E-04
2350.13946	0.00114	2350.13946	2.00E-04	2350.13946	4.80E-04
2349.1751	0.00112	2349.1751	2.10E-04	2349.1751	3.60E-04
2348.21074	0.00123	2348.21074	2.60E-04	2348.21074	2.50E-04
2347.24638	0.00141	2347.24638	3.20E-04	2347.24638	1.60E-04
2346.28203	0.00158	2346.28203	3.80E-04	2346.28203	1.20E-04
2345.31767	0.00174	2345.31767	4.50E-04	2345.31767	1.40E-04
2344.35331	0.00187	2344.35331	4.90E-04	2344.35331	2.20E-04
2343.38895	0.0019	2343.38895	5.20E-04	2343.38895	3.10E-04
2342.4246	0.00182	2342.4246	5.20E-04	2342.4246	3.70E-04
2341.46024	0.00175	2341.46024	5.00E-04	2341.46024	4.00E-04
2340.49588	0.00175	2340.49588	4.70E-04	2340.49588	4.20E-04
2339.53152	0.00171	2339.53152	4.30E-04	2339.53152	4.30E-04
2338.56716	0.00158	2338.56716	4.20E-04	2338.56716	4.30E-04
2337.60281	0.00159	2337.60281	4.10E-04	2337.60281	4.20E-04
2336.63845	0.00174	2336.63845	4.00E-04	2336.63845	4.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2335.67409	0.00184	2335.67409	4.00E-04	2335.67409	3.70E-04
2334.70973	0.00187	2334.70973	4.00E-04	2334.70973	3.50E-04
2333.74538	0.00187	2333.74538	4.00E-04	2333.74538	3.40E-04
2332.78102	0.00179	2332.78102	4.20E-04	2332.78102	3.30E-04
2331.81666	0.00166	2331.81666	4.40E-04	2331.81666	3.50E-04
2330.8523	0.00151	2330.8523	4.40E-04	2330.8523	3.80E-04
2329.88795	0.00143	2329.88795	4.20E-04	2329.88795	4.00E-04
2328.92359	0.00149	2328.92359	3.90E-04	2328.92359	4.20E-04
2327.95923	0.00158	2327.95923	3.60E-04	2327.95923	4.20E-04
2326.99487	0.00157	2326.99487	3.30E-04	2326.99487	4.10E-04
2326.03052	0.00154	2326.03052	3.00E-04	2326.03052	3.90E-04
2325.06616	0.00151	2325.06616	2.90E-04	2325.06616	3.80E-04
2324.1018	0.00141	2324.1018	2.90E-04	2324.1018	3.60E-04
2323.13744	0.00134	2323.13744	2.80E-04	2323.13744	3.50E-04
2322.17309	0.00128	2322.17309	2.60E-04	2322.17309	3.50E-04
2321.20873	0.00109	2321.20873	2.30E-04	2321.20873	3.50E-04
2320.24437	8.90E-04	2320.24437	2.10E-04	2320.24437	3.50E-04
2319.28001	8.60E-04	2319.28001	1.90E-04	2319.28001	3.50E-04
2318.31566	9.10E-04	2318.31566	1.80E-04	2318.31566	3.40E-04
2317.3513	8.70E-04	2317.3513	1.70E-04	2317.3513	3.30E-04
2316.38694	8.10E-04	2316.38694	1.70E-04	2316.38694	3.00E-04
2315.42258	8.20E-04	2315.42258	1.70E-04	2315.42258	2.60E-04
2314.45823	8.80E-04	2314.45823	1.70E-04	2314.45823	2.40E-04
2313.49387	8.90E-04	2313.49387	1.60E-04	2313.49387	2.20E-04
2312.52951	7.80E-04	2312.52951	1.60E-04	2312.52951	2.20E-04
2311.56515	6.80E-04	2311.56515	1.50E-04	2311.56515	2.10E-04
2310.60079	6.50E-04	2310.60079	1.50E-04	2310.60079	2.10E-04
2309.63644	6.50E-04	2309.63644	1.40E-04	2309.63644	2.10E-04
2308.67208	6.20E-04	2308.67208	1.30E-04	2308.67208	2.20E-04
2307.70772	5.70E-04	2307.70772	1.20E-04	2307.70772	2.10E-04
2306.74336	5.10E-04	2306.74336	1.10E-04	2306.74336	2.10E-04
2305.77901	4.40E-04	2305.77901	1.10E-04	2305.77901	2.00E-04
2304.81465	4.30E-04	2304.81465	1.00E-04	2304.81465	1.80E-04
2303.85029	4.90E-04	2303.85029	9.00E-05	2303.85029	1.70E-04
2302.88593	5.40E-04	2302.88593	8.00E-05	2302.88593	1.50E-04
2301.92158	5.50E-04	2301.92158	8.00E-05	2301.92158	1.40E-04
2300.95722	5.40E-04	2300.95722	7.00E-05	2300.95722	1.40E-04
2299.99286	4.80E-04	2299.99286	6.00E-05	2299.99286	1.40E-04
2299.0285	4.10E-04	2299.0285	6.00E-05	2299.0285	1.30E-04
2298.06415	4.00E-04	2298.06415	7.00E-05	2298.06415	1.40E-04
2297.09979	4.20E-04	2297.09979	7.00E-05	2297.09979	1.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2296.13543	4.30E-04	2296.13543	7.00E-05	2296.13543	1.30E-04
2295.17107	4.30E-04	2295.17107	7.00E-05	2295.17107	1.30E-04
2294.20672	4.20E-04	2294.20672	7.00E-05	2294.20672	1.20E-04
2293.24236	4.30E-04	2293.24236	7.00E-05	2293.24236	1.10E-04
2292.278	4.30E-04	2292.278	6.00E-05	2292.278	1.00E-04
2291.31364	4.00E-04	2291.31364	5.00E-05	2291.31364	1.00E-04
2290.34929	3.40E-04	2290.34929	3.00E-05	2290.34929	9.00E-05
2289.38493	2.90E-04	2289.38493	2.00E-05	2289.38493	9.00E-05
2288.42057	2.70E-04	2288.42057	1.00E-05	2288.42057	9.00E-05
2287.45621	3.00E-04	2287.45621	1.00E-05	2287.45621	9.00E-05
2286.49185	3.20E-04	2286.49185	2.00E-05	2286.49185	9.00E-05
2285.5275	2.70E-04	2285.5275	2.00E-05	2285.5275	9.00E-05
2284.56314	2.10E-04	2284.56314	3.00E-05	2284.56314	8.00E-05
2283.59878	1.80E-04	2283.59878	3.00E-05	2283.59878	7.00E-05
2282.63442	1.90E-04	2282.63442	3.00E-05	2282.63442	7.00E-05
2281.67007	2.00E-04	2281.67007	4.00E-05	2281.67007	6.00E-05
2280.70571	2.10E-04	2280.70571	4.00E-05	2280.70571	7.00E-05
2279.74135	2.50E-04	2279.74135	4.00E-05	2279.74135	7.00E-05
2278.77699	2.90E-04	2278.77699	5.00E-05	2278.77699	7.00E-05
2277.81264	3.20E-04	2277.81264	5.00E-05	2277.81264	8.00E-05
2276.84828	3.70E-04	2276.84828	5.00E-05	2276.84828	8.00E-05
2275.88392	3.90E-04	2275.88392	4.00E-05	2275.88392	8.00E-05
2274.91956	3.60E-04	2274.91956	3.00E-05	2274.91956	8.00E-05
2273.95521	3.20E-04	2273.95521	3.00E-05	2273.95521	8.00E-05
2272.99085	3.00E-04	2272.99085	3.00E-05	2272.99085	8.00E-05
2272.02649	2.60E-04	2272.02649	3.00E-05	2272.02649	7.00E-05
2271.06213	2.00E-04	2271.06213	4.00E-05	2271.06213	7.00E-05
2270.09778	1.70E-04	2270.09778	4.00E-05	2270.09778	6.00E-05
2269.13342	1.90E-04	2269.13342	5.00E-05	2269.13342	6.00E-05
2268.16906	2.10E-04	2268.16906	5.00E-05	2268.16906	7.00E-05
2267.2047	2.50E-04	2267.2047	5.00E-05	2267.2047	7.00E-05
2266.24035	2.90E-04	2266.24035	5.00E-05	2266.24035	8.00E-05
2265.27599	3.10E-04	2265.27599	5.00E-05	2265.27599	8.00E-05
2264.31163	3.00E-04	2264.31163	5.00E-05	2264.31163	7.00E-05
2263.34727	2.60E-04	2263.34727	5.00E-05	2263.34727	7.00E-05
2262.38292	2.40E-04	2262.38292	5.00E-05	2262.38292	6.00E-05
2261.41856	2.90E-04	2261.41856	5.00E-05	2261.41856	6.00E-05
2260.4542	3.10E-04	2260.4542	5.00E-05	2260.4542	6.00E-05
2259.48984	2.70E-04	2259.48984	6.00E-05	2259.48984	6.00E-05
2258.52548	2.50E-04	2258.52548	6.00E-05	2258.52548	6.00E-05
2257.56113	2.60E-04	2257.56113	6.00E-05	2257.56113	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2256.59677	2.60E-04	2256.59677	6.00E-05	2256.59677	6.00E-05
2255.63241	2.30E-04	2255.63241	5.00E-05	2255.63241	5.00E-05
2254.66805	2.20E-04	2254.66805	4.00E-05	2254.66805	5.00E-05
2253.7037	2.30E-04	2253.7037	3.00E-05	2253.7037	6.00E-05
2252.73934	2.20E-04	2252.73934	3.00E-05	2252.73934	6.00E-05
2251.77498	2.10E-04	2251.77498	4.00E-05	2251.77498	7.00E-05
2250.81062	2.00E-04	2250.81062	4.00E-05	2250.81062	7.00E-05
2249.84627	2.10E-04	2249.84627	5.00E-05	2249.84627	7.00E-05
2248.88191	2.10E-04	2248.88191	6.00E-05	2248.88191	7.00E-05
2247.91755	2.10E-04	2247.91755	7.00E-05	2247.91755	7.00E-05
2246.95319	2.00E-04	2246.95319	7.00E-05	2246.95319	7.00E-05
2245.98884	1.80E-04	2245.98884	7.00E-05	2245.98884	8.00E-05
2245.02448	1.50E-04	2245.02448	7.00E-05	2245.02448	9.00E-05
2244.06012	1.40E-04	2244.06012	6.00E-05	2244.06012	9.00E-05
2243.09576	1.50E-04	2243.09576	5.00E-05	2243.09576	8.00E-05
2242.13141	1.50E-04	2242.13141	5.00E-05	2242.13141	7.00E-05
2241.16705	1.50E-04	2241.16705	4.00E-05	2241.16705	6.00E-05
2240.20269	1.90E-04	2240.20269	4.00E-05	2240.20269	6.00E-05
2239.23833	2.30E-04	2239.23833	4.00E-05	2239.23833	6.00E-05
2238.27398	2.40E-04	2238.27398	4.00E-05	2238.27398	6.00E-05
2237.30962	2.40E-04	2237.30962	3.00E-05	2237.30962	6.00E-05
2236.34526	2.10E-04	2236.34526	3.00E-05	2236.34526	6.00E-05
2235.3809	1.80E-04	2235.3809	3.00E-05	2235.3809	6.00E-05
2234.41654	1.80E-04	2234.41654	2.00E-05	2234.41654	6.00E-05
2233.45219	1.90E-04	2233.45219	2.00E-05	2233.45219	6.00E-05
2232.48783	1.70E-04	2232.48783	2.00E-05	2232.48783	6.00E-05
2231.52347	1.50E-04	2231.52347	2.00E-05	2231.52347	5.00E-05
2230.55911	1.60E-04	2230.55911	2.00E-05	2230.55911	5.00E-05
2229.59476	1.80E-04	2229.59476	3.00E-05	2229.59476	4.00E-05
2228.6304	1.90E-04	2228.6304	3.00E-05	2228.6304	3.00E-05
2227.66604	1.80E-04	2227.66604	4.00E-05	2227.66604	3.00E-05
2226.70168	1.90E-04	2226.70168	4.00E-05	2226.70168	3.00E-05
2225.73733	2.30E-04	2225.73733	5.00E-05	2225.73733	4.00E-05
2224.77297	2.40E-04	2224.77297	5.00E-05	2224.77297	5.00E-05
2223.80861	2.00E-04	2223.80861	4.00E-05	2223.80861	6.00E-05
2222.84425	1.60E-04	2222.84425	4.00E-05	2222.84425	7.00E-05
2221.8799	1.60E-04	2221.8799	3.00E-05	2221.8799	7.00E-05
2220.91554	1.60E-04	2220.91554	3.00E-05	2220.91554	7.00E-05
2219.95118	1.40E-04	2219.95118	3.00E-05	2219.95118	7.00E-05
2218.98682	1.40E-04	2218.98682	3.00E-05	2218.98682	6.00E-05
2218.02247	1.60E-04	2218.02247	3.00E-05	2218.02247	5.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2217.05811	1.70E-04	2217.05811	4.00E-05	2217.05811	5.00E-05
2216.09375	1.80E-04	2216.09375	4.00E-05	2216.09375	5.00E-05
2215.12939	1.80E-04	2215.12939	4.00E-05	2215.12939	6.00E-05
2214.16504	1.80E-04	2214.16504	4.00E-05	2214.16504	6.00E-05
2213.20068	1.60E-04	2213.20068	4.00E-05	2213.20068	6.00E-05
2212.23632	1.40E-04	2212.23632	4.00E-05	2212.23632	6.00E-05
2211.27196	1.40E-04	2211.27196	4.00E-05	2211.27196	5.00E-05
2210.30761	1.70E-04	2210.30761	5.00E-05	2210.30761	5.00E-05
2209.34325	1.50E-04	2209.34325	5.00E-05	2209.34325	5.00E-05
2208.37889	1.00E-04	2208.37889	5.00E-05	2208.37889	5.00E-05
2207.41453	8.00E-05	2207.41453	6.00E-05	2207.41453	6.00E-05
2206.45017	1.20E-04	2206.45017	6.00E-05	2206.45017	6.00E-05
2205.48582	1.50E-04	2205.48582	5.00E-05	2205.48582	6.00E-05
2204.52146	1.30E-04	2204.52146	5.00E-05	2204.52146	6.00E-05
2203.5571	1.20E-04	2203.5571	4.00E-05	2203.5571	5.00E-05
2202.59274	1.40E-04	2202.59274	4.00E-05	2202.59274	5.00E-05
2201.62839	1.90E-04	2201.62839	4.00E-05	2201.62839	4.00E-05
2200.66403	2.10E-04	2200.66403	4.00E-05	2200.66403	4.00E-05
2199.69967	2.00E-04	2199.69967	4.00E-05	2199.69967	4.00E-05
2198.73531	1.80E-04	2198.73531	4.00E-05	2198.73531	4.00E-05
2197.77096	1.70E-04	2197.77096	4.00E-05	2197.77096	4.00E-05
2196.8066	1.80E-04	2196.8066	4.00E-05	2196.8066	5.00E-05
2195.84224	1.90E-04	2195.84224	4.00E-05	2195.84224	5.00E-05
2194.87788	1.80E-04	2194.87788	4.00E-05	2194.87788	5.00E-05
2193.91353	1.70E-04	2193.91353	4.00E-05	2193.91353	5.00E-05
2192.94917	1.80E-04	2192.94917	4.00E-05	2192.94917	5.00E-05
2191.98481	1.90E-04	2191.98481	4.00E-05	2191.98481	5.00E-05
2191.02045	1.60E-04	2191.02045	4.00E-05	2191.02045	5.00E-05
2190.0561	1.50E-04	2190.0561	4.00E-05	2190.0561	5.00E-05
2189.09174	1.80E-04	2189.09174	4.00E-05	2189.09174	5.00E-05
2188.12738	1.90E-04	2188.12738	4.00E-05	2188.12738	5.00E-05
2187.16302	1.60E-04	2187.16302	4.00E-05	2187.16302	5.00E-05
2186.19867	1.40E-04	2186.19867	4.00E-05	2186.19867	5.00E-05
2185.23431	1.50E-04	2185.23431	4.00E-05	2185.23431	5.00E-05
2184.26995	1.40E-04	2184.26995	4.00E-05	2184.26995	5.00E-05
2183.30559	1.20E-04	2183.30559	4.00E-05	2183.30559	5.00E-05
2182.34123	1.20E-04	2182.34123	4.00E-05	2182.34123	6.00E-05
2181.37688	1.20E-04	2181.37688	4.00E-05	2181.37688	6.00E-05
2180.41252	9.00E-05	2180.41252	4.00E-05	2180.41252	6.00E-05
2179.44816	6.00E-05	2179.44816	4.00E-05	2179.44816	6.00E-05
2178.4838	7.00E-05	2178.4838	5.00E-05	2178.4838	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2177.51945	1.10E-04	2177.51945	6.00E-05	2177.51945	6.00E-05
2176.55509	1.60E-04	2176.55509	6.00E-05	2176.55509	6.00E-05
2175.59073	1.70E-04	2175.59073	6.00E-05	2175.59073	6.00E-05
2174.62637	1.80E-04	2174.62637	6.00E-05	2174.62637	6.00E-05
2173.66202	1.80E-04	2173.66202	5.00E-05	2173.66202	6.00E-05
2172.69766	1.60E-04	2172.69766	4.00E-05	2172.69766	5.00E-05
2171.7333	1.20E-04	2171.7333	4.00E-05	2171.7333	4.00E-05
2170.76894	1.00E-04	2170.76894	4.00E-05	2170.76894	4.00E-05
2169.80459	8.00E-05	2169.80459	5.00E-05	2169.80459	4.00E-05
2168.84023	6.00E-05	2168.84023	6.00E-05	2168.84023	3.00E-05
2167.87587	6.00E-05	2167.87587	6.00E-05	2167.87587	3.00E-05
2166.91151	8.00E-05	2166.91151	6.00E-05	2166.91151	4.00E-05
2165.94716	1.10E-04	2165.94716	5.00E-05	2165.94716	4.00E-05
2164.9828	1.20E-04	2164.9828	5.00E-05	2164.9828	4.00E-05
2164.01844	1.20E-04	2164.01844	5.00E-05	2164.01844	5.00E-05
2163.05408	1.40E-04	2163.05408	5.00E-05	2163.05408	5.00E-05
2162.08973	1.20E-04	2162.08973	5.00E-05	2162.08973	5.00E-05
2161.12537	1.00E-04	2161.12537	6.00E-05	2161.12537	5.00E-05
2160.16101	1.00E-04	2160.16101	5.00E-05	2160.16101	5.00E-05
2159.19665	1.10E-04	2159.19665	5.00E-05	2159.19665	6.00E-05
2158.23229	1.10E-04	2158.23229	4.00E-05	2158.23229	6.00E-05
2157.26794	1.30E-04	2157.26794	4.00E-05	2157.26794	6.00E-05
2156.30358	1.10E-04	2156.30358	3.00E-05	2156.30358	5.00E-05
2155.33922	1.10E-04	2155.33922	2.00E-05	2155.33922	4.00E-05
2154.37486	1.40E-04	2154.37486	2.00E-05	2154.37486	4.00E-05
2153.41051	1.80E-04	2153.41051	3.00E-05	2153.41051	4.00E-05
2152.44615	2.00E-04	2152.44615	3.00E-05	2152.44615	4.00E-05
2151.48179	2.00E-04	2151.48179	4.00E-05	2151.48179	5.00E-05
2150.51743	2.00E-04	2150.51743	4.00E-05	2150.51743	5.00E-05
2149.55308	1.50E-04	2149.55308	5.00E-05	2149.55308	5.00E-05
2148.58872	7.00E-05	2148.58872	5.00E-05	2148.58872	5.00E-05
2147.62436	4.00E-05	2147.62436	5.00E-05	2147.62436	5.00E-05
2146.66	8.00E-05	2146.66	5.00E-05	2146.66	5.00E-05
2145.69565	1.50E-04	2145.69565	6.00E-05	2145.69565	6.00E-05
2144.73129	1.80E-04	2144.73129	6.00E-05	2144.73129	6.00E-05
2143.76693	1.70E-04	2143.76693	6.00E-05	2143.76693	6.00E-05
2142.80257	1.50E-04	2142.80257	7.00E-05	2142.80257	6.00E-05
2141.83822	1.60E-04	2141.83822	6.00E-05	2141.83822	6.00E-05
2140.87386	1.80E-04	2140.87386	6.00E-05	2140.87386	6.00E-05
2139.9095	1.50E-04	2139.9095	5.00E-05	2139.9095	5.00E-05
2138.94514	1.10E-04	2138.94514	4.00E-05	2138.94514	5.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2137.98079	1.00E-04	2137.98079	4.00E-05	2137.98079	5.00E-05
2137.01643	1.10E-04	2137.01643	4.00E-05	2137.01643	4.00E-05
2136.05207	1.40E-04	2136.05207	4.00E-05	2136.05207	4.00E-05
2135.08771	1.40E-04	2135.08771	4.00E-05	2135.08771	5.00E-05
2134.12336	1.20E-04	2134.12336	5.00E-05	2134.12336	6.00E-05
2133.159	1.00E-04	2133.159	5.00E-05	2133.159	6.00E-05
2132.19464	9.00E-05	2132.19464	5.00E-05	2132.19464	6.00E-05
2131.23028	9.00E-05	2131.23028	5.00E-05	2131.23028	5.00E-05
2130.26592	1.00E-04	2130.26592	5.00E-05	2130.26592	4.00E-05
2129.30157	1.10E-04	2129.30157	5.00E-05	2129.30157	4.00E-05
2128.33721	1.20E-04	2128.33721	5.00E-05	2128.33721	4.00E-05
2127.37285	1.30E-04	2127.37285	5.00E-05	2127.37285	4.00E-05
2126.40849	1.50E-04	2126.40849	5.00E-05	2126.40849	5.00E-05
2125.44414	1.50E-04	2125.44414	5.00E-05	2125.44414	5.00E-05
2124.47978	1.30E-04	2124.47978	5.00E-05	2124.47978	5.00E-05
2123.51542	1.20E-04	2123.51542	4.00E-05	2123.51542	5.00E-05
2122.55106	1.20E-04	2122.55106	4.00E-05	2122.55106	6.00E-05
2121.58671	1.30E-04	2121.58671	4.00E-05	2121.58671	7.00E-05
2120.62235	1.00E-04	2120.62235	4.00E-05	2120.62235	7.00E-05
2119.65799	8.00E-05	2119.65799	5.00E-05	2119.65799	7.00E-05
2118.69363	8.00E-05	2118.69363	5.00E-05	2118.69363	6.00E-05
2117.72928	1.10E-04	2117.72928	5.00E-05	2117.72928	5.00E-05
2116.76492	1.20E-04	2116.76492	5.00E-05	2116.76492	4.00E-05
2115.80056	1.50E-04	2115.80056	5.00E-05	2115.80056	4.00E-05
2114.8362	1.70E-04	2114.8362	5.00E-05	2114.8362	5.00E-05
2113.87185	1.60E-04	2113.87185	5.00E-05	2113.87185	6.00E-05
2112.90749	1.60E-04	2112.90749	4.00E-05	2112.90749	6.00E-05
2111.94313	1.70E-04	2111.94313	4.00E-05	2111.94313	6.00E-05
2110.97877	1.50E-04	2110.97877	5.00E-05	2110.97877	5.00E-05
2110.01442	1.20E-04	2110.01442	5.00E-05	2110.01442	4.00E-05
2109.05006	1.30E-04	2109.05006	5.00E-05	2109.05006	4.00E-05
2108.0857	1.50E-04	2108.0857	5.00E-05	2108.0857	5.00E-05
2107.12134	1.70E-04	2107.12134	5.00E-05	2107.12134	5.00E-05
2106.15698	1.80E-04	2106.15698	4.00E-05	2106.15698	5.00E-05
2105.19263	1.90E-04	2105.19263	4.00E-05	2105.19263	6.00E-05
2104.22827	1.80E-04	2104.22827	4.00E-05	2104.22827	6.00E-05
2103.26391	1.50E-04	2103.26391	5.00E-05	2103.26391	6.00E-05
2102.29955	1.40E-04	2102.29955	5.00E-05	2102.29955	6.00E-05
2101.3352	1.40E-04	2101.3352	6.00E-05	2101.3352	6.00E-05
2100.37084	1.60E-04	2100.37084	6.00E-05	2100.37084	6.00E-05
2099.40648	1.90E-04	2099.40648	6.00E-05	2099.40648	6.00E-05



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2098.44212	1.90E-04	2098.44212	6.00E-05	2098.44212	6.00E-05
2097.47777	1.60E-04	2097.47777	7.00E-05	2097.47777	6.00E-05
2096.51341	1.00E-04	2096.51341	7.00E-05	2096.51341	5.00E-05
2095.54905	8.00E-05	2095.54905	7.00E-05	2095.54905	4.00E-05
2094.58469	7.00E-05	2094.58469	6.00E-05	2094.58469	4.00E-05
2093.62034	5.00E-05	2093.62034	5.00E-05	2093.62034	4.00E-05
2092.65598	6.00E-05	2092.65598	5.00E-05	2092.65598	5.00E-05
2091.69162	9.00E-05	2091.69162	4.00E-05	2091.69162	6.00E-05
2090.72726	1.30E-04	2090.72726	4.00E-05	2090.72726	6.00E-05
2089.76291	1.50E-04	2089.76291	4.00E-05	2089.76291	7.00E-05
2088.79855	1.80E-04	2088.79855	4.00E-05	2088.79855	8.00E-05
2087.83419	2.20E-04	2087.83419	3.00E-05	2087.83419	7.00E-05
2086.86983	2.10E-04	2086.86983	4.00E-05	2086.86983	7.00E-05
2085.90548	1.40E-04	2085.90548	4.00E-05	2085.90548	6.00E-05
2084.94112	8.00E-05	2084.94112	4.00E-05	2084.94112	6.00E-05
2083.97676	8.00E-05	2083.97676	5.00E-05	2083.97676	5.00E-05
2083.0124	1.30E-04	2083.0124	5.00E-05	2083.0124	4.00E-05
2082.04805	1.70E-04	2082.04805	5.00E-05	2082.04805	4.00E-05
2081.08369	1.80E-04	2081.08369	5.00E-05	2081.08369	4.00E-05
2080.11933	1.50E-04	2080.11933	5.00E-05	2080.11933	4.00E-05
2079.15497	1.50E-04	2079.15497	5.00E-05	2079.15497	4.00E-05
2078.19061	2.00E-04	2078.19061	5.00E-05	2078.19061	4.00E-05
2077.22626	2.40E-04	2077.22626	5.00E-05	2077.22626	4.00E-05
2076.2619	2.10E-04	2076.2619	5.00E-05	2076.2619	5.00E-05
2075.29754	1.60E-04	2075.29754	4.00E-05	2075.29754	5.00E-05
2074.33318	1.60E-04	2074.33318	3.00E-05	2074.33318	5.00E-05
2073.36883	1.80E-04	2073.36883	3.00E-05	2073.36883	6.00E-05
2072.40447	1.80E-04	2072.40447	3.00E-05	2072.40447	6.00E-05
2071.44011	1.70E-04	2071.44011	3.00E-05	2071.44011	6.00E-05
2070.47575	1.40E-04	2070.47575	3.00E-05	2070.47575	6.00E-05
2069.5114	1.10E-04	2069.5114	3.00E-05	2069.5114	6.00E-05
2068.54704	1.00E-04	2068.54704	3.00E-05	2068.54704	6.00E-05
2067.58268	1.10E-04	2067.58268	3.00E-05	2067.58268	5.00E-05
2066.61832	1.20E-04	2066.61832	4.00E-05	2066.61832	6.00E-05
2065.65397	1.30E-04	2065.65397	4.00E-05	2065.65397	6.00E-05
2064.68961	1.20E-04	2064.68961	4.00E-05	2064.68961	6.00E-05
2063.72525	6.00E-05	2063.72525	4.00E-05	2063.72525	7.00E-05
2062.76089	3.00E-05	2062.76089	4.00E-05	2062.76089	6.00E-05
2061.79654	6.00E-05	2061.79654	3.00E-05	2061.79654	6.00E-05
2060.83218	1.00E-04	2060.83218	3.00E-05	2060.83218	6.00E-05
2059.86782	1.00E-04	2059.86782	3.00E-05	2059.86782	5.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2058.90346	9.00E-05	2058.90346	3.00E-05	2058.90346	5.00E-05
2057.93911	1.10E-04	2057.93911	3.00E-05	2057.93911	5.00E-05
2056.97475	1.50E-04	2056.97475	3.00E-05	2056.97475	5.00E-05
2056.01039	1.80E-04	2056.01039	4.00E-05	2056.01039	4.00E-05
2055.04603	2.00E-04	2055.04603	4.00E-05	2055.04603	4.00E-05
2054.08167	2.10E-04	2054.08167	4.00E-05	2054.08167	4.00E-05
2053.11732	1.90E-04	2053.11732	4.00E-05	2053.11732	4.00E-05
2052.15296	1.70E-04	2052.15296	4.00E-05	2052.15296	4.00E-05
2051.1886	1.90E-04	2051.1886	4.00E-05	2051.1886	4.00E-05
2050.22424	2.20E-04	2050.22424	5.00E-05	2050.22424	4.00E-05
2049.25989	2.30E-04	2049.25989	5.00E-05	2049.25989	5.00E-05
2048.29553	2.20E-04	2048.29553	5.00E-05	2048.29553	5.00E-05
2047.33117	2.00E-04	2047.33117	5.00E-05	2047.33117	5.00E-05
2046.36681	1.60E-04	2046.36681	5.00E-05	2046.36681	6.00E-05
2045.40246	1.20E-04	2045.40246	5.00E-05	2045.40246	6.00E-05
2044.4381	1.10E-04	2044.4381	5.00E-05	2044.4381	6.00E-05
2043.47374	1.20E-04	2043.47374	5.00E-05	2043.47374	6.00E-05
2042.50938	1.40E-04	2042.50938	6.00E-05	2042.50938	5.00E-05
2041.54503	1.60E-04	2041.54503	6.00E-05	2041.54503	5.00E-05
2040.58067	1.70E-04	2040.58067	6.00E-05	2040.58067	4.00E-05
2039.61631	1.60E-04	2039.61631	5.00E-05	2039.61631	3.00E-05
2038.65195	1.40E-04	2038.65195	5.00E-05	2038.65195	3.00E-05
2037.6876	1.40E-04	2037.6876	5.00E-05	2037.6876	3.00E-05
2036.72324	1.80E-04	2036.72324	5.00E-05	2036.72324	3.00E-05
2035.75888	1.90E-04	2035.75888	5.00E-05	2035.75888	3.00E-05
2034.79452	1.80E-04	2034.79452	5.00E-05	2034.79452	3.00E-05
2033.83017	1.80E-04	2033.83017	4.00E-05	2033.83017	3.00E-05
2032.86581	1.80E-04	2032.86581	4.00E-05	2032.86581	3.00E-05
2031.90145	1.70E-04	2031.90145	4.00E-05	2031.90145	4.00E-05
2030.93709	1.40E-04	2030.93709	4.00E-05	2030.93709	4.00E-05
2029.97273	1.10E-04	2029.97273	4.00E-05	2029.97273	4.00E-05
2029.00838	1.20E-04	2029.00838	4.00E-05	2029.00838	4.00E-05
2028.04402	1.40E-04	2028.04402	5.00E-05	2028.04402	5.00E-05
2027.07966	1.30E-04	2027.07966	5.00E-05	2027.07966	5.00E-05
2026.1153	1.00E-04	2026.1153	4.00E-05	2026.1153	4.00E-05
2025.15095	8.00E-05	2025.15095	3.00E-05	2025.15095	4.00E-05
2024.18659	8.00E-05	2024.18659	2.00E-05	2024.18659	3.00E-05
2023.22223	1.00E-04	2023.22223	1.00E-05	2023.22223	2.00E-05
2022.25787	1.20E-04	2022.25787	1.00E-05	2022.25787	2.00E-05
2021.29352	1.50E-04	2021.29352	2.00E-05	2021.29352	2.00E-05
2020.32916	1.50E-04	2020.32916	3.00E-05	2020.32916	2.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2019.3648	1.30E-04	2019.3648	4.00E-05	2019.3648	2.00E-05
2018.40044	1.30E-04	2018.40044	5.00E-05	2018.40044	3.00E-05
2017.43609	1.40E-04	2017.43609	4.00E-05	2017.43609	3.00E-05
2016.47173	1.50E-04	2016.47173	3.00E-05	2016.47173	4.00E-05
2015.50737	1.50E-04	2015.50737	2.00E-05	2015.50737	4.00E-05
2014.54301	1.30E-04	2014.54301	1.00E-05	2014.54301	4.00E-05
2013.57866	1.10E-04	2013.57866	2.00E-05	2013.57866	4.00E-05
2012.6143	1.20E-04	2012.6143	2.00E-05	2012.6143	4.00E-05
2011.64994	1.40E-04	2011.64994	3.00E-05	2011.64994	4.00E-05
2010.68558	1.00E-04	2010.68558	3.00E-05	2010.68558	4.00E-05
2009.72123	5.00E-05	2009.72123	3.00E-05	2009.72123	4.00E-05
2008.75687	4.00E-05	2008.75687	2.00E-05	2008.75687	4.00E-05
2007.79251	5.00E-05	2007.79251	1.00E-05	2007.79251	3.00E-05
2006.82815	5.00E-05	2006.82815	0	2006.82815	2.00E-05
2005.8638	5.00E-05	2005.8638	0	2005.8638	2.00E-05
2004.89944	7.00E-05	2004.89944	1.00E-05	2004.89944	1.00E-05
2003.93508	6.00E-05	2003.93508	1.00E-05	2003.93508	1.00E-05
2002.97072	4.00E-05	2002.97072	2.00E-05	2002.97072	1.00E-05
2002.00636	3.00E-05	2002.00636	2.00E-05	2002.00636	0
2001.04201	2.00E-05	2001.04201	3.00E-05	2001.04201	0
2000.07765	3.00E-05	2000.07765	3.00E-05	2000.07765	0
1999.11329	6.00E-05	1999.11329	3.00E-05	1999.11329	1.00E-05
1998.14893	9.00E-05	1998.14893	3.00E-05	1998.14893	2.00E-05
1997.18458	1.30E-04	1997.18458	3.00E-05	1997.18458	3.00E-05
1996.22022	1.20E-04	1996.22022	3.00E-05	1996.22022	3.00E-05
1995.25586	9.00E-05	1995.25586	3.00E-05	1995.25586	3.00E-05
1994.2915	7.00E-05	1994.2915	4.00E-05	1994.2915	3.00E-05
1993.32715	7.00E-05	1993.32715	4.00E-05	1993.32715	3.00E-05
1992.36279	7.00E-05	1992.36279	4.00E-05	1992.36279	3.00E-05
1991.39843	8.00E-05	1991.39843	3.00E-05	1991.39843	3.00E-05
1990.43407	7.00E-05	1990.43407	3.00E-05	1990.43407	3.00E-05
1989.46972	0	1989.46972	1.00E-05	1989.46972	3.00E-05
1988.50536	-3.00E-05	1988.50536	0	1988.50536	3.00E-05
1987.541	2.00E-05	1987.541	0	1987.541	2.00E-05
1986.57664	1.00E-04	1986.57664	0	1986.57664	2.00E-05
1985.61229	1.30E-04	1985.61229	0	1985.61229	2.00E-05
1984.64793	1.10E-04	1984.64793	0	1984.64793	3.00E-05
1983.68357	7.00E-05	1983.68357	1.00E-05	1983.68357	3.00E-05
1982.71921	5.00E-05	1982.71921	1.00E-05	1982.71921	2.00E-05
1981.75486	4.00E-05	1981.75486	2.00E-05	1981.75486	2.00E-05
1980.7905	4.00E-05	1980.7905	2.00E-05	1980.7905	1.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1979.82614	7.00E-05	1979.82614	1.00E-05	1979.82614	1.00E-05
1978.86178	1.10E-04	1978.86178	1.00E-05	1978.86178	2.00E-05
1977.89742	1.20E-04	1977.89742	1.00E-05	1977.89742	3.00E-05
1976.93307	9.00E-05	1976.93307	0	1976.93307	3.00E-05
1975.96871	4.00E-05	1975.96871	0	1975.96871	3.00E-05
1975.00435	2.00E-05	1975.00435	0	1975.00435	3.00E-05
1974.03999	6.00E-05	1974.03999	0	1974.03999	3.00E-05
1973.07564	8.00E-05	1973.07564	1.00E-05	1973.07564	2.00E-05
1972.11128	9.00E-05	1972.11128	1.00E-05	1972.11128	2.00E-05
1971.14692	7.00E-05	1971.14692	2.00E-05	1971.14692	2.00E-05
1970.18256	3.00E-05	1970.18256	3.00E-05	1970.18256	2.00E-05
1969.21821	0	1969.21821	4.00E-05	1969.21821	3.00E-05
1968.25385	2.00E-05	1968.25385	4.00E-05	1968.25385	4.00E-05
1967.28949	6.00E-05	1967.28949	3.00E-05	1967.28949	5.00E-05
1966.32513	8.00E-05	1966.32513	3.00E-05	1966.32513	6.00E-05
1965.36078	7.00E-05	1965.36078	2.00E-05	1965.36078	6.00E-05
1964.39642	8.00E-05	1964.39642	1.00E-05	1964.39642	6.00E-05
1963.43206	9.00E-05	1963.43206	0	1963.43206	5.00E-05
1962.4677	7.00E-05	1962.4677	0	1962.4677	4.00E-05
1961.50335	5.00E-05	1961.50335	1.00E-05	1961.50335	5.00E-05
1960.53899	7.00E-05	1960.53899	1.00E-05	1960.53899	5.00E-05
1959.57463	1.00E-04	1959.57463	1.00E-05	1959.57463	5.00E-05
1958.61027	9.00E-05	1958.61027	2.00E-05	1958.61027	4.00E-05
1957.64592	6.00E-05	1957.64592	2.00E-05	1957.64592	3.00E-05
1956.68156	7.00E-05	1956.68156	3.00E-05	1956.68156	2.00E-05
1955.7172	9.00E-05	1955.7172	3.00E-05	1955.7172	2.00E-05
1954.75284	1.00E-04	1954.75284	3.00E-05	1954.75284	3.00E-05
1953.78849	9.00E-05	1953.78849	3.00E-05	1953.78849	4.00E-05
1952.82413	6.00E-05	1952.82413	3.00E-05	1952.82413	4.00E-05
1951.85977	5.00E-05	1951.85977	3.00E-05	1951.85977	4.00E-05
1950.89541	7.00E-05	1950.89541	3.00E-05	1950.89541	3.00E-05
1949.93105	9.00E-05	1949.93105	3.00E-05	1949.93105	2.00E-05
1948.9667	9.00E-05	1948.9667	4.00E-05	1948.9667	2.00E-05
1948.00234	1.00E-04	1948.00234	4.00E-05	1948.00234	2.00E-05
1947.03798	1.10E-04	1947.03798	4.00E-05	1947.03798	2.00E-05
1946.07362	1.40E-04	1946.07362	4.00E-05	1946.07362	3.00E-05
1945.10927	1.70E-04	1945.10927	5.00E-05	1945.10927	3.00E-05
1944.14491	1.90E-04	1944.14491	6.00E-05	1944.14491	4.00E-05
1943.18055	1.60E-04	1943.18055	6.00E-05	1943.18055	5.00E-05
1942.21619	1.00E-04	1942.21619	5.00E-05	1942.21619	6.00E-05
1941.25184	4.00E-05	1941.25184	4.00E-05	1941.25184	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1940.28748	4.00E-05	1940.28748	3.00E-05	1940.28748	6.00E-05
1939.32312	8.00E-05	1939.32312	3.00E-05	1939.32312	5.00E-05
1938.35876	1.50E-04	1938.35876	3.00E-05	1938.35876	3.00E-05
1937.39441	2.10E-04	1937.39441	3.00E-05	1937.39441	3.00E-05
1936.43005	2.10E-04	1936.43005	4.00E-05	1936.43005	3.00E-05
1935.46569	1.70E-04	1935.46569	4.00E-05	1935.46569	3.00E-05
1934.50133	1.20E-04	1934.50133	4.00E-05	1934.50133	4.00E-05
1933.53698	1.00E-04	1933.53698	4.00E-05	1933.53698	5.00E-05
1932.57262	1.00E-04	1932.57262	5.00E-05	1932.57262	5.00E-05
1931.60826	1.00E-04	1931.60826	5.00E-05	1931.60826	5.00E-05
1930.6439	8.00E-05	1930.6439	4.00E-05	1930.6439	5.00E-05
1929.67955	7.00E-05	1929.67955	4.00E-05	1929.67955	5.00E-05
1928.71519	7.00E-05	1928.71519	4.00E-05	1928.71519	5.00E-05
1927.75083	9.00E-05	1927.75083	4.00E-05	1927.75083	5.00E-05
1926.78647	1.10E-04	1926.78647	4.00E-05	1926.78647	4.00E-05
1925.82211	1.00E-04	1925.82211	5.00E-05	1925.82211	4.00E-05
1924.85776	9.00E-05	1924.85776	7.00E-05	1924.85776	4.00E-05
1923.8934	1.10E-04	1923.8934	7.00E-05	1923.8934	5.00E-05
1922.92904	1.40E-04	1922.92904	6.00E-05	1922.92904	5.00E-05
1921.96468	1.50E-04	1921.96468	6.00E-05	1921.96468	6.00E-05
1921.00033	1.40E-04	1921.00033	7.00E-05	1921.00033	5.00E-05
1920.03597	1.60E-04	1920.03597	7.00E-05	1920.03597	6.00E-05
1919.07161	1.80E-04	1919.07161	8.00E-05	1919.07161	7.00E-05
1918.10725	1.50E-04	1918.10725	9.00E-05	1918.10725	8.00E-05
1917.1429	1.20E-04	1917.1429	9.00E-05	1917.1429	8.00E-05
1916.17854	1.40E-04	1916.17854	8.00E-05	1916.17854	8.00E-05
1915.21418	1.70E-04	1915.21418	6.00E-05	1915.21418	8.00E-05
1914.24982	1.90E-04	1914.24982	5.00E-05	1914.24982	6.00E-05
1913.28547	2.00E-04	1913.28547	6.00E-05	1913.28547	4.00E-05
1912.32111	2.20E-04	1912.32111	7.00E-05	1912.32111	4.00E-05
1911.35675	2.50E-04	1911.35675	8.00E-05	1911.35675	5.00E-05
1910.39239	2.50E-04	1910.39239	9.00E-05	1910.39239	6.00E-05
1909.42804	2.10E-04	1909.42804	9.00E-05	1909.42804	6.00E-05
1908.46368	1.90E-04	1908.46368	9.00E-05	1908.46368	7.00E-05
1907.49932	2.00E-04	1907.49932	8.00E-05	1907.49932	6.00E-05
1906.53496	2.20E-04	1906.53496	7.00E-05	1906.53496	6.00E-05
1905.57061	2.30E-04	1905.57061	6.00E-05	1905.57061	5.00E-05
1904.60625	2.30E-04	1904.60625	6.00E-05	1904.60625	5.00E-05
1903.64189	2.60E-04	1903.64189	6.00E-05	1903.64189	4.00E-05
1902.67753	2.90E-04	1902.67753	6.00E-05	1902.67753	4.00E-05
1901.71317	3.10E-04	1901.71317	6.00E-05	1901.71317	4.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1900.74882	2.90E-04	1900.74882	7.00E-05	1900.74882	3.00E-05
1899.78446	2.50E-04	1899.78446	7.00E-05	1899.78446	3.00E-05
1898.8201	2.20E-04	1898.8201	7.00E-05	1898.8201	3.00E-05
1897.85574	2.20E-04	1897.85574	7.00E-05	1897.85574	3.00E-05
1896.89139	2.10E-04	1896.89139	7.00E-05	1896.89139	4.00E-05
1895.92703	2.00E-04	1895.92703	7.00E-05	1895.92703	5.00E-05
1894.96267	2.00E-04	1894.96267	7.00E-05	1894.96267	6.00E-05
1893.99831	2.20E-04	1893.99831	7.00E-05	1893.99831	6.00E-05
1893.03396	2.30E-04	1893.03396	7.00E-05	1893.03396	5.00E-05
1892.0696	2.20E-04	1892.0696	7.00E-05	1892.0696	5.00E-05
1891.10524	2.00E-04	1891.10524	8.00E-05	1891.10524	5.00E-05
1890.14088	1.90E-04	1890.14088	8.00E-05	1890.14088	6.00E-05
1889.17653	1.70E-04	1889.17653	7.00E-05	1889.17653	7.00E-05
1888.21217	1.70E-04	1888.21217	6.00E-05	1888.21217	8.00E-05
1887.24781	1.50E-04	1887.24781	4.00E-05	1887.24781	8.00E-05
1886.28345	1.40E-04	1886.28345	2.00E-05	1886.28345	7.00E-05
1885.3191	1.50E-04	1885.3191	2.00E-05	1885.3191	5.00E-05
1884.35474	1.60E-04	1884.35474	2.00E-05	1884.35474	4.00E-05
1883.39038	1.60E-04	1883.39038	3.00E-05	1883.39038	3.00E-05
1882.42602	1.60E-04	1882.42602	3.00E-05	1882.42602	3.00E-05
1881.46167	1.50E-04	1881.46167	3.00E-05	1881.46167	3.00E-05
1880.49731	1.30E-04	1880.49731	3.00E-05	1880.49731	4.00E-05
1879.53295	1.10E-04	1879.53295	3.00E-05	1879.53295	4.00E-05
1878.56859	1.40E-04	1878.56859	3.00E-05	1878.56859	4.00E-05
1877.60424	1.80E-04	1877.60424	3.00E-05	1877.60424	4.00E-05
1876.63988	1.60E-04	1876.63988	3.00E-05	1876.63988	3.00E-05
1875.67552	1.10E-04	1875.67552	3.00E-05	1875.67552	3.00E-05
1874.71116	8.00E-05	1874.71116	3.00E-05	1874.71116	3.00E-05
1873.7468	8.00E-05	1873.7468	3.00E-05	1873.7468	2.00E-05
1872.78245	8.00E-05	1872.78245	5.00E-05	1872.78245	1.00E-05
1871.81809	1.00E-04	1871.81809	8.00E-05	1871.81809	1.00E-05
1870.85373	1.40E-04	1870.85373	1.10E-04	1870.85373	2.00E-05
1869.88937	1.80E-04	1869.88937	1.30E-04	1869.88937	6.00E-05
1868.92502	1.80E-04	1868.92502	1.30E-04	1868.92502	9.00E-05
1867.96066	1.40E-04	1867.96066	1.20E-04	1867.96066	1.20E-04
1866.9963	1.00E-04	1866.9963	9.00E-05	1866.9963	1.30E-04
1866.03194	8.00E-05	1866.03194	5.00E-05	1866.03194	1.20E-04
1865.06759	8.00E-05	1865.06759	2.00E-05	1865.06759	9.00E-05
1864.10323	9.00E-05	1864.10323	1.00E-05	1864.10323	6.00E-05
1863.13887	1.00E-04	1863.13887	1.00E-05	1863.13887	4.00E-05
1862.17451	1.10E-04	1862.17451	2.00E-05	1862.17451	4.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1861.21016	9.00E-05	1861.21016	2.00E-05	1861.21016	4.00E-05
1860.2458	8.00E-05	1860.2458	3.00E-05	1860.2458	4.00E-05
1859.28144	8.00E-05	1859.28144	3.00E-05	1859.28144	4.00E-05
1858.31708	8.00E-05	1858.31708	3.00E-05	1858.31708	4.00E-05
1857.35273	4.00E-05	1857.35273	3.00E-05	1857.35273	4.00E-05
1856.38837	2.00E-05	1856.38837	2.00E-05	1856.38837	4.00E-05
1855.42401	5.00E-05	1855.42401	2.00E-05	1855.42401	5.00E-05
1854.45965	8.00E-05	1854.45965	2.00E-05	1854.45965	5.00E-05
1853.4953	9.00E-05	1853.4953	1.00E-05	1853.4953	5.00E-05
1852.53094	9.00E-05	1852.53094	1.00E-05	1852.53094	5.00E-05
1851.56658	7.00E-05	1851.56658	2.00E-05	1851.56658	4.00E-05
1850.60222	6.00E-05	1850.60222	2.00E-05	1850.60222	4.00E-05
1849.63786	7.00E-05	1849.63786	3.00E-05	1849.63786	4.00E-05
1848.67351	1.00E-04	1848.67351	3.00E-05	1848.67351	4.00E-05
1847.70915	1.10E-04	1847.70915	6.00E-05	1847.70915	2.00E-05
1846.74479	1.20E-04	1846.74479	9.00E-05	1846.74479	1.00E-05
1845.78043	1.40E-04	1845.78043	1.10E-04	1845.78043	4.00E-05
1844.81608	1.00E-04	1844.81608	1.10E-04	1844.81608	8.00E-05
1843.85172	6.00E-05	1843.85172	1.00E-04	1843.85172	1.10E-04
1842.88736	7.00E-05	1842.88736	8.00E-05	1842.88736	1.30E-04
1841.923	8.00E-05	1841.923	4.00E-05	1841.923	1.30E-04
1840.95865	7.00E-05	1840.95865	1.00E-05	1840.95865	1.10E-04
1839.99429	7.00E-05	1839.99429	1.00E-05	1839.99429	6.00E-05
1839.02993	9.00E-05	1839.02993	1.00E-05	1839.02993	3.00E-05
1838.06557	9.00E-05	1838.06557	1.00E-05	1838.06557	4.00E-05
1837.10122	1.00E-04	1837.10122	1.00E-05	1837.10122	4.00E-05
1836.13686	1.00E-04	1836.13686	1.00E-05	1836.13686	4.00E-05
1835.1725	9.00E-05	1835.1725	0	1835.1725	4.00E-05
1834.20814	6.00E-05	1834.20814	0	1834.20814	3.00E-05
1833.24379	3.00E-05	1833.24379	2.00E-05	1833.24379	2.00E-05
1832.27943	3.00E-05	1832.27943	5.00E-05	1832.27943	1.00E-05
1831.31507	6.00E-05	1831.31507	7.00E-05	1831.31507	4.00E-05
1830.35071	1.00E-04	1830.35071	8.00E-05	1830.35071	7.00E-05
1829.38636	1.20E-04	1829.38636	7.00E-05	1829.38636	8.00E-05
1828.422	1.10E-04	1828.422	7.00E-05	1828.422	8.00E-05
1827.45764	9.00E-05	1827.45764	7.00E-05	1827.45764	9.00E-05
1826.49328	1.00E-04	1826.49328	6.00E-05	1826.49328	8.00E-05
1825.52893	1.10E-04	1825.52893	6.00E-05	1825.52893	7.00E-05
1824.56457	9.00E-05	1824.56457	6.00E-05	1824.56457	6.00E-05
1823.60021	7.00E-05	1823.60021	5.00E-05	1823.60021	7.00E-05
1822.63585	3.00E-05	1822.63585	2.00E-05	1822.63585	7.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1821.67149	0	1821.67149	0	1821.67149	6.00E-05
1820.70714	1.00E-05	1820.70714	0	1820.70714	3.00E-05
1819.74278	3.00E-05	1819.74278	1.00E-05	1819.74278	2.00E-05
1818.77842	5.00E-05	1818.77842	2.00E-05	1818.77842	3.00E-05
1817.81406	8.00E-05	1817.81406	2.00E-05	1817.81406	3.00E-05
1816.84971	9.00E-05	1816.84971	2.00E-05	1816.84971	3.00E-05
1815.88535	6.00E-05	1815.88535	1.00E-05	1815.88535	3.00E-05
1814.92099	2.00E-05	1814.92099	1.00E-05	1814.92099	2.00E-05
1813.95663	1.00E-05	1813.95663	1.00E-05	1813.95663	1.00E-05
1812.99228	1.00E-05	1812.99228	1.00E-05	1812.99228	1.00E-05
1812.02792	3.00E-05	1812.02792	2.00E-05	1812.02792	3.00E-05
1811.06356	2.00E-05	1811.06356	2.00E-05	1811.06356	4.00E-05
1810.0992	2.00E-05	1810.0992	1.00E-05	1810.0992	6.00E-05
1809.13485	5.00E-05	1809.13485	0	1809.13485	6.00E-05
1808.17049	8.00E-05	1808.17049	-1.00E-05	1808.17049	6.00E-05
1807.20613	8.00E-05	1807.20613	-2.00E-05	1807.20613	5.00E-05
1806.24177	6.00E-05	1806.24177	-2.00E-05	1806.24177	4.00E-05
1805.27742	5.00E-05	1805.27742	-1.00E-05	1805.27742	2.00E-05
1804.31306	4.00E-05	1804.31306	0	1804.31306	2.00E-05
1803.3487	4.00E-05	1803.3487	1.00E-05	1803.3487	1.00E-05
1802.38434	5.00E-05	1802.38434	2.00E-05	1802.38434	2.00E-05
1801.41999	6.00E-05	1801.41999	2.00E-05	1801.41999	3.00E-05
1800.45563	7.00E-05	1800.45563	2.00E-05	1800.45563	5.00E-05
1799.49127	8.00E-05	1799.49127	1.00E-05	1799.49127	7.00E-05
1798.52691	1.10E-04	1798.52691	1.00E-05	1798.52691	7.00E-05
1797.56255	1.10E-04	1797.56255	1.00E-05	1797.56255	6.00E-05
1796.5982	7.00E-05	1796.5982	1.00E-05	1796.5982	5.00E-05
1795.63384	4.00E-05	1795.63384	4.00E-05	1795.63384	2.00E-05
1794.66948	6.00E-05	1794.66948	7.00E-05	1794.66948	2.00E-05
1793.70512	1.00E-04	1793.70512	9.00E-05	1793.70512	6.00E-05
1792.74077	1.10E-04	1792.74077	1.00E-04	1792.74077	1.10E-04
1791.77641	9.00E-05	1791.77641	8.00E-05	1791.77641	1.40E-04
1790.81205	6.00E-05	1790.81205	5.00E-05	1790.81205	1.60E-04
1789.84769	4.00E-05	1789.84769	0	1789.84769	1.50E-04
1788.88334	4.00E-05	1788.88334	-3.00E-05	1788.88334	1.10E-04
1787.91898	2.00E-05	1787.91898	-3.00E-05	1787.91898	5.00E-05
1786.95462	0	1786.95462	-2.00E-05	1786.95462	2.00E-05
1785.99026	2.00E-05	1785.99026	-1.00E-05	1785.99026	4.00E-05
1785.02591	5.00E-05	1785.02591	0	1785.02591	5.00E-05
1784.06155	7.00E-05	1784.06155	1.00E-05	1784.06155	6.00E-05
1783.09719	1.00E-04	1783.09719	1.00E-05	1783.09719	7.00E-05



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1782.13283	1.20E-04	1782.13283	2.00E-05	1782.13283	8.00E-05
1781.16848	1.10E-04	1781.16848	2.00E-05	1781.16848	8.00E-05
1780.20412	1.00E-04	1780.20412	2.00E-05	1780.20412	8.00E-05
1779.23976	1.30E-04	1779.23976	2.00E-05	1779.23976	7.00E-05
1778.2754	1.70E-04	1778.2754	1.00E-05	1778.2754	8.00E-05
1777.31105	1.80E-04	1777.31105	1.00E-05	1777.31105	7.00E-05
1776.34669	1.60E-04	1776.34669	2.00E-05	1776.34669	5.00E-05
1775.38233	1.50E-04	1775.38233	7.00E-05	1775.38233	2.00E-05
1774.41797	1.60E-04	1774.41797	1.20E-04	1774.41797	4.00E-05
1773.45362	1.70E-04	1773.45362	1.50E-04	1773.45362	9.00E-05
1772.48926	1.60E-04	1772.48926	1.50E-04	1772.48926	1.40E-04
1771.5249	1.40E-04	1771.5249	1.40E-04	1771.5249	1.60E-04
1770.56054	1.40E-04	1770.56054	1.00E-04	1770.56054	1.70E-04
1769.59618	1.70E-04	1769.59618	6.00E-05	1769.59618	1.90E-04
1768.63183	1.80E-04	1768.63183	2.00E-05	1768.63183	1.60E-04
1767.66747	1.50E-04	1767.66747	1.00E-05	1767.66747	1.30E-04
1766.70311	1.30E-04	1766.70311	1.00E-05	1766.70311	1.20E-04
1765.73875	1.20E-04	1765.73875	1.00E-05	1765.73875	1.10E-04
1764.7744	9.00E-05	1764.7744	2.00E-05	1764.7744	8.00E-05
1763.81004	9.00E-05	1763.81004	4.00E-05	1763.81004	5.00E-05
1762.84568	1.70E-04	1762.84568	6.00E-05	1762.84568	6.00E-05
1761.88132	2.20E-04	1761.88132	5.00E-05	1761.88132	9.00E-05
1760.91697	1.80E-04	1760.91697	5.00E-05	1760.91697	1.10E-04
1759.95261	1.50E-04	1759.95261	4.00E-05	1759.95261	1.20E-04
1758.98825	1.80E-04	1758.98825	4.00E-05	1758.98825	1.40E-04
1758.02389	2.20E-04	1758.02389	4.00E-05	1758.02389	1.50E-04
1757.05954	2.20E-04	1757.05954	4.00E-05	1757.05954	1.60E-04
1756.09518	2.30E-04	1756.09518	3.00E-05	1756.09518	1.80E-04
1755.13082	2.60E-04	1755.13082	2.00E-05	1755.13082	2.00E-04
1754.16646	2.80E-04	1754.16646	3.00E-05	1754.16646	2.00E-04
1753.20211	2.70E-04	1753.20211	5.00E-05	1753.20211	2.10E-04
1752.23775	2.80E-04	1752.23775	1.00E-04	1752.23775	2.40E-04
1751.27339	3.00E-04	1751.27339	1.40E-04	1751.27339	2.80E-04
1750.30903	3.60E-04	1750.30903	1.70E-04	1750.30903	3.50E-04
1749.34468	4.40E-04	1749.34468	1.70E-04	1749.34468	4.30E-04
1748.38032	4.70E-04	1748.38032	1.60E-04	1748.38032	4.80E-04
1747.41596	4.50E-04	1747.41596	1.40E-04	1747.41596	5.00E-04
1746.4516	4.10E-04	1746.4516	1.30E-04	1746.4516	4.90E-04
1745.48724	4.20E-04	1745.48724	1.20E-04	1745.48724	5.10E-04
1744.52289	4.50E-04	1744.52289	1.00E-04	1744.52289	5.30E-04
1743.55853	4.50E-04	1743.55853	1.20E-04	1743.55853	5.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1742.59417	4.60E-04	1742.59417	1.50E-04	1742.59417	5.50E-04
1741.62981	5.20E-04	1741.62981	1.90E-04	1741.62981	6.00E-04
1740.66546	5.80E-04	1740.66546	2.10E-04	1740.66546	6.50E-04
1739.7011	5.70E-04	1739.7011	2.20E-04	1739.7011	6.90E-04
1738.73674	5.60E-04	1738.73674	2.10E-04	1738.73674	6.90E-04
1737.77238	5.90E-04	1737.77238	2.40E-04	1737.77238	6.60E-04
1736.80803	6.50E-04	1736.80803	2.90E-04	1736.80803	6.30E-04
1735.84367	7.40E-04	1735.84367	3.40E-04	1735.84367	6.50E-04
1734.87931	8.40E-04	1734.87931	3.70E-04	1734.87931	7.10E-04
1733.91495	8.70E-04	1733.91495	3.70E-04	1733.91495	7.90E-04
1732.9506	8.40E-04	1732.9506	3.50E-04	1732.9506	8.60E-04
1731.98624	8.30E-04	1731.98624	3.00E-04	1731.98624	9.00E-04
1731.02188	8.40E-04	1731.02188	2.50E-04	1731.02188	8.90E-04
1730.05752	8.40E-04	1730.05752	2.40E-04	1730.05752	8.10E-04
1729.09317	8.60E-04	1729.09317	2.50E-04	1729.09317	7.50E-04
1728.12881	8.90E-04	1728.12881	2.50E-04	1728.12881	7.30E-04
1727.16445	9.10E-04	1727.16445	2.50E-04	1727.16445	7.20E-04
1726.20009	9.50E-04	1726.20009	2.60E-04	1726.20009	7.10E-04
1725.23574	9.90E-04	1725.23574	2.90E-04	1725.23574	7.00E-04
1724.27138	1.00E-03	1724.27138	3.10E-04	1724.27138	7.10E-04
1723.30702	1.00E-03	1723.30702	3.20E-04	1723.30702	7.30E-04
1722.34266	0.00105	1722.34266	3.30E-04	1722.34266	7.30E-04
1721.3783	0.00112	1721.3783	3.90E-04	1721.3783	7.00E-04
1720.41395	0.0012	1720.41395	4.60E-04	1720.41395	7.00E-04
1719.44959	0.00128	1719.44959	5.30E-04	1719.44959	7.40E-04
1718.48523	0.00133	1718.48523	5.90E-04	1718.48523	8.10E-04
1717.52087	0.00133	1717.52087	6.20E-04	1717.52087	8.80E-04
1716.55652	0.00136	1716.55652	6.10E-04	1716.55652	9.50E-04
1715.59216	0.0014	1715.59216	5.60E-04	1715.59216	1.00E-03
1714.6278	0.00141	1714.6278	5.10E-04	1714.6278	1.00E-03
1713.66344	0.00143	1713.66344	4.90E-04	1713.66344	9.50E-04
1712.69909	0.00145	1712.69909	4.80E-04	1712.69909	9.20E-04
1711.73473	0.00146	1711.73473	4.70E-04	1711.73473	9.10E-04
1710.77037	0.00146	1710.77037	4.80E-04	1710.77037	8.90E-04
1709.80601	0.0015	1709.80601	5.10E-04	1709.80601	8.70E-04
1708.84166	0.00158	1708.84166	5.60E-04	1708.84166	8.90E-04
1707.8773	0.00167	1707.8773	6.30E-04	1707.8773	9.40E-04
1706.91294	0.00175	1706.91294	6.80E-04	1706.91294	0.00102
1705.94858	0.00183	1705.94858	7.20E-04	1705.94858	0.00111
1704.98423	0.00192	1704.98423	7.40E-04	1704.98423	0.00119
1704.01987	0.00204	1704.01987	7.80E-04	1704.01987	0.0012

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1703.05551	0.00216	1703.05551	8.70E-04	1703.05551	0.0012
1702.09115	0.00231	1702.09115	9.70E-04	1702.09115	0.00129
1701.1268	0.00249	1701.1268	0.00105	1701.1268	0.00146
1700.16244	0.00262	1700.16244	0.00113	1700.16244	0.00163
1699.19808	0.0027	1699.19808	0.0012	1699.19808	0.00176
1698.23372	0.00283	1698.23372	0.00126	1698.23372	0.00191
1697.26937	0.00302	1697.26937	0.00131	1697.26937	0.00205
1696.30501	0.00325	1696.30501	0.00139	1696.30501	0.00212
1695.34065	0.00352	1695.34065	0.00149	1695.34065	0.0022
1694.37629	0.00379	1694.37629	0.00158	1694.37629	0.00233
1693.41193	0.00407	1693.41193	0.00166	1693.41193	0.00245
1692.44758	0.00438	1692.44758	0.00176	1692.44758	0.00251
1691.48322	0.0047	1691.48322	0.00192	1691.48322	0.00253
1690.51886	0.00506	1690.51886	0.00211	1690.51886	0.00261
1689.5545	0.00549	1689.5545	0.00229	1689.5545	0.00275
1688.59015	0.00594	1688.59015	0.00248	1688.59015	0.00286
1687.62579	0.00638	1687.62579	0.00271	1687.62579	0.00292
1686.66143	0.00682	1686.66143	0.00297	1686.66143	0.00304
1685.69707	0.00723	1685.69707	0.00322	1685.69707	0.00324
1684.73272	0.0077	1684.73272	0.00344	1684.73272	0.00347
1683.76836	0.00821	1683.76836	0.00363	1683.76836	0.00368
1682.804	0.00859	1682.804	0.00377	1682.804	0.00388
1681.83964	0.00892	1681.83964	0.00388	1681.83964	0.00403
1680.87529	0.00925	1680.87529	0.00397	1680.87529	0.0041
1679.91093	0.0096	1679.91093	0.00409	1679.91093	0.00411
1678.94657	0.00994	1678.94657	0.00425	1678.94657	0.00415
1677.98221	0.01026	1677.98221	0.00442	1677.98221	0.00425
1677.01786	0.01056	1677.01786	0.00459	1677.01786	0.00442
1676.0535	0.01083	1676.0535	0.00473	1676.0535	0.00459
1675.08914	0.0111	1675.08914	0.00486	1675.08914	0.00476
1674.12478	0.01136	1674.12478	0.00498	1674.12478	0.00493
1673.16043	0.01157	1673.16043	0.00508	1673.16043	0.0051
1672.19607	0.01175	1672.19607	0.00519	1672.19607	0.00523
1671.23171	0.01194	1671.23171	0.0053	1671.23171	0.00536
1670.26735	0.01218	1670.26735	0.00541	1670.26735	0.00554
1669.30299	0.01236	1669.30299	0.00547	1669.30299	0.00574
1668.33864	0.01241	1668.33864	0.00549	1668.33864	0.00593
1667.37428	0.01245	1667.37428	0.0055	1667.37428	0.00608
1666.40992	0.01251	1666.40992	0.00551	1666.40992	0.0062
1665.44556	0.01256	1665.44556	0.00556	1665.44556	0.0063
1664.48121	0.01261	1664.48121	0.0056	1664.48121	0.00643

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1663.51685	0.01262	1663.51685	0.00564	1663.51685	0.0066
1662.55249	0.01256	1662.55249	0.00564	1662.55249	0.00679
1661.58813	0.01253	1661.58813	0.00561	1661.58813	0.00695
1660.62378	0.01252	1660.62378	0.00556	1660.62378	0.00709
1659.65942	0.01248	1659.65942	0.0055	1659.65942	0.00721
1658.69506	0.01241	1658.69506	0.00546	1658.69506	0.00728
1657.7307	0.01231	1657.7307	0.00545	1657.7307	0.00732
1656.76635	0.0122	1656.76635	0.00552	1656.76635	0.00734
1655.80199	0.01211	1655.80199	0.00563	1655.80199	0.00738
1654.83763	0.01206	1654.83763	0.00568	1654.83763	0.00749
1653.87327	0.01196	1653.87327	0.00563	1653.87327	0.00765
1652.90892	0.01155	1652.90892	0.00549	1652.90892	0.00778
1651.94456	0.0112	1651.94456	0.0053	1651.94456	0.00785
1650.9802	0.01104	1650.9802	0.0051	1650.9802	0.00785
1650.01584	0.01088	1650.01584	0.00496	1650.01584	0.00777
1649.05149	0.0107	1649.05149	0.00493	1649.05149	0.00762
1648.08713	0.01053	1648.08713	0.00492	1648.08713	0.00753
1647.12277	0.01033	1647.12277	0.00484	1647.12277	0.00753
1646.15841	0.01005	1646.15841	0.0047	1646.15841	0.00755
1645.19406	0.00975	1645.19406	0.00452	1645.19406	0.00754
1644.2297	0.00953	1644.2297	0.00434	1644.2297	0.0075
1643.26534	0.00933	1643.26534	0.00418	1643.26534	0.00744
1642.30098	0.00914	1642.30098	0.00408	1642.30098	0.00736
1641.33662	0.00897	1641.33662	0.004	1641.33662	0.00728
1640.37227	0.00878	1640.37227	0.00393	1640.37227	0.00723
1639.40791	0.00861	1639.40791	0.00389	1639.40791	0.00718
1638.44355	0.00848	1638.44355	0.00388	1638.44355	0.00712
1637.47919	0.00839	1637.47919	0.00387	1637.47919	0.00709
1636.51484	0.00833	1636.51484	0.00381	1636.51484	0.00708
1635.55048	0.00812	1635.55048	0.00372	1635.55048	0.00706
1634.58612	0.00786	1634.58612	0.00361	1634.58612	0.00699
1633.62176	0.00775	1633.62176	0.00348	1633.62176	0.00689
1632.65741	0.00766	1632.65741	0.00337	1632.65741	0.00673
1631.69305	0.00757	1631.69305	0.00331	1631.69305	0.00654
1630.72869	0.00754	1630.72869	0.00331	1630.72869	0.00632
1629.76433	0.00756	1629.76433	0.00333	1629.76433	0.00615
1628.79998	0.0076	1628.79998	0.00334	1628.79998	0.00599
1627.83562	0.00768	1627.83562	0.00336	1627.83562	0.00582
1626.87126	0.0078	1626.87126	0.00341	1626.87126	0.00563
1625.9069	0.00793	1625.9069	0.00347	1625.9069	0.00543
1624.94255	0.00809	1624.94255	0.00356	1624.94255	0.00526

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1623.97819	0.00833	1623.97819	0.00366	1623.97819	0.00509
1623.01383	0.00867	1623.01383	0.00379	1623.01383	0.00492
1622.04947	0.00904	1622.04947	0.00393	1622.04947	0.00477
1621.08512	0.00942	1621.08512	0.00409	1621.08512	0.0046
1620.12076	0.00984	1620.12076	0.00428	1620.12076	0.00441
1619.1564	0.0103	1619.1564	0.00453	1619.1564	0.00424
1618.19204	0.01077	1618.19204	0.00481	1618.19204	0.00413
1617.22768	0.01134	1617.22768	0.00508	1617.22768	0.00406
1616.26333	0.01207	1616.26333	0.00533	1616.26333	0.00399
1615.29897	0.01267	1615.29897	0.00557	1615.29897	0.00391
1614.33461	0.01314	1614.33461	0.00577	1614.33461	0.00381
1613.37025	0.01356	1613.37025	0.00595	1613.37025	0.00369
1612.4059	0.01393	1612.4059	0.00612	1612.4059	0.00356
1611.44154	0.01423	1611.44154	0.00626	1611.44154	0.00345
1610.47718	0.01442	1610.47718	0.00635	1610.47718	0.00338
1609.51282	0.01446	1609.51282	0.00637	1609.51282	0.00331
1608.54847	0.01434	1608.54847	0.00632	1608.54847	0.00324
1607.58411	0.01405	1607.58411	0.00622	1607.58411	0.00317
1606.61975	0.01364	1606.61975	0.00606	1606.61975	0.00309
1605.65539	0.01319	1605.65539	0.00587	1605.65539	0.00301
1604.69104	0.01274	1604.69104	0.00565	1604.69104	0.00293
1603.72668	0.01224	1603.72668	0.00541	1603.72668	0.00286
1602.76232	0.0117	1602.76232	0.00518	1602.76232	0.0028
1601.79796	0.01116	1601.79796	0.00494	1601.79796	0.00274
1600.83361	0.01069	1600.83361	0.00473	1600.83361	0.00268
1599.86925	0.01028	1599.86925	0.00454	1599.86925	0.00262
1598.90489	0.00995	1598.90489	0.0044	1598.90489	0.00257
1597.94053	0.00974	1597.94053	0.0043	1597.94053	0.00251
1596.97618	0.00964	1596.97618	0.00425	1596.97618	0.00246
1596.01182	0.00965	1596.01182	0.00426	1596.01182	0.00242
1595.04746	0.00978	1595.04746	0.00433	1595.04746	0.00238
1594.0831	0.01006	1594.0831	0.00446	1594.0831	0.00236
1593.11874	0.01045	1593.11874	0.00464	1593.11874	0.00233
1592.15439	0.01094	1592.15439	0.00487	1592.15439	0.00232
1591.19003	0.01149	1591.19003	0.00513	1591.19003	0.00231
1590.22567	0.01205	1590.22567	0.00539	1590.22567	0.00231
1589.26131	0.01255	1589.26131	0.00562	1589.26131	0.00231
1588.29696	0.0129	1588.29696	0.00579	1588.29696	0.00232
1587.3326	0.01306	1587.3326	0.00587	1587.3326	0.00233
1586.36824	0.01298	1586.36824	0.00584	1586.36824	0.00232
1585.40388	0.01268	1585.40388	0.00572	1585.40388	0.00232

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1584.43953	0.01221	1584.43953	0.00551	1584.43953	0.00231
1583.47517	0.01161	1583.47517	0.00524	1583.47517	0.00231
1582.51081	0.01093	1582.51081	0.00493	1582.51081	0.00231
1581.54645	0.01025	1581.54645	0.00461	1581.54645	0.00231
1580.5821	0.0096	1580.5821	0.00433	1580.5821	0.00229
1579.61774	0.00896	1579.61774	0.0041	1579.61774	0.00225
1578.65338	0.00838	1578.65338	0.0039	1578.65338	0.00224
1577.68902	0.00792	1577.68902	0.00369	1577.68902	0.00227
1576.72467	0.00742	1576.72467	0.00347	1576.72467	0.00233
1575.76031	0.00678	1575.76031	0.00326	1575.76031	0.00239
1574.79595	0.00634	1574.79595	0.00304	1574.79595	0.00244
1573.83159	0.00611	1573.83159	0.00287	1573.83159	0.00246
1572.86724	0.00597	1572.86724	0.00279	1572.86724	0.00243
1571.90288	0.00595	1571.90288	0.00282	1571.90288	0.00241
1570.93852	0.00601	1570.93852	0.00288	1570.93852	0.00244
1569.97416	0.00608	1569.97416	0.00294	1569.97416	0.00252
1569.00981	0.00618	1569.00981	0.003	1569.00981	0.00259
1568.04545	0.00635	1568.04545	0.00306	1568.04545	0.00265
1567.08109	0.00654	1567.08109	0.00312	1567.08109	0.00271
1566.11673	0.00676	1566.11673	0.0032	1566.11673	0.00276
1565.15237	0.00706	1565.15237	0.00331	1565.15237	0.0028
1564.18802	0.00742	1564.18802	0.00345	1564.18802	0.00285
1563.22366	0.00779	1563.22366	0.00362	1563.22366	0.00288
1562.2593	0.00814	1562.2593	0.00387	1562.2593	0.0029
1561.29494	0.0085	1561.29494	0.00419	1561.29494	0.003
1560.33059	0.0089	1560.33059	0.00451	1560.33059	0.00319
1559.36623	0.00943	1559.36623	0.00478	1559.36623	0.00342
1558.40187	0.01001	1558.40187	0.00497	1558.40187	0.00364
1557.43751	0.01046	1557.43751	0.00509	1557.43751	0.00378
1556.47316	0.01077	1556.47316	0.00516	1556.47316	0.00385
1555.5088	0.01105	1555.5088	0.00523	1555.5088	0.00385
1554.54444	0.01143	1554.54444	0.00535	1554.54444	0.00383
1553.58008	0.01188	1553.58008	0.00552	1553.58008	0.00385
1552.61573	0.01228	1552.61573	0.00571	1552.61573	0.00393
1551.65137	0.01266	1551.65137	0.00589	1551.65137	0.00403
1550.68701	0.01307	1550.68701	0.00606	1550.68701	0.0041
1549.72265	0.01351	1549.72265	0.00625	1549.72265	0.00414
1548.7583	0.01389	1548.7583	0.00643	1548.7583	0.00418
1547.79394	0.01423	1547.79394	0.00661	1547.79394	0.00423
1546.82958	0.01457	1546.82958	0.00677	1546.82958	0.00427
1545.86522	0.01491	1545.86522	0.00694	1545.86522	0.00429

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1544.90087	0.0152	1544.90087	0.0071	1544.90087	0.00431
1543.93651	0.01541	1543.93651	0.00724	1543.93651	0.00435
1542.97215	0.01558	1542.97215	0.00738	1542.97215	0.00438
1542.00779	0.0157	1542.00779	0.00749	1542.00779	0.00441
1541.04343	0.01579	1541.04343	0.00752	1541.04343	0.00445
1540.07908	0.01578	1540.07908	0.00746	1540.07908	0.0045
1539.11472	0.01553	1539.11472	0.00733	1539.11472	0.00451
1538.15036	0.01522	1538.15036	0.00716	1538.15036	0.00445
1537.186	0.01498	1537.186	0.007	1537.186	0.00433
1536.22165	0.01473	1536.22165	0.00686	1536.22165	0.0042
1535.25729	0.01447	1535.25729	0.00674	1535.25729	0.00409
1534.29293	0.01414	1534.29293	0.0066	1534.29293	0.00402
1533.32857	0.01361	1533.32857	0.00641	1533.32857	0.00399
1532.36422	0.01308	1532.36422	0.00617	1532.36422	0.00396
1531.39986	0.01266	1531.39986	0.00592	1531.39986	0.00388
1530.4355	0.01224	1530.4355	0.00568	1530.4355	0.00379
1529.47114	0.0118	1529.47114	0.00547	1529.47114	0.00367
1528.50679	0.01132	1528.50679	0.00529	1528.50679	0.00357
1527.54243	0.01081	1527.54243	0.00509	1527.54243	0.00351
1526.57807	0.01034	1526.57807	0.00488	1526.57807	0.00346
1525.61371	0.00986	1525.61371	0.00469	1525.61371	0.00341
1524.64936	0.0094	1524.64936	0.00453	1524.64936	0.00333
1523.685	0.00911	1523.685	0.0044	1523.685	0.00327
1522.72064	0.00886	1522.72064	0.00424	1522.72064	0.00325
1521.75628	0.00849	1521.75628	0.00407	1521.75628	0.00323
1520.79193	0.00801	1520.79193	0.0039	1520.79193	0.00319
1519.82757	0.00764	1519.82757	0.00374	1519.82757	0.00314
1518.86321	0.00743	1518.86321	0.00359	1518.86321	0.0031
1517.89885	0.00727	1517.89885	0.00348	1517.89885	0.00303
1516.9345	0.00711	1516.9345	0.00342	1516.9345	0.00294
1515.97014	0.00704	1515.97014	0.00338	1515.97014	0.00284
1515.00578	0.00706	1515.00578	0.00336	1515.00578	0.00275
1514.04142	0.00715	1514.04142	0.00337	1514.04142	0.00266
1513.07706	0.00733	1513.07706	0.00345	1513.07706	0.00253
1512.11271	0.00768	1512.11271	0.00361	1512.11271	0.00241
1511.14835	0.00818	1511.14835	0.00386	1511.14835	0.00232
1510.18399	0.00877	1510.18399	0.00422	1510.18399	0.00223
1509.21963	0.00951	1509.21963	0.0047	1509.21963	0.00217
1508.25528	0.01037	1508.25528	0.00524	1508.25528	0.00216
1507.29092	0.01145	1507.29092	0.00576	1507.29092	0.00217
1506.32656	0.01268	1506.32656	0.00617	1506.32656	0.00216

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1505.3622	0.01344	1505.3622	0.00642	1505.3622	0.0021
1504.39785	0.01369	1504.39785	0.00648	1504.39785	0.00199
1503.43349	0.01365	1503.43349	0.00639	1503.43349	0.00182
1502.46913	0.01338	1502.46913	0.00622	1502.46913	0.00161
1501.50477	0.01294	1501.50477	0.00603	1501.50477	0.00145
1500.54042	0.01252	1500.54042	0.00584	1500.54042	0.00135
1499.57606	0.0122	1499.57606	0.00569	1499.57606	0.00128
1498.6117	0.01203	1498.6117	0.00564	1498.6117	0.00123
1497.64734	0.01208	1497.64734	0.00572	1497.64734	0.00121
1496.68299	0.01248	1496.68299	0.00594	1496.68299	0.0012
1495.71863	0.01338	1495.71863	0.00633	1495.71863	0.00119
1494.75427	0.01462	1494.75427	0.00692	1494.75427	0.00115
1493.78991	0.01619	1493.78991	0.00774	1493.78991	0.00112
1492.82556	0.01818	1492.82556	0.00878	1492.82556	0.00112
1491.8612	0.02042	1491.8612	0.00997	1491.8612	0.00114
1490.89684	0.02287	1490.89684	0.01116	1490.89684	0.00119
1489.93248	0.02521	1489.93248	0.01215	1489.93248	0.00124
1488.96812	0.02654	1488.96812	0.01271	1488.96812	0.00127
1488.00377	0.02658	1488.00377	0.01273	1488.00377	0.00125
1487.03941	0.02533	1487.03941	0.01222	1487.03941	0.00116
1486.07505	0.02326	1486.07505	0.01131	1486.07505	0.00102
1485.11069	0.02101	1485.11069	0.01021	1485.11069	8.70E-04
1484.14634	0.01874	1484.14634	0.00909	1484.14634	7.50E-04
1483.18198	0.01669	1483.18198	0.00807	1483.18198	6.50E-04
1482.21762	0.01501	1482.21762	0.00719	1482.21762	5.80E-04
1481.25326	0.01354	1481.25326	0.00645	1481.25326	5.40E-04
1480.28891	0.01223	1480.28891	0.00583	1480.28891	5.10E-04
1479.32455	0.01115	1479.32455	0.00532	1479.32455	4.90E-04
1478.36019	0.01027	1478.36019	0.00489	1478.36019	5.00E-04
1477.39583	0.00952	1477.39583	0.00451	1477.39583	5.20E-04
1476.43148	0.00878	1476.43148	0.00422	1476.43148	5.40E-04
1475.46712	0.00815	1475.46712	0.00399	1475.46712	5.80E-04
1474.50276	0.00773	1474.50276	0.00377	1474.50276	6.70E-04
1473.5384	0.00732	1473.5384	0.00356	1473.5384	7.80E-04
1472.57405	0.00686	1472.57405	0.00336	1472.57405	8.80E-04
1471.60969	0.00652	1471.60969	0.00316	1471.60969	9.60E-04
1470.64533	0.00633	1470.64533	0.00297	1470.64533	0.00105
1469.68097	0.00623	1469.68097	0.00281	1469.68097	0.00112
1468.71662	0.00618	1468.71662	0.00272	1468.71662	0.00115
1467.75226	0.00619	1467.75226	0.00273	1467.75226	0.00117
1466.7879	0.00625	1466.7879	0.00277	1466.7879	0.00124



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1465.82354	0.00634	1465.82354	0.0028	1465.82354	0.00133
1464.85918	0.00641	1464.85918	0.00281	1464.85918	0.0014
1463.89483	0.00646	1463.89483	0.00281	1463.89483	0.00145
1462.93047	0.00653	1462.93047	0.00281	1462.93047	0.00149
1461.96611	0.0066	1461.96611	0.00284	1461.96611	0.00152
1461.00175	0.00671	1461.00175	0.00293	1461.00175	0.00154
1460.0374	0.0069	1460.0374	0.00307	1460.0374	0.00157
1459.07304	0.00711	1459.07304	0.00322	1459.07304	0.00166
1458.10868	0.00728	1458.10868	0.00333	1458.10868	0.00178
1457.14432	0.0074	1457.14432	0.00341	1457.14432	0.0019
1456.17997	0.00757	1456.17997	0.00346	1456.17997	0.00199
1455.21561	0.00775	1455.21561	0.0035	1455.21561	0.00204
1454.25125	0.00787	1454.25125	0.00355	1454.25125	0.00205
1453.28689	0.00797	1453.28689	0.00362	1453.28689	0.00201
1452.32254	0.00813	1452.32254	0.0037	1452.32254	0.00195
1451.35818	0.00831	1451.35818	0.00378	1451.35818	0.00192
1450.39382	0.00842	1450.39382	0.00386	1450.39382	0.0019
1449.42946	0.00843	1449.42946	0.00393	1449.42946	0.0019
1448.46511	0.00836	1448.46511	0.00398	1448.46511	0.00189
1447.50075	0.00828	1447.50075	0.00401	1447.50075	0.00187
1446.53639	0.0083	1446.53639	0.00401	1446.53639	0.00185
1445.57203	0.00833	1445.57203	0.00398	1445.57203	0.00181
1444.60768	0.00825	1444.60768	0.00393	1444.60768	0.00176
1443.64332	0.00817	1443.64332	0.00388	1443.64332	0.00169
1442.67896	0.00811	1442.67896	0.00383	1442.67896	0.00163
1441.7146	0.00802	1441.7146	0.00377	1441.7146	0.00159
1440.75025	0.00792	1440.75025	0.00374	1440.75025	0.00155
1439.78589	0.00779	1439.78589	0.00373	1439.78589	0.00151
1438.82153	0.0076	1438.82153	0.00371	1438.82153	0.00151
1437.85717	0.00741	1437.85717	0.00366	1437.85717	0.00151
1436.89281	0.0072	1436.89281	0.00358	1436.89281	0.00149
1435.92846	0.00703	1435.92846	0.00349	1435.92846	0.00144
1434.9641	0.00695	1434.9641	0.00336	1434.9641	0.00137
1433.99974	0.00689	1433.99974	0.00324	1433.99974	0.00129
1433.03538	0.00685	1433.03538	0.00317	1433.03538	0.00119
1432.07103	0.00684	1432.07103	0.00315	1432.07103	0.00111
1431.10667	0.00684	1431.10667	0.00312	1431.10667	0.00106
1430.14231	0.0068	1430.14231	0.0031	1430.14231	0.00103
1429.17795	0.00673	1429.17795	0.00307	1429.17795	9.80E-04
1428.2136	0.0067	1428.2136	0.00306	1428.2136	9.40E-04
1427.24924	0.00669	1427.24924	0.00305	1427.24924	9.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1426.28488	0.00673	1426.28488	0.00308	1426.28488	8.70E-04
1425.32052	0.00681	1425.32052	0.00314	1425.32052	8.70E-04
1424.35617	0.00694	1424.35617	0.00319	1424.35617	8.90E-04
1423.39181	0.00709	1423.39181	0.00326	1423.39181	9.00E-04
1422.42745	0.00723	1422.42745	0.00336	1422.42745	9.10E-04
1421.46309	0.00738	1421.46309	0.00347	1421.46309	9.40E-04
1420.49874	0.00756	1420.49874	0.00356	1420.49874	9.90E-04
1419.53438	0.00777	1419.53438	0.00364	1419.53438	0.00103
1418.57002	0.00789	1418.57002	0.00371	1418.57002	0.00108
1417.60566	0.00793	1417.60566	0.00374	1417.60566	0.00112
1416.64131	0.00795	1416.64131	0.00373	1416.64131	0.00112
1415.67695	0.00796	1415.67695	0.00367	1415.67695	0.00106
1414.71259	0.00792	1414.71259	0.00359	1414.71259	9.70E-04
1413.74823	0.00783	1413.74823	0.0035	1413.74823	9.10E-04
1412.78387	0.00768	1412.78387	0.00341	1412.78387	8.70E-04
1411.81952	0.00744	1411.81952	0.0033	1411.81952	8.70E-04
1410.85516	0.00713	1410.85516	0.0032	1410.85516	9.00E-04
1409.8908	0.00679	1409.8908	0.00309	1409.8908	9.40E-04
1408.92644	0.00642	1408.92644	0.00297	1408.92644	9.70E-04
1407.96209	0.00605	1407.96209	0.00284	1407.96209	9.70E-04
1406.99773	0.00577	1406.99773	0.00269	1406.99773	9.60E-04
1406.03337	0.00554	1406.03337	0.00254	1406.03337	9.50E-04
1405.06901	0.00522	1405.06901	0.00237	1405.06901	9.50E-04
1404.10466	0.00484	1404.10466	0.0022	1404.10466	9.40E-04
1403.1403	0.00451	1403.1403	0.00203	1403.1403	9.20E-04
1402.17594	0.00425	1402.17594	0.00189	1402.17594	8.90E-04
1401.21158	0.00406	1401.21158	0.00178	1401.21158	8.80E-04
1400.24723	0.00387	1400.24723	0.00169	1400.24723	8.70E-04
1399.28287	0.00358	1399.28287	0.00161	1399.28287	8.80E-04
1398.31851	0.00331	1398.31851	0.00155	1398.31851	8.80E-04
1397.35415	0.0032	1397.35415	0.0015	1397.35415	9.00E-04
1396.3898	0.00313	1396.3898	0.00145	1396.3898	9.30E-04
1395.42544	0.003	1395.42544	0.00141	1395.42544	9.60E-04
1394.46108	0.00285	1394.46108	0.00138	1394.46108	9.90E-04
1393.49672	0.00277	1393.49672	0.00135	1393.49672	0.00102
1392.53237	0.00276	1392.53237	0.00131	1392.53237	0.00103
1391.56801	0.00278	1391.56801	0.00129	1391.56801	0.00102
1390.60365	0.00284	1390.60365	0.00131	1390.60365	1.00E-03
1389.63929	0.00291	1389.63929	0.00137	1389.63929	0.00101
1388.67494	0.00301	1388.67494	0.00142	1388.67494	0.00106
1387.71058	0.00308	1387.71058	0.00145	1387.71058	0.00111

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1386.74622	0.0031	1386.74622	0.00147	1386.74622	0.00115
1385.78186	0.0031	1385.78186	0.00145	1385.78186	0.00118
1384.8175	0.00309	1384.8175	0.0014	1384.8175	0.00118
1383.85315	0.00307	1383.85315	0.00134	1383.85315	0.00116
1382.88879	0.00302	1382.88879	0.00129	1382.88879	0.00113
1381.92443	0.00296	1381.92443	0.00126	1381.92443	0.0011
1380.96007	0.00292	1380.96007	0.00123	1380.96007	0.00109
1379.99572	0.00295	1379.99572	0.00121	1379.99572	0.00108
1379.03136	0.00299	1379.03136	0.0012	1379.03136	0.00108
1378.067	0.00295	1378.067	0.0012	1378.067	0.00106
1377.10264	0.00287	1377.10264	0.0012	1377.10264	0.00105
1376.13829	0.00281	1376.13829	0.00121	1376.13829	0.00102
1375.17393	0.00277	1375.17393	0.0012	1375.17393	9.90E-04
1374.20957	0.0027	1374.20957	0.00117	1374.20957	9.40E-04
1373.24521	0.00262	1373.24521	0.00112	1373.24521	8.90E-04
1372.28086	0.00258	1372.28086	0.00107	1372.28086	8.30E-04
1371.3165	0.00261	1371.3165	0.00104	1371.3165	7.70E-04
1370.35214	0.00266	1370.35214	0.00105	1370.35214	7.00E-04
1369.38778	0.00267	1369.38778	0.0011	1369.38778	6.40E-04
1368.42343	0.00271	1368.42343	0.00117	1368.42343	5.90E-04
1367.45907	0.00283	1367.45907	0.00124	1367.45907	5.50E-04
1366.49471	0.00296	1366.49471	0.00131	1366.49471	5.10E-04
1365.53035	0.00306	1365.53035	0.00137	1365.53035	4.80E-04
1364.566	0.00315	1364.566	0.00142	1364.566	4.50E-04
1363.60164	0.00321	1363.60164	0.00143	1363.60164	4.20E-04
1362.63728	0.0032	1362.63728	0.00142	1362.63728	3.70E-04
1361.67292	0.0031	1361.67292	0.00136	1361.67292	3.20E-04
1360.70856	0.00293	1360.70856	0.00129	1360.70856	2.50E-04
1359.74421	0.00275	1359.74421	0.00121	1359.74421	1.80E-04
1358.77985	0.00263	1358.77985	0.00116	1358.77985	1.20E-04
1357.81549	0.0026	1357.81549	0.00113	1357.81549	7.00E-05
1356.85113	0.00265	1356.85113	0.00113	1356.85113	4.00E-05
1355.88678	0.00271	1355.88678	0.00115	1355.88678	2.00E-05
1354.92242	0.00277	1354.92242	0.00119	1354.92242	0
1353.95806	0.00286	1353.95806	0.00124	1353.95806	-1.00E-05
1352.9937	0.00297	1352.9937	0.00129	1352.9937	-2.00E-05
1352.02935	0.00311	1352.02935	0.00134	1352.02935	-2.00E-05
1351.06499	0.00324	1351.06499	0.0014	1351.06499	-2.00E-05
1350.10063	0.00334	1350.10063	0.00147	1350.10063	-1.00E-05
1349.13627	0.00345	1349.13627	0.00155	1349.13627	-1.00E-05
1348.17192	0.00358	1348.17192	0.00163	1348.17192	-2.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1347.20756	0.0037	1347.20756	0.00172	1347.20756	-3.00E-05
1346.2432	0.00383	1346.2432	0.00181	1346.2432	-4.00E-05
1345.27884	0.00399	1345.27884	0.00191	1345.27884	-4.00E-05
1344.31449	0.00421	1344.31449	0.00201	1344.31449	-5.00E-05
1343.35013	0.00443	1343.35013	0.00212	1343.35013	-4.00E-05
1342.38577	0.0046	1342.38577	0.00225	1342.38577	-2.00E-05
1341.42141	0.00477	1341.42141	0.00238	1341.42141	1.00E-05
1340.45706	0.00497	1340.45706	0.00252	1340.45706	4.00E-05
1339.4927	0.00522	1339.4927	0.00265	1339.4927	7.00E-05
1338.52834	0.0055	1338.52834	0.00279	1338.52834	9.00E-05
1337.56398	0.00579	1337.56398	0.00294	1337.56398	1.00E-04
1336.59963	0.00609	1336.59963	0.00311	1336.59963	1.00E-04
1335.63527	0.00644	1335.63527	0.00331	1335.63527	1.00E-04
1334.67091	0.00684	1334.67091	0.00355	1334.67091	1.00E-04
1333.70655	0.00726	1333.70655	0.0038	1333.70655	1.00E-04
1332.74219	0.0077	1332.74219	0.00408	1332.74219	1.10E-04
1331.77784	0.00816	1331.77784	0.00436	1331.77784	1.40E-04
1330.81348	0.00866	1330.81348	0.00463	1330.81348	1.70E-04
1329.84912	0.00916	1329.84912	0.00488	1329.84912	2.10E-04
1328.88476	0.0096	1328.88476	0.00511	1328.88476	2.50E-04
1327.92041	0.0099	1327.92041	0.0053	1327.92041	2.90E-04
1326.95605	0.01009	1326.95605	0.00546	1326.95605	3.10E-04
1325.99169	0.01025	1325.99169	0.00556	1325.99169	3.30E-04
1325.02733	0.01036	1325.02733	0.0056	1325.02733	3.60E-04
1324.06298	0.01037	1324.06298	0.00559	1324.06298	3.80E-04
1323.09862	0.01027	1323.09862	0.00554	1323.09862	4.10E-04
1322.13426	0.01008	1322.13426	0.00545	1322.13426	4.40E-04
1321.1699	0.00983	1321.1699	0.00532	1321.1699	4.70E-04
1320.20555	0.0096	1320.20555	0.00518	1320.20555	5.00E-04
1319.24119	0.00938	1319.24119	0.00503	1319.24119	5.20E-04
1318.27683	0.00915	1318.27683	0.00488	1318.27683	5.30E-04
1317.31247	0.00889	1317.31247	0.00475	1317.31247	5.30E-04
1316.34812	0.00864	1316.34812	0.00464	1316.34812	5.40E-04
1315.38376	0.00849	1315.38376	0.00458	1315.38376	5.50E-04
1314.4194	0.00847	1314.4194	0.00457	1314.4194	5.70E-04
1313.45504	0.00852	1313.45504	0.0046	1313.45504	5.90E-04
1312.49069	0.00862	1312.49069	0.00467	1312.49069	6.20E-04
1311.52633	0.00876	1311.52633	0.00476	1311.52633	6.50E-04
1310.56197	0.00893	1310.56197	0.00486	1310.56197	6.90E-04
1309.59761	0.0091	1309.59761	0.00495	1309.59761	7.10E-04
1308.63325	0.00921	1308.63325	0.00501	1308.63325	7.20E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1307.6689	0.0092	1307.6689	0.00505	1307.6689	7.30E-04
1306.70454	0.00912	1306.70454	0.00506	1306.70454	7.40E-04
1305.74018	0.00906	1305.74018	0.00506	1305.74018	7.40E-04
1304.77582	0.00905	1304.77582	0.00504	1304.77582	7.40E-04
1303.81147	0.00907	1303.81147	0.00503	1303.81147	7.50E-04
1302.84711	0.00912	1302.84711	0.00504	1302.84711	7.60E-04
1301.88275	0.0092	1301.88275	0.00508	1301.88275	7.70E-04
1300.91839	0.0093	1300.91839	0.00516	1300.91839	7.80E-04
1299.95404	0.00945	1299.95404	0.00528	1299.95404	7.90E-04
1298.98968	0.0097	1298.98968	0.00543	1298.98968	8.00E-04
1298.02532	0.01004	1298.02532	0.0056	1298.02532	8.20E-04
1297.06096	0.01033	1297.06096	0.00574	1297.06096	8.50E-04
1296.09661	0.01049	1296.09661	0.00584	1296.09661	8.60E-04
1295.13225	0.01054	1295.13225	0.00587	1295.13225	8.70E-04
1294.16789	0.01049	1294.16789	0.00581	1294.16789	8.80E-04
1293.20353	0.01028	1293.20353	0.00567	1293.20353	8.80E-04
1292.23918	0.00991	1292.23918	0.00547	1292.23918	8.80E-04
1291.27482	0.00947	1291.27482	0.00525	1291.27482	8.80E-04
1290.31046	0.00905	1290.31046	0.00503	1290.31046	8.80E-04
1289.3461	0.00871	1289.3461	0.00483	1289.3461	8.80E-04
1288.38175	0.00844	1288.38175	0.00464	1288.38175	8.60E-04
1287.41739	0.00824	1287.41739	0.00448	1287.41739	8.30E-04
1286.45303	0.00804	1286.45303	0.00434	1286.45303	8.10E-04
1285.48867	0.00778	1285.48867	0.00421	1285.48867	7.90E-04
1284.52431	0.00754	1284.52431	0.0041	1284.52431	7.80E-04
1283.55996	0.00736	1283.55996	0.004	1283.55996	7.80E-04
1282.5956	0.00717	1282.5956	0.00391	1282.5956	7.70E-04
1281.63124	0.00699	1281.63124	0.00381	1281.63124	7.70E-04
1280.66688	0.00685	1280.66688	0.00373	1280.66688	7.70E-04
1279.70253	0.00671	1279.70253	0.00365	1279.70253	7.70E-04
1278.73817	0.00661	1278.73817	0.00359	1278.73817	7.80E-04
1277.77381	0.00656	1277.77381	0.00354	1277.77381	7.90E-04
1276.80945	0.00654	1276.80945	0.00351	1276.80945	7.90E-04
1275.8451	0.00652	1275.8451	0.0035	1275.8451	8.00E-04
1274.88074	0.00652	1274.88074	0.00351	1274.88074	8.10E-04
1273.91638	0.00658	1273.91638	0.00354	1273.91638	8.20E-04
1272.95202	0.00665	1272.95202	0.00359	1272.95202	8.40E-04
1271.98767	0.00673	1271.98767	0.00366	1271.98767	8.70E-04
1271.02331	0.00685	1271.02331	0.00375	1271.02331	9.00E-04
1270.05895	0.00706	1270.05895	0.00387	1270.05895	9.30E-04
1269.09459	0.0074	1269.09459	0.00403	1269.09459	9.80E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1268.13024	0.00779	1268.13024	0.00422	1268.13024	0.00103
1267.16588	0.00819	1267.16588	0.00445	1267.16588	0.00108
1266.20152	0.00867	1266.20152	0.00472	1266.20152	0.00113
1265.23716	0.00922	1265.23716	0.00503	1265.23716	0.00119
1264.27281	0.00983	1264.27281	0.0054	1264.27281	0.00125
1263.30845	0.01052	1263.30845	0.00582	1263.30845	0.00132
1262.34409	0.01131	1262.34409	0.0063	1262.34409	0.0014
1261.37973	0.01219	1261.37973	0.00684	1261.37973	0.00148
1260.41538	0.0132	1260.41538	0.00744	1260.41538	0.00156
1259.45102	0.01435	1259.45102	0.00809	1259.45102	0.00165
1258.48666	0.01556	1258.48666	0.0088	1258.48666	0.00174
1257.5223	0.0168	1257.5223	0.00955	1257.5223	0.00184
1256.55794	0.0181	1256.55794	0.01034	1256.55794	0.00192
1255.59359	0.01942	1255.59359	0.01115	1255.59359	0.002
1254.62923	0.02072	1254.62923	0.01196	1254.62923	0.00208
1253.66487	0.022	1253.66487	0.01274	1253.66487	0.00215
1252.70051	0.02326	1252.70051	0.01347	1252.70051	0.00223
1251.73616	0.02442	1251.73616	0.01414	1251.73616	0.00232
1250.7718	0.02541	1250.7718	0.01474	1250.7718	0.00241
1249.80744	0.02627	1249.80744	0.01528	1249.80744	0.00248
1248.84308	0.02703	1248.84308	0.01574	1248.84308	0.00254
1247.87873	0.02762	1247.87873	0.01612	1247.87873	0.0026
1246.91437	0.02807	1246.91437	0.01641	1246.91437	0.00266
1245.95001	0.0284	1245.95001	0.0166	1245.95001	0.00271
1244.98565	0.02858	1244.98565	0.01667	1244.98565	0.00276
1244.0213	0.02857	1244.0213	0.01661	1244.0213	0.00278
1243.05694	0.02831	1243.05694	0.01645	1243.05694	0.0028
1242.09258	0.02779	1242.09258	0.01617	1242.09258	0.0028
1241.12822	0.02712	1241.12822	0.01579	1241.12822	0.00279
1240.16387	0.02635	1240.16387	0.01532	1240.16387	0.00277
1239.19951	0.02541	1239.19951	0.01475	1239.19951	0.00275
1238.23515	0.02427	1238.23515	0.01411	1238.23515	0.00271
1237.27079	0.02302	1237.27079	0.0134	1237.27079	0.00266
1236.30644	0.02175	1236.30644	0.01264	1236.30644	0.0026
1235.34208	0.02049	1235.34208	0.01185	1235.34208	0.00253
1234.37772	0.01924	1234.37772	0.01106	1234.37772	0.00246
1233.41336	0.01799	1233.41336	0.01028	1233.41336	0.00239
1232.449	0.01671	1232.449	0.00953	1232.449	0.00231
1231.48465	0.01546	1231.48465	0.00881	1231.48465	0.00224
1230.52029	0.0143	1230.52029	0.00813	1230.52029	0.00216
1229.55593	0.01322	1229.55593	0.00749	1229.55593	0.00209

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1228.59157	0.01218	1228.59157	0.00689	1228.59157	0.00203
1227.62722	0.01122	1227.62722	0.00634	1227.62722	0.00196
1226.66286	0.01035	1226.66286	0.00582	1226.66286	0.0019
1225.6985	0.00955	1225.6985	0.00533	1225.6985	0.00182
1224.73414	0.00881	1224.73414	0.00488	1224.73414	0.00174
1223.76979	0.00812	1223.76979	0.00446	1223.76979	0.00166
1222.80543	0.00753	1222.80543	0.00408	1222.80543	0.00157
1221.84107	0.00703	1221.84107	0.00374	1221.84107	0.00149
1220.87671	0.00658	1220.87671	0.00344	1220.87671	0.00141
1219.91236	0.00615	1219.91236	0.00318	1219.91236	0.00134
1218.948	0.00576	1218.948	0.00296	1218.948	0.00126
1217.98364	0.00542	1217.98364	0.00276	1217.98364	0.00117
1217.01928	0.0051	1217.01928	0.00259	1217.01928	0.00108
1216.05493	0.00481	1216.05493	0.00245	1216.05493	1.00E-03
1215.09057	0.00458	1215.09057	0.00234	1215.09057	9.20E-04
1214.12621	0.00443	1214.12621	0.00224	1214.12621	8.60E-04
1213.16185	0.00434	1213.16185	0.00218	1213.16185	8.10E-04
1212.1975	0.00426	1212.1975	0.00215	1212.1975	7.60E-04
1211.23314	0.0042	1211.23314	0.00214	1211.23314	7.10E-04
1210.26878	0.00421	1210.26878	0.00216	1210.26878	6.50E-04
1209.30442	0.00427	1209.30442	0.0022	1209.30442	5.80E-04
1208.34007	0.00433	1208.34007	0.00223	1208.34007	5.20E-04
1207.37571	0.00436	1207.37571	0.00226	1207.37571	4.60E-04
1206.41135	0.00435	1206.41135	0.00226	1206.41135	4.00E-04
1205.44699	0.0043	1205.44699	0.00224	1205.44699	3.40E-04
1204.48263	0.00422	1204.48263	0.00218	1204.48263	2.80E-04
1203.51828	0.00411	1203.51828	0.00209	1203.51828	2.20E-04
1202.55392	0.00396	1202.55392	0.00198	1202.55392	1.70E-04
1201.58956	0.00377	1201.58956	0.00187	1201.58956	1.30E-04
1200.6252	0.0036	1200.6252	0.00175	1200.6252	8.00E-05
1199.66085	0.00341	1199.66085	0.00165	1199.66085	5.00E-05
1198.69649	0.0032	1198.69649	0.00155	1198.69649	2.00E-05
1197.73213	0.00303	1197.73213	0.00147	1197.73213	0
1196.76777	0.00292	1196.76777	0.00139	1196.76777	-3.00E-05
1195.80342	0.00282	1195.80342	0.00133	1195.80342	-5.00E-05
1194.83906	0.00274	1194.83906	0.00128	1194.83906	-8.00E-05
1193.8747	0.00267	1193.8747	0.00126	1193.8747	-1.00E-04
1192.91034	0.00258	1192.91034	0.00125	1192.91034	-1.30E-04
1191.94599	0.00252	1191.94599	0.00124	1191.94599	-1.50E-04
1190.98163	0.00255	1190.98163	0.00124	1190.98163	-1.70E-04
1190.01727	0.00259	1190.01727	0.00123	1190.01727	-1.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1189.05291	0.00259	1189.05291	0.00124	1189.05291	-2.00E-04
1188.08856	0.00257	1188.08856	0.00125	1188.08856	-2.00E-04
1187.1242	0.00259	1187.1242	0.00127	1187.1242	-1.90E-04
1186.15984	0.00265	1186.15984	0.0013	1186.15984	-1.60E-04
1185.19548	0.00275	1185.19548	0.00133	1185.19548	-1.20E-04
1184.23113	0.00288	1184.23113	0.00139	1184.23113	-8.00E-05
1183.26677	0.00306	1183.26677	0.00149	1183.26677	-5.00E-05
1182.30241	0.00329	1182.30241	0.00163	1182.30241	-1.00E-05
1181.33805	0.00358	1181.33805	0.00183	1181.33805	4.00E-05
1180.37369	0.00392	1180.37369	0.00207	1180.37369	9.00E-05
1179.40934	0.00438	1179.40934	0.00238	1179.40934	1.50E-04
1178.44498	0.00497	1178.44498	0.00276	1178.44498	2.30E-04
1177.48062	0.00566	1177.48062	0.00321	1177.48062	3.00E-04
1176.51626	0.00642	1176.51626	0.00373	1176.51626	3.80E-04
1175.55191	0.00726	1175.55191	0.00429	1175.55191	4.70E-04
1174.58755	0.00816	1174.58755	0.00487	1174.58755	5.40E-04
1173.62319	0.00908	1173.62319	0.00541	1173.62319	6.20E-04
1172.65883	0.00991	1172.65883	0.00591	1172.65883	6.90E-04
1171.69448	0.01056	1171.69448	0.00633	1171.69448	7.60E-04
1170.73012	0.01103	1170.73012	0.00664	1170.73012	8.50E-04
1169.76576	0.01128	1169.76576	0.00679	1169.76576	9.30E-04
1168.8014	0.01117	1168.8014	0.00674	1168.8014	9.90E-04
1167.83705	0.01068	1167.83705	0.00648	1167.83705	0.00103
1166.87269	0.00993	1166.87269	0.00605	1166.87269	0.00105
1165.90833	0.00908	1165.90833	0.00553	1165.90833	0.00105
1164.94397	0.00827	1164.94397	0.005	1164.94397	0.00104
1163.97962	0.00759	1163.97962	0.00452	1163.97962	0.00105
1163.01526	0.00705	1163.01526	0.00413	1163.01526	0.00108
1162.0509	0.00657	1162.0509	0.00387	1162.0509	0.0011
1161.08654	0.00625	1161.08654	0.00378	1161.08654	0.00114
1160.12219	0.00636	1160.12219	0.00392	1160.12219	0.00119
1159.15783	0.00707	1159.15783	0.00438	1159.15783	0.00125
1158.19347	0.00836	1158.19347	0.0052	1158.19347	0.00134
1157.22911	0.01018	1157.22911	0.00634	1157.22911	0.00146
1156.26475	0.01234	1156.26475	0.00768	1156.26475	0.00159
1155.3004	0.01451	1155.3004	0.00903	1155.3004	0.00174
1154.33604	0.01629	1154.33604	0.01019	1154.33604	0.00188
1153.37168	0.01745	1153.37168	0.01099	1153.37168	0.00201
1152.40732	0.01799	1152.40732	0.01137	1152.40732	0.00209
1151.44297	0.01793	1151.44297	0.0113	1151.44297	0.00212
1150.47861	0.01733	1150.47861	0.01085	1150.47861	0.00208



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1149.51425	0.01636	1149.51425	0.0101	1149.51425	0.00198
1148.54989	0.01509	1148.54989	0.00912	1148.54989	0.00184
1147.58554	0.01354	1147.58554	0.00801	1147.58554	0.00167
1146.62118	0.01188	1146.62118	0.00685	1146.62118	0.00148
1145.65682	0.01034	1145.65682	0.00571	1145.65682	0.00129
1144.69246	0.00898	1144.69246	0.00465	1144.69246	0.00107
1143.72811	0.00785	1143.72811	0.00368	1143.72811	8.10E-04
1142.76375	0.00699	1142.76375	0.00281	1142.76375	5.30E-04
1141.79939	0.00623	1141.79939	0.00206	1141.79939	2.90E-04
1140.83503	0.0055	1140.83503	0.0015	1140.83503	1.40E-04
1139.87068	0.00501	1139.87068	0.00111	1139.87068	1.00E-04
1138.90632	0.00477	1138.90632	8.70E-04	1138.90632	1.90E-04
1137.94196	0.00453	1137.94196	7.60E-04	1137.94196	3.80E-04
1136.9776	0.00425	1136.9776	7.30E-04	1136.9776	5.90E-04
1136.01325	0.00404	1136.01325	7.30E-04	1136.01325	7.60E-04
1135.04889	0.00394	1135.04889	7.40E-04	1135.04889	9.30E-04
1134.08453	0.00389	1134.08453	7.70E-04	1134.08453	0.00111
1133.12017	0.00381	1133.12017	8.70E-04	1133.12017	0.00132
1132.15582	0.00368	1132.15582	9.90E-04	1132.15582	0.00152
1131.19146	0.00365	1131.19146	0.00112	1131.19146	0.00171
1130.2271	0.00379	1130.2271	0.00126	1130.2271	0.00188
1129.26274	0.00389	1129.26274	0.00141	1129.26274	0.00202
1128.29838	0.00386	1128.29838	0.00158	1128.29838	0.00217
1127.33403	0.00393	1127.33403	0.00172	1127.33403	0.00237
1126.36967	0.00418	1126.36967	0.00181	1126.36967	0.00261
1125.40531	0.00435	1125.40531	0.00185	1125.40531	0.00284
1124.44095	0.00426	1124.44095	0.00188	1124.44095	0.00304
1123.4766	0.00405	1123.4766	0.00191	1123.4766	0.00323
1122.51224	0.004	1122.51224	0.002	1122.51224	0.00337
1121.54788	0.00419	1121.54788	0.00218	1121.54788	0.00349
1120.58352	0.00442	1120.58352	0.00241	1120.58352	0.00361
1119.61917	0.00461	1119.61917	0.00266	1119.61917	0.00375
1118.65481	0.00494	1118.65481	0.00291	1118.65481	0.00389
1117.69045	0.00541	1117.69045	0.00317	1117.69045	0.004
1116.72609	0.00587	1116.72609	0.00346	1116.72609	0.0041
1115.76174	0.0063	1115.76174	0.0038	1115.76174	0.00422
1114.79738	0.00687	1114.79738	0.00428	1114.79738	0.00435
1113.83302	0.00768	1113.83302	0.0049	1113.83302	0.00447
1112.86866	0.00868	1112.86866	0.00565	1112.86866	0.00458
1111.90431	0.00975	1111.90431	0.00648	1111.90431	0.0047
1110.93995	0.01093	1110.93995	0.00734	1110.93995	0.00482

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1109.97559	0.01217	1109.97559	0.00816	1109.97559	0.0049
1109.01123	0.01325	1109.01123	0.00882	1109.01123	0.00497
1108.04688	0.01398	1108.04688	0.00928	1108.04688	0.00505
1107.08252	0.01436	1107.08252	0.00951	1107.08252	0.00512
1106.11816	0.01439	1106.11816	0.0095	1106.11816	0.00519
1105.1538	0.01392	1105.1538	0.00924	1105.1538	0.00525
1104.18944	0.01302	1104.18944	0.0088	1104.18944	0.00528
1103.22509	0.01204	1103.22509	0.0082	1103.22509	0.00529
1102.26073	0.01107	1102.26073	0.00751	1102.26073	0.00527
1101.29637	0.01	1101.29637	0.00679	1101.29637	0.00525
1100.33201	0.00897	1100.33201	0.00609	1100.33201	0.00522
1099.36766	0.00817	1099.36766	0.00544	1099.36766	0.00518
1098.4033	0.00751	1098.4033	0.00488	1098.4033	0.00515
1097.43894	0.00691	1097.43894	0.00441	1097.43894	0.00515
1096.47458	0.00633	1096.47458	0.00403	1096.47458	0.00515
1095.51023	0.00574	1095.51023	0.00371	1095.51023	0.00516
1094.54587	0.00522	1094.54587	0.00345	1094.54587	0.00516
1093.58151	0.00477	1093.58151	0.00321	1093.58151	0.00518
1092.61715	0.00439	1092.61715	0.00301	1092.61715	0.00522
1091.6528	0.00417	1091.6528	0.00284	1091.6528	0.00523
1090.68844	0.00409	1090.68844	0.00272	1090.68844	0.00523
1089.72408	0.00409	1089.72408	0.00266	1089.72408	0.00521
1088.75972	0.00408	1088.75972	0.00265	1088.75972	0.00521
1087.79537	0.00399	1087.79537	0.00269	1087.79537	0.0052
1086.83101	0.00397	1086.83101	0.00275	1086.83101	0.0052
1085.86665	0.00409	1085.86665	0.00281	1085.86665	0.00523
1084.90229	0.0042	1084.90229	0.00286	1084.90229	0.00529
1083.93794	0.00437	1083.93794	0.00292	1083.93794	0.00536
1082.97358	0.00471	1082.97358	0.003	1082.97358	0.00543
1082.00922	0.00499	1082.00922	0.00305	1082.00922	0.0055
1081.04486	0.00493	1081.04486	0.00306	1081.04486	0.00557
1080.08051	0.00464	1080.08051	0.00299	1080.08051	0.0056
1079.11615	0.00436	1079.11615	0.00287	1079.11615	0.00559
1078.15179	0.00416	1078.15179	0.00272	1078.15179	0.00556
1077.18743	0.00407	1077.18743	0.0026	1077.18743	0.0055
1076.22307	0.00402	1076.22307	0.00253	1076.22307	0.00544
1075.25872	0.00391	1075.25872	0.00248	1075.25872	0.00539
1074.29436	0.00375	1074.29436	0.0024	1074.29436	0.00538
1073.33	0.0035	1073.33	0.00226	1073.33	0.00536
1072.36564	0.00315	1072.36564	0.00206	1072.36564	0.00534
1071.40129	0.00279	1071.40129	0.00182	1071.40129	0.0053

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1070.43693	0.0025	1070.43693	0.00157	1070.43693	0.00526
1069.47257	0.00222	1069.47257	0.00137	1069.47257	0.00521
1068.50821	0.00198	1068.50821	0.00121	1068.50821	0.00515
1067.54386	0.00182	1067.54386	0.00109	1067.54386	0.0051
1066.5795	0.0017	1066.5795	9.90E-04	1066.5795	0.00505
1065.61514	0.00158	1065.61514	8.90E-04	1065.61514	0.00499
1064.65078	0.00148	1064.65078	8.10E-04	1064.65078	0.00494
1063.68643	0.00141	1063.68643	7.30E-04	1063.68643	0.00491
1062.72207	0.00131	1062.72207	6.60E-04	1062.72207	0.0049
1061.75771	0.00124	1061.75771	6.00E-04	1061.75771	0.0049
1060.79335	0.00118	1060.79335	5.50E-04	1060.79335	0.0049
1059.829	0.00114	1059.829	5.00E-04	1059.829	0.0049
1058.86464	0.00111	1058.86464	4.50E-04	1058.86464	0.0049
1057.90028	0.00105	1057.90028	4.20E-04	1057.90028	0.00489
1056.93592	9.40E-04	1056.93592	4.00E-04	1056.93592	0.00489
1055.97157	8.40E-04	1055.97157	3.70E-04	1055.97157	0.0049
1055.00721	7.40E-04	1055.00721	3.40E-04	1055.00721	0.00489
1054.04285	6.30E-04	1054.04285	3.00E-04	1054.04285	0.00488
1053.07849	6.30E-04	1053.07849	2.50E-04	1053.07849	0.00488
1052.11413	7.40E-04	1052.11413	1.90E-04	1052.11413	0.00488
1051.14978	7.90E-04	1051.14978	1.50E-04	1051.14978	0.00488
1050.18542	7.20E-04	1050.18542	1.30E-04	1050.18542	0.00488
1049.22106	6.80E-04	1049.22106	1.20E-04	1049.22106	0.00487
1048.2567	6.80E-04	1048.2567	1.20E-04	1048.2567	0.00485
1047.29235	5.80E-04	1047.29235	1.20E-04	1047.29235	0.0048
1046.32799	4.30E-04	1046.32799	1.00E-04	1046.32799	0.00474
1045.36363	3.60E-04	1045.36363	9.00E-05	1045.36363	0.00469
1044.39927	3.80E-04	1044.39927	7.00E-05	1044.39927	0.00464
1043.43492	4.70E-04	1043.43492	7.00E-05	1043.43492	0.00459
1042.47056	5.30E-04	1042.47056	6.00E-05	1042.47056	0.00454
1041.5062	4.60E-04	1041.5062	6.00E-05	1041.5062	0.00449
1040.54184	3.50E-04	1040.54184	8.00E-05	1040.54184	0.00445
1039.57749	3.40E-04	1039.57749	9.00E-05	1039.57749	0.00443
1038.61313	3.70E-04	1038.61313	9.00E-05	1038.61313	0.0044
1037.64877	3.90E-04	1037.64877	9.00E-05	1037.64877	0.00438
1036.68441	4.40E-04	1036.68441	9.00E-05	1036.68441	0.00437
1035.72006	4.50E-04	1035.72006	8.00E-05	1035.72006	0.00433
1034.7557	4.00E-04	1034.7557	6.00E-05	1034.7557	0.00427
1033.79134	4.10E-04	1033.79134	4.00E-05	1033.79134	0.00418
1032.82698	4.30E-04	1032.82698	3.00E-05	1032.82698	0.0041
1031.86263	3.70E-04	1031.86263	4.00E-05	1031.86263	0.00401

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1030.89827	2.90E-04	1030.89827	5.00E-05	1030.89827	0.0039
1029.93391	2.80E-04	1029.93391	5.00E-05	1029.93391	0.00379
1028.96955	3.10E-04	1028.96955	5.00E-05	1028.96955	0.00369
1028.0052	3.00E-04	1028.0052	3.00E-05	1028.0052	0.00362
1027.04084	2.00E-04	1027.04084	1.00E-05	1027.04084	0.00355
1026.07648	1.20E-04	1026.07648	-2.00E-05	1026.07648	0.00348
1025.11212	1.60E-04	1025.11212	-2.00E-05	1025.11212	0.00338
1024.14776	2.60E-04	1024.14776	1.00E-05	1024.14776	0.00325
1023.18341	3.50E-04	1023.18341	5.00E-05	1023.18341	0.00309
1022.21905	4.80E-04	1022.21905	1.30E-04	1022.21905	0.00294
1021.25469	7.50E-04	1021.25469	2.60E-04	1021.25469	0.00283
1020.29033	0.00107	1020.29033	4.80E-04	1020.29033	0.00276
1019.32598	0.00139	1019.32598	7.80E-04	1019.32598	0.00269
1018.36162	0.00189	1018.36162	0.00117	1018.36162	0.0026
1017.39726	0.00256	1017.39726	0.00162	1017.39726	0.00251
1016.4329	0.00325	1016.4329	0.00204	1016.4329	0.0024
1015.46855	0.00374	1015.46855	0.00236	1015.46855	0.00228
1014.50419	0.0039	1014.50419	0.00251	1014.50419	0.00215
1013.53983	0.00371	1013.53983	0.00247	1013.53983	0.00202
1012.57547	0.00331	1012.57547	0.00227	1012.57547	0.00187
1011.61112	0.00293	1011.61112	0.00195	1011.61112	0.0017
1010.64676	0.00256	1010.64676	0.00158	1010.64676	0.00152
1009.6824	0.00214	1009.6824	0.00121	1009.6824	0.00136
1008.71804	0.00182	1008.71804	8.70E-04	1008.71804	0.0012
1007.75369	0.00155	1007.75369	5.80E-04	1007.75369	0.00105
1006.78933	0.00125	1006.78933	3.40E-04	1006.78933	8.90E-04
1005.82497	0.00102	1005.82497	1.70E-04	1005.82497	7.50E-04
1004.86061	9.10E-04	1004.86061	5.00E-05	1004.86061	6.40E-04
1003.89626	8.10E-04	1003.89626	-3.00E-05	1003.89626	5.40E-04
1002.9319	7.80E-04	1002.9319	-6.00E-05	1002.9319	4.30E-04
1001.96754	9.20E-04	1001.96754	-6.00E-05	1001.96754	4.30E-04
1001.00318	0.00104	1001.00318	-6.00E-05	1001.00318	4.30E-04
1000.03882	0.00101	1000.03882	-6.00E-05	1000.03882	4.30E-04
999.07447	9.80E-04	999.07447	-6.00E-05	999.07447	4.30E-04
998.11011	0.00101				
997.14575	0.00102				
996.18139	0.00103				
995.21704	0.00101				
994.25268	9.20E-04				
993.28832	9.30E-04				
992.32396	0.00114				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
991.35961	0.00134				
990.39525	0.00146				
989.43089	0.00152				
988.46653	0.00154				
987.50218	0.00163				
986.53782	0.00178				
985.57346	0.00195				
984.6091	0.00211				
983.64475	0.00211				
982.68039	0.00186				
981.71603	0.00162				
980.75167	0.0017				
979.78732	0.00208				
978.82296	0.0025				
977.8586	0.00273				
976.89424	0.00281				
975.92988	0.00289				
974.96553	0.00301				
974.00117	0.00311				
973.03681	0.00314				
972.07245	0.00307				
971.1081	0.00298				
970.14374	0.0031				
969.17938	0.00339				
968.21502	0.00347				
967.25067	0.00332				
966.28631	0.00322				
965.32195	0.00328				
964.35759	0.00346				
963.39324	0.0036				
962.42888	0.00358				
961.46452	0.00345				
960.50016	0.0033				
959.53581	0.00316				
958.57145	0.00314				
957.60709	0.00339				
956.64273	0.00363				
955.67838	0.00357				
954.71402	0.00346				
953.74966	0.00355				
952.7853	0.00364				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
951.82095	0.00363				
950.85659	0.0036				
949.89223	0.0035				
948.92787	0.00342				
947.96351	0.00339				
946.99916	0.0034				
946.0348	0.00351				
945.07044	0.00349				
944.10608	0.00315				
943.14173	0.00282				
942.17737	0.0029				
941.21301	0.00324				
940.24865	0.00338				
939.2843	0.00337				
938.31994	0.00348				
937.35558	0.00368				
936.39122	0.00378				
935.42687	0.0036				
934.46251	0.00327				
933.49815	0.00323				
932.53379	0.0035				
931.56944	0.00388				
930.60508	0.00427				
929.64072	0.00451				
928.67636	0.00462				
927.71201	0.00476				
926.74765	0.00482				
925.78329	0.00482				
924.81893	0.00483				
923.85457	0.00483				
922.89022	0.00492				
921.92586	0.00523				
920.9615	0.00539				
919.99714	0.0051				
919.03279	0.00487				
918.06843	0.00508				
917.10407	0.00556				
916.13971	0.00639				
915.17536	0.00727				
914.211	0.00761				
913.24664	0.00771				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
912.28228	0.00806				
911.31793	0.00828				
910.35357	0.00819				
909.38921	0.00839				
908.42485	0.00883				
907.4605	0.00888				
906.49614	0.00865				
905.53178	0.00872				
904.56742	0.00887				
903.60307	0.00863				
902.63871	0.00834				
901.67435	0.00825				
900.70999	0.00827				
899.74564	0.00838				
898.78128	0.00825				
897.81692	0.00783				
896.85256	0.00773				
895.8882	0.00799				
894.92385	0.00801				
893.95949	0.00793				
892.99513	0.00817				
892.03077	0.00857				
891.06642	0.0087				
890.10206	0.00862				
889.1377	0.00876				
888.17334	0.00902				
887.20899	0.00924				
886.24463	0.00949				
885.28027	0.00963				
884.31591	0.00978				
883.35156	0.00979				
882.3872	0.00946				
881.42284	0.00949				
880.45848	0.01033				
879.49413	0.01114				
878.52977	0.01113				
877.56541	0.01073				
876.60105	0.01074				
875.6367	0.0112				
874.67234	0.0115				
873.70798	0.01159				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
872.74362	0.01158				
871.77926	0.01124				
870.81491	0.01084				
869.85055	0.01039				
868.88619	0.00935				
867.92183	0.0082				
866.95748	0.00789				
865.99312	0.00844				
865.02876	0.00903				
864.0644	0.00913				
863.10005	0.00888				
862.13569	0.00856				
861.17133	0.00832				
860.20697	0.00818				
859.24262	0.00809				
858.27826	0.00819				
857.3139	0.00831				
856.34954	0.00812				
855.38519	0.00783				
854.42083	0.00789				
853.45647	0.00827				
852.49211	0.00839				
851.52776	0.00793				
850.5634	0.00743				
849.59904	0.00739				
848.63468	0.00739				
847.67032	0.00664				
846.70597	0.00555				
845.74161	0.00536				
844.77725	0.00596				
843.81289	0.00649				
842.84854	0.00674				
841.88418	0.00688				
840.91982	0.00715				
839.95546	0.00747				
838.99111	0.00763				
838.02675	0.00779				
837.06239	0.00812				
836.09803	0.00855				
835.13368	0.0088				
834.16932	0.00883				



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
833.20496	0.00902				
832.2406	0.00919				
831.27625	0.00906				
830.31189	0.00906				
829.34753	0.00907				
828.38317	0.00868				
827.41882	0.00839				
826.45446	0.0086				
825.4901	0.00865				
824.52574	0.00805				
823.56139	0.0074				
822.59703	0.0074				
821.63267	0.00789				
820.66831	0.00812				
819.70395	0.00789				
818.7396	0.0077				
817.77524	0.00767				
816.81088	0.00779				
815.84652	0.00806				
814.88217	0.00789				
813.91781	0.00722				
812.95345	0.00664				
811.98909	0.00626				
811.02474	0.00615				
810.06038	0.00645				
809.09602	0.00682				
808.13166	0.00688				
807.16731	0.00659				
806.20295	0.0062				
805.23859	0.00603				
804.27423	0.00579				
803.30988	0.00515				
802.34552	0.00457				
801.38116	0.0045				
800.4168	0.00469				
799.45245	0.00489				
798.48809	0.00511				
797.52373	0.0055				
796.55937	0.00597				
795.59501	0.00641				
794.63066	0.00685				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
793.6663	0.00713				
792.70194	0.00718				
791.73758	0.00703				
790.77323	0.00657				
789.80887	0.0061				
788.84451	0.00629				
787.88015	0.00688				
786.9158	0.00683				
785.95144	0.00639				
784.98708	0.00661				
784.02272	0.00692				
783.05837	0.00676				
782.09401	0.0067				
781.12965	0.00681				
780.16529	0.00679				
779.20094	0.00692				
778.23658	0.00728				
777.27222	0.0072				
776.30786	0.0065				
775.34351	0.00597				
774.37915	0.00611				
773.41479	0.00638				
772.45043	0.00639				
771.48608	0.00656				
770.52172	0.00698				
769.55736	0.00723				
768.593	0.00713				
767.62864	0.00696				
766.66429	0.00724				
765.69993	0.00766				
764.73557	0.00753				
763.77121	0.00714				
762.80686	0.00737				
761.8425	0.00826				
760.87814	0.00839				
759.91378	0.00734				
758.94943	0.00675				
757.98507	0.00725				
757.02071	0.00782				
756.05635	0.00825				
755.092	0.00859				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
754.12764	0.00843				
753.16328	0.0082				
752.19892	0.00847				
751.23457	0.00852				
750.27021	0.00809				
749.30585	0.00799				
748.34149	0.00811				
747.37714	0.00792				
746.41278	0.00818				
745.44842	0.00924				
744.48406	0.00981				
743.5197	0.00913				
742.55535	0.00802				
741.59099	0.00744				
740.62663	0.00783				
739.66227	0.00918				
738.69792	0.01056				
737.73356	0.01075				
736.7692	0.00978				
735.80484	0.00882				
734.84049	0.00854				
733.87613	0.00872				
732.91177	0.00897				
731.94741	0.00891				
730.98306	0.00853				
730.0187	0.00845				
729.05434	0.00892				
728.08998	0.0093				
727.12563	0.00921				
726.16127	0.00867				
725.19691	0.0081				
724.23255	0.00808				
723.2682	0.00831				
722.30384	0.00809				
721.33948	0.00759				
720.37512	0.00715				
719.41076	0.00675				
718.44641	0.00661				
717.48205	0.00669				
716.51769	0.00659				
715.55333	0.00632				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
714.58898	0.00604				
713.62462	0.00565				
712.66026	0.00507				
711.6959	0.00446				
710.73155	0.00404				
709.76719	0.00374				
708.80283	0.00334				
707.83847	0.00291				
706.87412	0.00272				
705.90976	0.00285				
704.9454	0.00315				
703.98104	0.00344				
703.01669	0.00373				
702.05233	0.00409				
701.08797	0.00445				
700.12361	0.0048				
699.15926	0.00517				
698.1949	0.00551				
697.23054	0.00586				
696.26618	0.00626				
695.30183	0.00646				
694.33747	0.0063				
693.37311	0.00606				
692.40875	0.00598				
691.44439	0.00599				
690.48004	0.00597				
689.51568	0.00588				
688.55132	0.00583				
687.58696	0.00596				
686.62261	0.00608				
685.65825	0.00588				
684.69389	0.00542				
683.72953	0.00493				
682.76518	0.00452				
681.80082	0.00422				
680.83646	0.004				
679.8721	0.00376				
678.90775	0.00328				
677.94339	0.00279				
676.97903	0.00256				
676.01467	0.00248				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
675.05032	0.00239				
674.08596	0.00227				
673.1216	0.00227				
672.15724	0.00241				
671.19289	0.00245				
670.22853	0.00242				
669.26417	0.0025				
668.29981	0.00239				
667.33545	0.00224				
666.3711	0.00266				
665.40674	0.00299				
664.44238	0.0029				
663.47802	0.00252				
662.51367	0.0021				
661.54931	0.00194				
660.58495	0.00218				
659.62059	0.00258				
658.65624	0.00265				
657.69188	0.00234				
656.72752	0.00207				
655.76316	0.00189				
654.79881	0.00153				
653.83445	0.00115				
652.87009	0.0012				
651.90573	0.00157				
650.94138	0.00195				
649.97702	0.00225				
649.01266	0.00243				
648.0483	0.00237				
647.08395	0.00213				
646.11959	0.00187				
645.15523	0.00165				
644.19087	0.00166				
643.22652	0.00211				
642.26216	0.00281				
641.2978	0.00341				
640.33344	0.00383				
639.36908	0.00385				
638.40473	0.00354				
637.44037	0.00359				
636.47601	0.00398				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
635.51165	0.00416				
634.5473	0.00422				
633.58294	0.00429				
632.61858	0.00411				
631.65422	0.00402				
630.68987	0.00461				
629.72551	0.00562				
628.76115	0.00653				
627.79679	0.00741				
626.83244	0.00785				
625.86808	0.00759				
624.90372	0.00691				
623.93936	0.00588				
622.97501	0.00473				
622.01065	0.00399				
621.04629	0.00452				
620.08193	0.00606				
619.11758	0.00683				
618.15322	0.00641				
617.18886	0.00619				
616.2245	0.0067				
615.26014	0.00729				
614.29579	0.00729				
613.33143	0.00679				
612.36707	0.00688				
611.40271	0.00757				
610.43836	0.00808				
609.474	0.00833				
608.50964	0.00734				
607.54528	0.00528				
606.58093	0.00446				
605.61657	0.00512				
604.65221	0.00576				
603.68785	0.00627				
602.7235	0.00776				
601.75914	0.00991				
600.79478	0.01046				
599.83042	0.00939				
598.86607	0.00869				
597.90171	0.00851				
596.93735	0.00855				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
595.97299	0.00876				
595.00864	0.00844				
594.04428	0.00812				
593.07992	0.00865				
592.11556	0.00932				
591.15121	0.00952				
590.18685	0.00919				
589.22249	0.0078				
588.25813	0.00595				
587.29377	0.00551				
586.32942	0.00653				
585.36506	0.00763				
584.4007	0.00804				
583.43634	0.00734				
582.47199	0.00579				
581.50763	0.00508				
580.54327	0.00628				
579.57891	0.00795				
578.61456	0.00849				
577.6502	0.00818				
576.68584	0.00773				
575.72148	0.00721				
574.75713	0.00643				
573.79277	0.0058				
572.82841	0.00619				
571.86405	0.0072				
570.8997	0.00816				
569.93534	0.00952				
568.97098	0.01036				
568.00662	0.00937				
567.04227	0.00749				
566.07791	0.00632				
565.11355	0.00645				
564.14919	0.00711				
563.18483	0.00764				
562.22048	0.00867				
561.25612	0.00995				
560.29176	0.01019				
559.3274	0.00955				
558.36305	0.009				
557.39869	0.0081				

Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
556.43433	0.00681				
555.46997	0.00665				
554.50562	0.00718				
553.54126	0.00717				
552.5769	0.00676				
551.61254	0.006				
550.64819	0.00559				
549.68383	0.0062				
548.71947	0.00746				
547.75511	0.00864				
546.79076	0.00846				
545.8264	0.00722				
544.86204	0.0071				
543.89768	0.00833				
542.93333	0.00804				
541.96897	0.00537				
541.00461	0.00385				
540.04025	0.00408				
539.07589	0.0036				
538.11154	0.00339				
537.14718	0.00487				
536.18282	0.00644				
535.21846	0.00607				
534.25411	0.00397				
533.28975	0.00269				
532.32539	0.00353				
531.36103	0.0049				
530.39668	0.00524				
529.43232	0.00466				
528.46796	0.0033				
527.5036	0.0019				
526.53925	0.00219				
525.57489	0.00376				
524.61053	0.00497				
523.64617	0.00518				
522.68182	0.00464				
521.71746	0.00441				
520.7531	0.004				
519.78874	0.0027				
518.82439	0.00235				
517.86003	0.00349				



Virgin Membrane		Fouled by real wastewater effluent after 30 min		Fouled by real wastewater effluent after 17 h	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
516.89567	0.00423				
515.93131	0.00422				
514.96696	0.00436				
514.0026	0.0042				
513.03824	0.00416				
512.07388	0.00503				
511.10952	0.00572				
510.14517	0.00579				
509.18081	0.00605				
508.21645	0.00637				
507.25209	0.00604				
506.28774	0.00484				
505.32338	0.00325				
504.35902	0.00143				
503.39466	0				
502.43031	-5.30E-04				
501.46595	7.60E-04				
500.50159	0.00119				
499.53723	0				

**Figure 6.11**

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3998.22658	3.70E-04	3998.22658	-1.30E-04
3997.26223	5.00E-04	3997.26223	-1.30E-04
3996.29787	4.60E-04	3996.29787	-1.30E-04
3995.33351	2.40E-04	3995.33351	-1.30E-04
3994.36915	4.00E-05	3994.36915	-1.30E-04
3993.4048	1.60E-04	3993.4048	-1.30E-04
3992.44044	4.90E-04	3992.44044	-1.30E-04
3991.47608	6.70E-04	3991.47608	-1.20E-04
3990.51172	6.10E-04	3990.51172	-1.20E-04
3989.54737	4.50E-04	3989.54737	-1.10E-04
3988.58301	3.00E-04	3988.58301	-1.10E-04
3987.61865	1.70E-04	3987.61865	-1.00E-04
3986.65429	1.60E-04	3986.65429	-1.00E-04
3985.68994	3.10E-04	3985.68994	-9.00E-05
3984.72558	4.10E-04	3984.72558	-8.00E-05
3983.76122	3.60E-04	3983.76122	-7.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3982.79686	3.00E-04	3982.79686	-6.00E-05
3981.8325	2.90E-04	3981.8325	-6.00E-05
3980.86815	2.00E-04	3980.86815	-6.00E-05
3979.90379	1.30E-04	3979.90379	-7.00E-05
3978.93943	1.10E-04	3978.93943	-7.00E-05
3977.97507	9.00E-05	3977.97507	-5.00E-05
3977.01072	1.30E-04	3977.01072	-2.00E-05
3976.04636	2.30E-04	3976.04636	0
3975.082	2.80E-04	3975.082	2.00E-05
3974.11764	2.90E-04	3974.11764	3.00E-05
3973.15329	2.40E-04	3973.15329	3.00E-05
3972.18893	2.40E-04	3972.18893	1.00E-05
3971.22457	3.90E-04	3971.22457	0
3970.26021	4.20E-04	3970.26021	-1.00E-05
3969.29586	2.30E-04	3969.29586	0
3968.3315	1.20E-04	3968.3315	0
3967.36714	1.60E-04	3967.36714	0
3966.40278	1.90E-04	3966.40278	1.00E-05
3965.43843	2.00E-04	3965.43843	1.00E-05
3964.47407	2.10E-04	3964.47407	1.00E-05
3963.50971	1.40E-04	3963.50971	1.00E-05
3962.54535	1.00E-05	3962.54535	2.00E-05
3961.581	2.00E-05	3961.581	3.00E-05
3960.61664	1.50E-04	3960.61664	5.00E-05
3959.65228	2.70E-04	3959.65228	7.00E-05
3958.68792	2.60E-04	3958.68792	9.00E-05
3957.72357	1.40E-04	3957.72357	1.00E-04
3956.75921	7.00E-05	3956.75921	1.00E-04
3955.79485	1.10E-04	3955.79485	1.10E-04
3954.83049	1.60E-04	3954.83049	1.20E-04
3953.86613	1.70E-04	3953.86613	1.30E-04
3952.90178	2.60E-04	3952.90178	1.30E-04
3951.93742	3.90E-04	3951.93742	1.20E-04
3950.97306	4.10E-04	3950.97306	1.20E-04
3950.0087	4.00E-04	3950.0087	1.30E-04
3949.04435	4.70E-04	3949.04435	1.40E-04
3948.07999	4.90E-04	3948.07999	1.60E-04
3947.11563	3.80E-04	3947.11563	1.80E-04
3946.15127	1.70E-04	3946.15127	1.80E-04
3945.18692	0	3945.18692	1.60E-04
3944.22256	1.00E-04	3944.22256	1.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3943.2582	2.60E-04	3943.2582	1.70E-04
3942.29384	2.70E-04	3942.29384	1.90E-04
3941.32949	3.80E-04	3941.32949	2.10E-04
3940.36513	5.80E-04	3940.36513	2.30E-04
3939.40077	5.70E-04	3939.40077	2.40E-04
3938.43641	4.00E-04	3938.43641	2.20E-04
3937.47206	2.50E-04	3937.47206	2.00E-04
3936.5077	1.80E-04	3936.5077	1.80E-04
3935.54334	1.40E-04	3935.54334	1.60E-04
3934.57898	2.40E-04	3934.57898	1.40E-04
3933.61463	4.30E-04	3933.61463	1.50E-04
3932.65027	5.40E-04	3932.65027	1.80E-04
3931.68591	6.30E-04	3931.68591	2.20E-04
3930.72155	6.50E-04	3930.72155	2.70E-04
3929.75719	4.40E-04	3929.75719	3.10E-04
3928.79284	1.80E-04	3928.79284	3.10E-04
3927.82848	1.50E-04	3927.82848	2.80E-04
3926.86412	2.90E-04	3926.86412	2.50E-04
3925.89976	3.50E-04	3925.89976	2.70E-04
3924.93541	2.10E-04	3924.93541	3.00E-04
3923.97105	1.10E-04	3923.97105	3.30E-04
3923.00669	2.40E-04	3923.00669	3.30E-04
3922.04233	3.60E-04	3922.04233	3.30E-04
3921.07798	2.80E-04	3921.07798	3.30E-04
3920.11362	1.80E-04	3920.11362	2.90E-04
3919.14926	4.00E-04	3919.14926	2.80E-04
3918.1849	6.60E-04	3918.1849	3.30E-04
3917.22055	4.50E-04	3917.22055	3.90E-04
3916.25619	1.40E-04	3916.25619	4.20E-04
3915.29183	1.70E-04	3915.29183	4.30E-04
3914.32747	3.30E-04	3914.32747	4.30E-04
3913.36312	4.40E-04	3913.36312	4.20E-04
3912.39876	5.30E-04	3912.39876	3.90E-04
3911.4344	6.00E-04	3911.4344	3.60E-04
3910.47004	5.70E-04	3910.47004	3.60E-04
3909.50569	3.80E-04	3909.50569	3.50E-04
3908.54133	2.00E-04	3908.54133	3.20E-04
3907.57697	2.90E-04	3907.57697	2.80E-04
3906.61261	5.30E-04	3906.61261	2.70E-04
3905.64825	7.10E-04	3905.64825	3.00E-04
3904.6839	6.50E-04	3904.6839	3.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3903.71954	6.00E-04	3903.71954	4.10E-04
3902.75518	6.70E-04	3902.75518	4.70E-04
3901.79082	5.80E-04	3901.79082	5.00E-04
3900.82647	5.80E-04	3900.82647	5.30E-04
3899.86211	6.60E-04	3899.86211	5.70E-04
3898.89775	4.30E-04	3898.89775	6.10E-04
3897.93339	2.10E-04	3897.93339	6.30E-04
3896.96904	1.50E-04	3896.96904	6.20E-04
3896.00468	1.70E-04	3896.00468	5.90E-04
3895.04032	2.50E-04	3895.04032	5.10E-04
3894.07596	3.80E-04	3894.07596	3.90E-04
3893.11161	6.40E-04	3893.11161	3.60E-04
3892.14725	8.10E-04	3892.14725	4.30E-04
3891.18289	6.30E-04	3891.18289	5.30E-04
3890.21853	4.40E-04	3890.21853	6.20E-04
3889.25418	4.20E-04	3889.25418	6.20E-04
3888.28982	4.70E-04	3888.28982	5.60E-04
3887.32546	6.10E-04	3887.32546	4.90E-04
3886.3611	6.60E-04	3886.3611	4.50E-04
3885.39675	6.90E-04	3885.39675	4.90E-04
3884.43239	9.90E-04	3884.43239	5.60E-04
3883.46803	0.0012	3883.46803	6.10E-04
3882.50367	0.00122	3882.50367	6.20E-04
3881.53932	0.00108	3881.53932	6.00E-04
3880.57496	5.60E-04	3880.57496	5.90E-04
3879.6106	1.90E-04	3879.6106	6.30E-04
3878.64624	3.70E-04	3878.64624	6.80E-04
3877.68188	5.60E-04	3877.68188	6.80E-04
3876.71753	5.80E-04	3876.71753	6.30E-04
3875.75317	5.70E-04	3875.75317	5.90E-04
3874.78881	3.40E-04	3874.78881	6.00E-04
3873.82445	7.00E-05	3873.82445	6.30E-04
3872.8601	2.80E-04	3872.8601	6.20E-04
3871.89574	6.80E-04	3871.89574	6.20E-04
3870.93138	7.50E-04	3870.93138	6.70E-04
3869.96702	3.50E-04	3869.96702	7.40E-04
3869.00267	1.80E-04	3869.00267	7.70E-04
3868.03831	5.10E-04	3868.03831	7.70E-04
3867.07395	8.60E-04	3867.07395	7.70E-04
3866.10959	8.40E-04	3866.10959	7.40E-04
3865.14524	3.70E-04	3865.14524	6.60E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3864.18088	1.90E-04	3864.18088	6.20E-04
3863.21652	4.40E-04	3863.21652	6.70E-04
3862.25216	4.10E-04	3862.25216	7.60E-04
3861.28781	2.20E-04	3861.28781	7.80E-04
3860.32345	3.30E-04	3860.32345	7.40E-04
3859.35909	4.70E-04	3859.35909	7.30E-04
3858.39473	4.50E-04	3858.39473	7.40E-04
3857.43038	4.00E-04	3857.43038	6.10E-04
3856.46602	5.50E-04	3856.46602	4.20E-04
3855.50166	7.70E-04	3855.50166	3.60E-04
3854.5373	5.20E-04	3854.5373	4.60E-04
3853.57294	2.50E-04	3853.57294	6.50E-04
3852.60859	6.00E-04	3852.60859	8.80E-04
3851.64423	8.30E-04	3851.64423	0.0011
3850.67987	9.20E-04	3850.67987	0.00121
3849.71551	7.20E-04	3849.71551	0.0011
3848.75116	3.00E-04	3848.75116	9.00E-04
3847.7868	1.50E-04	3847.7868	7.60E-04
3846.82244	2.50E-04	3846.82244	6.70E-04
3845.85808	3.00E-04	3845.85808	6.20E-04
3844.89373	2.70E-04	3844.89373	6.30E-04
3843.92937	2.40E-04	3843.92937	6.20E-04
3842.96501	4.30E-04	3842.96501	6.40E-04
3842.00065	7.80E-04	3842.00065	6.60E-04
3841.0363	9.00E-04	3841.0363	6.50E-04
3840.07194	8.10E-04	3840.07194	6.40E-04
3839.10758	7.80E-04	3839.10758	6.90E-04
3838.14322	5.40E-04	3838.14322	7.50E-04
3837.17887	4.60E-04	3837.17887	8.20E-04
3836.21451	7.60E-04	3836.21451	8.80E-04
3835.25015	6.80E-04	3835.25015	9.10E-04
3834.28579	4.00E-04	3834.28579	8.80E-04
3833.32144	5.40E-04	3833.32144	8.00E-04
3832.35708	7.50E-04	3832.35708	7.70E-04
3831.39272	7.10E-04	3831.39272	7.80E-04
3830.42836	7.10E-04	3830.42836	7.60E-04
3829.46401	7.60E-04	3829.46401	7.10E-04
3828.49965	7.00E-04	3828.49965	6.90E-04
3827.53529	6.30E-04	3827.53529	6.90E-04
3826.57093	6.20E-04	3826.57093	6.80E-04
3825.60657	5.90E-04	3825.60657	6.80E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3824.64222	4.50E-04	3824.64222	6.30E-04
3823.67786	3.80E-04	3823.67786	5.40E-04
3822.7135	5.50E-04	3822.7135	5.00E-04
3821.74914	6.80E-04	3821.74914	5.50E-04
3820.78479	5.50E-04	3820.78479	6.60E-04
3819.82043	5.70E-04	3819.82043	7.40E-04
3818.85607	7.20E-04	3818.85607	7.50E-04
3817.89171	8.40E-04	3817.89171	7.20E-04
3816.92736	7.80E-04	3816.92736	6.90E-04
3815.963	5.10E-04	3815.963	6.70E-04
3814.99864	4.90E-04	3814.99864	7.20E-04
3814.03428	6.20E-04	3814.03428	8.00E-04
3813.06993	6.60E-04	3813.06993	8.60E-04
3812.10557	7.40E-04	3812.10557	8.20E-04
3811.14121	7.30E-04	3811.14121	6.90E-04
3810.17685	6.40E-04	3810.17685	5.40E-04
3809.2125	7.10E-04	3809.2125	4.70E-04
3808.24814	8.70E-04	3808.24814	5.00E-04
3807.28378	7.70E-04	3807.28378	5.90E-04
3806.31942	6.30E-04	3806.31942	6.90E-04
3805.35507	7.90E-04	3805.35507	7.40E-04
3804.39071	9.30E-04	3804.39071	7.00E-04
3803.42635	9.50E-04	3803.42635	6.40E-04
3802.46199	9.50E-04	3802.46199	6.00E-04
3801.49763	7.50E-04	3801.49763	6.40E-04
3800.53328	6.20E-04	3800.53328	7.30E-04
3799.56892	7.00E-04	3799.56892	8.10E-04
3798.60456	7.10E-04	3798.60456	8.50E-04
3797.6402	6.50E-04	3797.6402	8.20E-04
3796.67585	6.40E-04	3796.67585	7.50E-04
3795.71149	6.60E-04	3795.71149	7.10E-04
3794.74713	7.10E-04	3794.74713	7.30E-04
3793.78277	7.20E-04	3793.78277	7.40E-04
3792.81842	7.10E-04	3792.81842	7.00E-04
3791.85406	5.70E-04	3791.85406	6.30E-04
3790.8897	3.20E-04	3790.8897	5.90E-04
3789.92534	2.10E-04	3789.92534	5.90E-04
3788.96099	2.60E-04	3788.96099	6.10E-04
3787.99663	3.50E-04	3787.99663	6.10E-04
3787.03227	4.60E-04	3787.03227	6.00E-04
3786.06791	4.80E-04	3786.06791	6.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3785.10356	4.20E-04	3785.10356	6.30E-04
3784.1392	4.60E-04	3784.1392	6.40E-04
3783.17484	5.40E-04	3783.17484	6.30E-04
3782.21048	5.30E-04	3782.21048	6.00E-04
3781.24613	4.80E-04	3781.24613	5.80E-04
3780.28177	4.10E-04	3780.28177	5.80E-04
3779.31741	3.00E-04	3779.31741	6.00E-04
3778.35305	3.20E-04	3778.35305	6.40E-04
3777.38869	3.80E-04	3777.38869	6.70E-04
3776.42434	4.30E-04	3776.42434	6.80E-04
3775.45998	5.00E-04	3775.45998	6.50E-04
3774.49562	4.80E-04	3774.49562	6.00E-04
3773.53126	4.10E-04	3773.53126	5.50E-04
3772.56691	4.50E-04	3772.56691	5.20E-04
3771.60255	5.40E-04	3771.60255	5.30E-04
3770.63819	4.90E-04	3770.63819	5.90E-04
3769.67383	3.80E-04	3769.67383	6.40E-04
3768.70948	5.20E-04	3768.70948	6.50E-04
3767.74512	7.50E-04	3767.74512	6.60E-04
3766.78076	8.10E-04	3766.78076	6.80E-04
3765.8164	6.60E-04	3765.8164	6.70E-04
3764.85205	6.70E-04	3764.85205	6.30E-04
3763.88769	8.20E-04	3763.88769	6.20E-04
3762.92333	7.60E-04	3762.92333	6.00E-04
3761.95897	6.80E-04	3761.95897	5.50E-04
3760.99462	7.30E-04	3760.99462	5.10E-04
3760.03026	7.20E-04	3760.03026	5.10E-04
3759.0659	7.60E-04	3759.0659	5.40E-04
3758.10154	8.50E-04	3758.10154	6.10E-04
3757.13719	7.60E-04	3757.13719	6.80E-04
3756.17283	6.60E-04	3756.17283	6.80E-04
3755.20847	6.80E-04	3755.20847	5.60E-04
3754.24411	6.70E-04	3754.24411	4.70E-04
3753.27976	6.20E-04	3753.27976	4.80E-04
3752.3154	5.70E-04	3752.3154	4.90E-04
3751.35104	8.20E-04	3751.35104	5.40E-04
3750.38668	9.70E-04	3750.38668	7.20E-04
3749.42232	4.60E-04	3749.42232	9.40E-04
3748.45797	2.90E-04	3748.45797	9.70E-04
3747.49361	7.70E-04	3747.49361	7.30E-04
3746.52925	0.00113	3746.52925	5.60E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3745.56489	9.10E-04	3745.56489	5.50E-04
3744.60054	0	3744.60054	5.90E-04
3743.63618	5.00E-05	3743.63618	6.80E-04
3742.67182	7.60E-04	3742.67182	8.40E-04
3741.70746	9.80E-04	3741.70746	9.80E-04
3740.74311	8.80E-04	3740.74311	9.30E-04
3739.77875	8.50E-04	3739.77875	6.80E-04
3738.81439	9.00E-04	3738.81439	5.00E-04
3737.85003	9.80E-04	3737.85003	4.60E-04
3736.88568	9.90E-04	3736.88568	5.10E-04
3735.92132	8.10E-04	3735.92132	6.00E-04
3734.95696	6.00E-04	3734.95696	6.70E-04
3733.9926	8.40E-04	3733.9926	7.30E-04
3733.02825	0.00106	3733.02825	7.90E-04
3732.06389	7.50E-04	3732.06389	8.10E-04
3731.09953	6.10E-04	3731.09953	7.70E-04
3730.13517	7.90E-04	3730.13517	7.00E-04
3729.17082	8.80E-04	3729.17082	6.50E-04
3728.20646	8.90E-04	3728.20646	6.10E-04
3727.2421	8.20E-04	3727.2421	5.80E-04
3726.27774	6.70E-04	3726.27774	5.90E-04
3725.31338	7.20E-04	3725.31338	6.30E-04
3724.34903	9.20E-04	3724.34903	6.70E-04
3723.38467	9.50E-04	3723.38467	7.10E-04
3722.42031	7.40E-04	3722.42031	7.00E-04
3721.45595	6.40E-04	3721.45595	6.70E-04
3720.4916	7.30E-04	3720.4916	6.60E-04
3719.52724	6.80E-04	3719.52724	6.60E-04
3718.56288	4.80E-04	3718.56288	6.50E-04
3717.59852	3.40E-04	3717.59852	6.10E-04
3716.63417	2.80E-04	3716.63417	5.80E-04
3715.66981	2.80E-04	3715.66981	5.30E-04
3714.70545	4.10E-04	3714.70545	4.60E-04
3713.74109	6.10E-04	3713.74109	4.50E-04
3712.77674	6.00E-04	3712.77674	5.00E-04
3711.81238	4.40E-04	3711.81238	5.70E-04
3710.84802	5.80E-04	3710.84802	6.60E-04
3709.88366	6.10E-04	3709.88366	7.60E-04
3708.91931	4.40E-04	3708.91931	8.20E-04
3707.95495	5.60E-04	3707.95495	7.80E-04
3706.99059	8.10E-04	3706.99059	7.00E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3706.02623	8.90E-04	3706.02623	6.60E-04
3705.06188	8.60E-04	3705.06188	6.00E-04
3704.09752	8.80E-04	3704.09752	5.40E-04
3703.13316	9.50E-04	3703.13316	5.50E-04
3702.1688	8.40E-04	3702.1688	6.00E-04
3701.20445	6.40E-04	3701.20445	6.50E-04
3700.24009	6.60E-04	3700.24009	6.80E-04
3699.27573	6.70E-04	3699.27573	7.00E-04
3698.31137	5.50E-04	3698.31137	6.90E-04
3697.34701	5.30E-04	3697.34701	6.50E-04
3696.38266	6.60E-04	3696.38266	6.00E-04
3695.4183	6.90E-04	3695.4183	5.80E-04
3694.45394	6.10E-04	3694.45394	5.40E-04
3693.48958	5.60E-04	3693.48958	5.10E-04
3692.52523	6.20E-04	3692.52523	5.10E-04
3691.56087	7.10E-04	3691.56087	4.90E-04
3690.59651	8.10E-04	3690.59651	5.00E-04
3689.63215	8.40E-04	3689.63215	5.80E-04
3688.6678	5.00E-04	3688.6678	7.10E-04
3687.70344	2.50E-04	3687.70344	7.80E-04
3686.73908	4.60E-04	3686.73908	8.00E-04
3685.77472	6.20E-04	3685.77472	7.90E-04
3684.81037	7.30E-04	3684.81037	7.50E-04
3683.84601	9.40E-04	3683.84601	6.50E-04
3682.88165	0.00104	3682.88165	5.50E-04
3681.91729	9.90E-04	3681.91729	5.30E-04
3680.95294	9.90E-04	3680.95294	5.60E-04
3679.98858	0.00102	3679.98858	5.80E-04
3679.02422	9.70E-04	3679.02422	5.10E-04
3678.05986	9.60E-04	3678.05986	4.10E-04
3677.09551	8.90E-04	3677.09551	4.00E-04
3676.13115	6.20E-04	3676.13115	5.10E-04
3675.16679	5.00E-04	3675.16679	6.40E-04
3674.20243	7.20E-04	3674.20243	7.20E-04
3673.23807	9.50E-04	3673.23807	7.60E-04
3672.27372	0.00106	3672.27372	7.70E-04
3671.30936	9.00E-04	3671.30936	7.10E-04
3670.345	8.40E-04	3670.345	6.60E-04
3669.38064	0.00114	3669.38064	7.30E-04
3668.41629	0.00114	3668.41629	8.40E-04
3667.45193	8.80E-04	3667.45193	9.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3666.48757	8.10E-04	3666.48757	8.40E-04
3665.52321	9.40E-04	3665.52321	7.30E-04
3664.55886	0.00107	3664.55886	6.40E-04
3663.5945	0.00102	3663.5945	5.90E-04
3662.63014	8.80E-04	3662.63014	5.70E-04
3661.66578	8.60E-04	3661.66578	5.80E-04
3660.70143	9.60E-04	3660.70143	5.80E-04
3659.73707	0.00108	3659.73707	5.40E-04
3658.77271	0.00115	3658.77271	4.90E-04
3657.80835	0.00124	3657.80835	5.00E-04
3656.844	0.00113	3656.844	5.60E-04
3655.87964	9.20E-04	3655.87964	6.30E-04
3654.91528	0.00101	3654.91528	6.80E-04
3653.95092	0.00119	3653.95092	6.70E-04
3652.98657	0.00129	3652.98657	6.10E-04
3652.02221	0.00145	3652.02221	5.40E-04
3651.05785	0.00174	3651.05785	5.30E-04
3650.09349	0.00198	3650.09349	6.10E-04
3649.12913	0.00201	3649.12913	7.50E-04
3648.16478	0.00194	3648.16478	9.20E-04
3647.20042	0.00168	3647.20042	0.00101
3646.23606	0.00143	3646.23606	1.00E-03
3645.2717	0.00144	3645.2717	9.20E-04
3644.30735	0.0015	3644.30735	8.30E-04
3643.34299	0.00148	3643.34299	7.50E-04
3642.37863	0.00144	3642.37863	6.70E-04
3641.41427	0.00142	3641.41427	6.40E-04
3640.44992	0.00139	3640.44992	6.40E-04
3639.48556	0.00138	3639.48556	6.60E-04
3638.5212	0.0014	3638.5212	6.70E-04
3637.55684	0.00141	3637.55684	6.70E-04
3636.59249	0.00146	3636.59249	6.50E-04
3635.62813	0.00157	3635.62813	6.40E-04
3634.66377	0.00162	3634.66377	6.50E-04
3633.69941	0.00151	3633.69941	6.70E-04
3632.73506	0.00147	3632.73506	6.30E-04
3631.7707	0.00163	3631.7707	5.50E-04
3630.80634	0.00175	3630.80634	5.40E-04
3629.84198	0.00154	3629.84198	6.10E-04
3628.87763	0.00122	3628.87763	7.10E-04
3627.91327	0.00136	3627.91327	8.30E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3626.94891	0.00154	3626.94891	9.40E-04
3625.98455	0.00146	3625.98455	9.80E-04
3625.0202	0.00144	3625.0202	8.90E-04
3624.05584	0.00165	3624.05584	7.40E-04
3623.09148	0.00187	3623.09148	6.30E-04
3622.12712	0.00199	3622.12712	5.70E-04
3621.16276	0.002	3621.16276	5.60E-04
3620.19841	0.00185	3620.19841	6.00E-04
3619.23405	0.00165	3619.23405	6.80E-04
3618.26969	0.00155	3618.26969	7.70E-04
3617.30533	0.00153	3617.30533	8.40E-04
3616.34098	0.0016	3616.34098	8.50E-04
3615.37662	0.00174	3615.37662	8.10E-04
3614.41226	0.00198	3614.41226	7.80E-04
3613.4479	0.00214	3613.4479	7.70E-04
3612.48355	0.00193	3612.48355	7.60E-04
3611.51919	0.00186	3611.51919	7.60E-04
3610.55483	0.00211	3610.55483	7.80E-04
3609.59047	0.00208	3609.59047	8.00E-04
3608.62612	0.00188	3608.62612	8.10E-04
3607.66176	0.00196	3607.66176	8.30E-04
3606.6974	0.00207	3606.6974	8.60E-04
3605.73304	0.00203	3605.73304	8.90E-04
3604.76869	0.00198	3604.76869	8.60E-04
3603.80433	0.00201	3603.80433	8.20E-04
3602.83997	0.00218	3602.83997	8.10E-04
3601.87561	0.0024	3601.87561	8.10E-04
3600.91126	0.00243	3600.91126	8.10E-04
3599.9469	0.00231	3599.9469	8.20E-04
3598.98254	0.00224	3598.98254	8.20E-04
3598.01818	0.00233	3598.01818	8.10E-04
3597.05382	0.00256	3597.05382	8.10E-04
3596.08947	0.00261	3596.08947	8.10E-04
3595.12511	0.00243	3595.12511	8.30E-04
3594.16075	0.0023	3594.16075	8.50E-04
3593.19639	0.00226	3593.19639	8.70E-04
3592.23204	0.00233	3592.23204	8.50E-04
3591.26768	0.00247	3591.26768	8.10E-04
3590.30332	0.00252	3590.30332	7.70E-04
3589.33896	0.00245	3589.33896	7.70E-04
3588.37461	0.00244	3588.37461	8.20E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3587.41025	0.00246	3587.41025	9.00E-04
3586.44589	0.00218	3586.44589	9.90E-04
3585.48153	0.00193	3585.48153	0.00103
3584.51718	0.00203	3584.51718	0.00101
3583.55282	0.00216	3583.55282	9.50E-04
3582.58846	0.00204	3582.58846	8.70E-04
3581.6241	0.00188	3581.6241	8.10E-04
3580.65975	0.002	3580.65975	7.90E-04
3579.69539	0.00231	3579.69539	8.00E-04
3578.73103	0.00257	3578.73103	8.10E-04
3577.76667	0.00263	3577.76667	8.20E-04
3576.80232	0.00252	3576.80232	8.20E-04
3575.83796	0.00241	3575.83796	8.30E-04
3574.8736	0.00238	3574.8736	8.30E-04
3573.90924	0.00234	3573.90924	8.30E-04
3572.94489	0.00228	3572.94489	8.40E-04
3571.98053	0.00225	3571.98053	8.50E-04
3571.01617	0.00231	3571.01617	8.50E-04
3570.05181	0.00248	3570.05181	8.40E-04
3569.08745	0.00272	3569.08745	8.50E-04
3568.1231	0.00292	3568.1231	8.90E-04
3567.15874	0.00303	3567.15874	9.50E-04
3566.19438	0.00299	3566.19438	0.00101
3565.23002	0.00292	3565.23002	0.00105
3564.26567	0.00288	3564.26567	0.00105
3563.30131	0.00274	3563.30131	0.00102
3562.33695	0.00256	3562.33695	9.70E-04
3561.37259	0.00255	3561.37259	9.40E-04
3560.40824	0.00265	3560.40824	9.40E-04
3559.44388	0.00269	3559.44388	9.40E-04
3558.47952	0.00259	3558.47952	9.40E-04
3557.51516	0.00242	3557.51516	9.30E-04
3556.55081	0.00235	3556.55081	9.20E-04
3555.58645	0.00243	3555.58645	9.10E-04
3554.62209	0.0026	3554.62209	9.10E-04
3553.65773	0.00283	3553.65773	9.20E-04
3552.69338	0.00301	3552.69338	9.50E-04
3551.72902	0.00303	3551.72902	9.80E-04
3550.76466	0.00303	3550.76466	9.90E-04
3549.8003	0.00308	3549.8003	9.70E-04
3548.83595	0.00313	3548.83595	9.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3547.87159	0.00327	3547.87159	9.10E-04
3546.90723	0.0035	3546.90723	9.10E-04
3545.94287	0.00359	3545.94287	9.40E-04
3544.97851	0.00341	3544.97851	9.90E-04
3544.01416	0.00311	3544.01416	0.00104
3543.0498	0.00293	3543.0498	0.00107
3542.08544	0.00296	3542.08544	0.00107
3541.12108	0.00308	3541.12108	0.00106
3540.15673	0.00309	3540.15673	0.00105
3539.19237	0.00305	3539.19237	0.00103
3538.22801	0.00317	3538.22801	0.00102
3537.26365	0.00345	3537.26365	0.00102
3536.2993	0.00368	3536.2993	0.00102
3535.33494	0.00366	3535.33494	0.00104
3534.37058	0.00349	3534.37058	0.00106
3533.40622	0.00344	3533.40622	0.00108
3532.44187	0.00352	3532.44187	0.00108
3531.47751	0.00354	3531.47751	0.00106
3530.51315	0.00355	3530.51315	0.00105
3529.54879	0.00357	3529.54879	0.00104
3528.58444	0.0035	3528.58444	0.00104
3527.62008	0.00339	3527.62008	0.00104
3526.65572	0.0034	3526.65572	0.00105
3525.69136	0.00358	3525.69136	0.00105
3524.72701	0.00377	3524.72701	0.00105
3523.76265	0.00382	3523.76265	0.00105
3522.79829	0.00386	3522.79829	0.00104
3521.83393	0.004	3521.83393	0.00104
3520.86958	0.00404	3520.86958	0.00105
3519.90522	0.00383	3519.90522	0.00107
3518.94086	0.00366	3518.94086	0.00108
3517.9765	0.00373	3517.9765	0.0011
3517.01214	0.00391	3517.01214	0.00111
3516.04779	0.00406	3516.04779	0.00112
3515.08343	0.00414	3515.08343	0.00111
3514.11907	0.00412	3514.11907	0.00111
3513.15471	0.00399	3513.15471	0.00112
3512.19036	0.00393	3512.19036	0.00112
3511.226	0.00415	3511.226	0.00113
3510.26164	0.00442	3510.26164	0.00114
3509.29728	0.00439	3509.29728	0.00115

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3508.33293	0.00425	3508.33293	0.00116
3507.36857	0.00423	3507.36857	0.00116
3506.40421	0.00424	3506.40421	0.00116
3505.43985	0.00427	3505.43985	0.00114
3504.4755	0.00427	3504.4755	0.00113
3503.51114	0.00415	3503.51114	0.00114
3502.54678	0.00416	3502.54678	0.00116
3501.58242	0.00435	3501.58242	0.00118
3500.61807	0.00446	3500.61807	0.0012
3499.65371	0.00436	3499.65371	0.00121
3498.68935	0.00416	3498.68935	0.00121
3497.72499	0.00409	3497.72499	0.00119
3496.76064	0.00418	3496.76064	0.00118
3495.79628	0.00429	3495.79628	0.00119
3494.83192	0.00435	3494.83192	0.0012
3493.86756	0.00439	3493.86756	0.0012
3492.9032	0.00434	3492.9032	0.00119
3491.93885	0.00424	3491.93885	0.00117
3490.97449	0.00431	3490.97449	0.00116
3490.01013	0.00451	3490.01013	0.00117
3489.04577	0.00458	3489.04577	0.0012
3488.08142	0.00452	3488.08142	0.00124
3487.11706	0.00445	3487.11706	0.00127
3486.1527	0.00439	3486.1527	0.00127
3485.18834	0.00444	3485.18834	0.00126
3484.22399	0.00462	3484.22399	0.00124
3483.25963	0.00468	3483.25963	0.00124
3482.29527	0.00466	3482.29527	0.00125
3481.33091	0.00478	3481.33091	0.00127
3480.36656	0.0049	3480.36656	0.00129
3479.4022	0.0048	3479.4022	0.0013
3478.43784	0.0047	3478.43784	0.00129
3477.47348	0.00477	3477.47348	0.00128
3476.50913	0.00481	3476.50913	0.00127
3475.54477	0.00474	3475.54477	0.00126
3474.58041	0.00476	3474.58041	0.00126
3473.61605	0.00494	3473.61605	0.00127
3472.6517	0.00511	3472.6517	0.00128
3471.68734	0.00519	3471.68734	0.00128
3470.72298	0.00522	3470.72298	0.00129
3469.75862	0.00522	3469.75862	0.00131

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3468.79426	0.0052	3468.79426	0.00133
3467.82991	0.0051	3467.82991	0.00134
3466.86555	0.00506	3466.86555	0.00135
3465.90119	0.00515	3465.90119	0.00135
3464.93683	0.00517	3464.93683	0.00133
3463.97248	0.00514	3463.97248	0.00132
3463.00812	0.00524	3463.00812	0.00132
3462.04376	0.0054	3462.04376	0.00132
3461.0794	0.00542	3461.0794	0.00133
3460.11505	0.00531	3460.11505	0.00134
3459.15069	0.0052	3459.15069	0.00135
3458.18633	0.0051	3458.18633	0.00136
3457.22197	0.00509	3457.22197	0.00137
3456.25762	0.00521	3456.25762	0.00137
3455.29326	0.0054	3455.29326	0.00137
3454.3289	0.0056	3454.3289	0.00138
3453.36454	0.00572	3453.36454	0.00139
3452.40019	0.00564	3452.40019	0.00139
3451.43583	0.00543	3451.43583	0.00139
3450.47147	0.00537	3450.47147	0.00139
3449.50711	0.00557	3449.50711	0.00139
3448.54276	0.00584	3448.54276	0.00139
3447.5784	0.00594	3447.5784	0.0014
3446.61404	0.00592	3446.61404	0.0014
3445.64968	0.00587	3445.64968	0.00141
3444.68533	0.00578	3444.68533	0.00142
3443.72097	0.00571	3443.72097	0.00142
3442.75661	0.00569	3442.75661	0.00143
3441.79225	0.00564	3441.79225	0.00144
3440.82789	0.00572	3440.82789	0.00144
3439.86354	0.00605	3439.86354	0.00144
3438.89918	0.00627	3438.89918	0.00144
3437.93482	0.00632	3437.93482	0.00143
3436.97046	0.00636	3436.97046	0.00143
3436.00611	0.00625	3436.00611	0.00144
3435.04175	0.00605	3435.04175	0.00146
3434.07739	0.00598	3434.07739	0.00148
3433.11303	0.00599	3433.11303	0.00148
3432.14868	0.00608	3432.14868	0.00148
3431.18432	0.00626	3431.18432	0.00147
3430.21996	0.00631	3430.21996	0.00145

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3429.2556	0.00617	3429.2556	0.00144
3428.29125	0.0061	3428.29125	0.00144
3427.32689	0.00617	3427.32689	0.00145
3426.36253	0.00632	3426.36253	0.00147
3425.39817	0.00648	3425.39817	0.00149
3424.43382	0.00657	3424.43382	0.00151
3423.46946	0.00653	3423.46946	0.00152
3422.5051	0.00647	3422.5051	0.00151
3421.54074	0.00643	3421.54074	0.0015
3420.57639	0.00638	3420.57639	0.0015
3419.61203	0.00638	3419.61203	0.0015
3418.64767	0.00641	3418.64767	0.00151
3417.68331	0.0065	3417.68331	0.00153
3416.71895	0.0067	3416.71895	0.00155
3415.7546	0.00682	3415.7546	0.00155
3414.79024	0.00673	3414.79024	0.00155
3413.82588	0.00662	3413.82588	0.00155
3412.86152	0.00665	3412.86152	0.00155
3411.89717	0.00674	3411.89717	0.00154
3410.93281	0.00676	3410.93281	0.00154
3409.96845	0.00677	3409.96845	0.00154
3409.00409	0.00691	3409.00409	0.00154
3408.03974	0.00708	3408.03974	0.00154
3407.07538	0.00708	3407.07538	0.00154
3406.11102	0.00686	3406.11102	0.00154
3405.14666	0.00673	3405.14666	0.00154
3404.18231	0.00685	3404.18231	0.00154
3403.21795	0.007	3403.21795	0.00156
3402.25359	0.00704	3402.25359	0.00158
3401.28923	0.00711	3401.28923	0.00161
3400.32488	0.00722	3400.32488	0.00162
3399.36052	0.00719	3399.36052	0.00162
3398.39616	0.00709	3398.39616	0.00161
3397.4318	0.00709	3397.4318	0.0016
3396.46745	0.00714	3396.46745	0.00158
3395.50309	0.00715	3395.50309	0.00158
3394.53873	0.00716	3394.53873	0.00159
3393.57437	0.00719	3393.57437	0.00161
3392.61002	0.00718	3392.61002	0.00162
3391.64566	0.00715	3391.64566	0.00163
3390.6813	0.00723	3390.6813	0.00162



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3389.71694	0.00733	3389.71694	0.00161
3388.75258	0.00737	3388.75258	0.0016
3387.78823	0.00745	3387.78823	0.00159
3386.82387	0.00752	3386.82387	0.0016
3385.85951	0.00749	3385.85951	0.00161
3384.89515	0.00743	3384.89515	0.00162
3383.9308	0.00744	3383.9308	0.00163
3382.96644	0.00756	3382.96644	0.00163
3382.00208	0.00773	3382.00208	0.00163
3381.03772	0.00783	3381.03772	0.00164
3380.07337	0.00779	3380.07337	0.00165
3379.10901	0.00767	3379.10901	0.00166
3378.14465	0.00758	3378.14465	0.00168
3377.18029	0.00749	3377.18029	0.00169
3376.21594	0.00734	3376.21594	0.00169
3375.25158	0.0073	3375.25158	0.0017
3374.28722	0.00755	3374.28722	0.0017
3373.32286	0.00779	3373.32286	0.00169
3372.35851	0.00781	3372.35851	0.00169
3371.39415	0.00775	3371.39415	0.00169
3370.42979	0.00768	3370.42979	0.00169
3369.46543	0.0076	3369.46543	0.00169
3368.50108	0.00753	3368.50108	0.00169
3367.53672	0.00757	3367.53672	0.0017
3366.57236	0.0077	3366.57236	0.00171
3365.608	0.0078	3365.608	0.00172
3364.64364	0.00784	3364.64364	0.00173
3363.67929	0.00789	3363.67929	0.00173
3362.71493	0.00786	3362.71493	0.00172
3361.75057	0.00777	3361.75057	0.0017
3360.78621	0.00774	3360.78621	0.00169
3359.82186	0.0078	3359.82186	0.00169
3358.8575	0.0079	3358.8575	0.00169
3357.89314	0.00804	3357.89314	0.00169
3356.92878	0.00811	3356.92878	0.0017
3355.96443	0.00803	3355.96443	0.0017
3355.00007	0.00796	3355.00007	0.00171
3354.03571	0.00798	3354.03571	0.00171
3353.07135	0.008	3353.07135	0.00171
3352.107	0.00788	3352.107	0.00172
3351.14264	0.00778	3351.14264	0.00173

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3350.17828	0.00789	3350.17828	0.00174
3349.21392	0.00806	3349.21392	0.00173
3348.24957	0.00813	3348.24957	0.00173
3347.28521	0.00814	3347.28521	0.00173
3346.32085	0.00814	3346.32085	0.00174
3345.35649	0.00815	3345.35649	0.00175
3344.39214	0.00817	3344.39214	0.00178
3343.42778	0.00814	3343.42778	0.00179
3342.46342	0.00811	3342.46342	0.0018
3341.49906	0.00815	3341.49906	0.00179
3340.5347	0.00823	3340.5347	0.00179
3339.57035	0.0082	3339.57035	0.00179
3338.60599	0.00817	3338.60599	0.0018
3337.64163	0.0082	3337.64163	0.00181
3336.67727	0.0082	3336.67727	0.00183
3335.71292	0.00813	3335.71292	0.00183
3334.74856	0.00805	3334.74856	0.00183
3333.7842	0.008	3333.7842	0.00183
3332.81984	0.00807	3332.81984	0.00183
3331.85549	0.00816	3331.85549	0.00183
3330.89113	0.00819	3330.89113	0.00184
3329.92677	0.00822	3329.92677	0.00185
3328.96241	0.00829	3328.96241	0.00185
3327.99806	0.00828	3327.99806	0.00185
3327.0337	0.00823	3327.0337	0.00185
3326.06934	0.00819	3326.06934	0.00186
3325.10498	0.00809	3325.10498	0.00186
3324.14063	0.00799	3324.14063	0.00186
3323.17627	0.008	3323.17627	0.00185
3322.21191	0.00803	3322.21191	0.00185
3321.24755	0.008	3321.24755	0.00184
3320.2832	0.00804	3320.2832	0.00184
3319.31884	0.0082	3319.31884	0.00184
3318.35448	0.00827	3318.35448	0.00185
3317.39012	0.0082	3317.39012	0.00185
3316.42577	0.00814	3316.42577	0.00186
3315.46141	0.00819	3315.46141	0.00186
3314.49705	0.00832	3314.49705	0.00186
3313.53269	0.00836	3313.53269	0.00186
3312.56833	0.00827	3312.56833	0.00186
3311.60398	0.00814	3311.60398	0.00187

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3310.63962	0.00814	3310.63962	0.00188
3309.67526	0.00826	3309.67526	0.00188
3308.7109	0.00831	3308.7109	0.00188
3307.74655	0.0083	3307.74655	0.00189
3306.78219	0.0083	3306.78219	0.00191
3305.81783	0.00831	3305.81783	0.00193
3304.85347	0.00823	3304.85347	0.00194
3303.88912	0.0081	3303.88912	0.00194
3302.92476	0.00806	3302.92476	0.00194
3301.9604	0.0081	3301.9604	0.00193
3300.99604	0.00806	3300.99604	0.00193
3300.03169	0.00794	3300.03169	0.00193
3299.06733	0.00789	3299.06733	0.00194
3298.10297	0.00789	3298.10297	0.00194
3297.13861	0.00773	3297.13861	0.00194
3296.17426	0.00755	3296.17426	0.00193
3295.2099	0.00761	3295.2099	0.00193
3294.24554	0.00783	3294.24554	0.00194
3293.28118	0.008	3293.28118	0.00195
3292.31683	0.00802	3292.31683	0.00195
3291.35247	0.00791	3291.35247	0.00195
3290.38811	0.00783	3290.38811	0.00194
3289.42375	0.00785	3289.42375	0.00192
3288.45939	0.00794	3288.45939	0.00191
3287.49504	0.00803	3287.49504	0.0019
3286.53068	0.00799	3286.53068	0.0019
3285.56632	0.00778	3285.56632	0.0019
3284.60196	0.00751	3284.60196	0.0019
3283.63761	0.00745	3283.63761	0.00191
3282.67325	0.00759	3282.67325	0.0019
3281.70889	0.0077	3281.70889	0.0019
3280.74453	0.00774	3280.74453	0.0019
3279.78018	0.00777	3279.78018	0.00189
3278.81582	0.00775	3278.81582	0.00188
3277.85146	0.00765	3277.85146	0.00188
3276.8871	0.00754	3276.8871	0.00188
3275.92275	0.00757	3275.92275	0.00189
3274.95839	0.00766	3274.95839	0.00191
3273.99403	0.00767	3273.99403	0.00193
3273.02967	0.00768	3273.02967	0.00195
3272.06532	0.00773	3272.06532	0.00195

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3271.10096	0.00764	3271.10096	0.00193
3270.1366	0.00741	3270.1366	0.00191
3269.17224	0.00727	3269.17224	0.00187
3268.20789	0.00726	3268.20789	0.00184
3267.24353	0.00729	3267.24353	0.00182
3266.27917	0.00735	3266.27917	0.00181
3265.31481	0.00734	3265.31481	0.00181
3264.35046	0.00721	3264.35046	0.00182
3263.3861	0.0071	3263.3861	0.00181
3262.42174	0.0071	3262.42174	0.0018
3261.45738	0.00713	3261.45738	0.00179
3260.49302	0.00716	3260.49302	0.00177
3259.52867	0.00716	3259.52867	0.00175
3258.56431	0.00714	3258.56431	0.00174
3257.59995	0.00713	3257.59995	0.00174
3256.63559	0.0071	3256.63559	0.00174
3255.67124	0.00707	3255.67124	0.00174
3254.70688	0.00705	3254.70688	0.00174
3253.74252	0.00703	3253.74252	0.00173
3252.77816	0.00697	3252.77816	0.00172
3251.81381	0.00686	3251.81381	0.00172
3250.84945	0.00678	3250.84945	0.00171
3249.88509	0.00684	3249.88509	0.00171
3248.92073	0.0069	3248.92073	0.0017
3247.95638	0.00685	3247.95638	0.00169
3246.99202	0.00677	3246.99202	0.00168
3246.02766	0.00669	3246.02766	0.00166
3245.0633	0.0066	3245.0633	0.00166
3244.09895	0.00659	3244.09895	0.00165
3243.13459	0.00661	3243.13459	0.00165
3242.17023	0.00652	3242.17023	0.00165
3241.20587	0.00634	3241.20587	0.00165
3240.24152	0.00623	3240.24152	0.00164
3239.27716	0.00633	3239.27716	0.00163
3238.3128	0.00652	3238.3128	0.00162
3237.34844	0.00652	3237.34844	0.00162
3236.38408	0.00645	3236.38408	0.00162
3235.41973	0.00645	3235.41973	0.00161
3234.45537	0.00633	3234.45537	0.00161
3233.49101	0.0061	3233.49101	0.0016
3232.52665	0.00601	3232.52665	0.00159

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3231.5623	0.00611	3231.5623	0.00158
3230.59794	0.00621	3230.59794	0.00157
3229.63358	0.00622	3229.63358	0.00157
3228.66922	0.00614	3228.66922	0.00156
3227.70487	0.00603	3227.70487	0.00156
3226.74051	0.00594	3226.74051	0.00157
3225.77615	0.00589	3225.77615	0.00158
3224.81179	0.00585	3224.81179	0.00159
3223.84744	0.00585	3223.84744	0.00159
3222.88308	0.00587	3222.88308	0.00157
3221.91872	0.00589	3221.91872	0.00154
3220.95436	0.00586	3220.95436	0.00152
3219.99001	0.0058	3219.99001	0.0015
3219.02565	0.00579	3219.02565	0.0015
3218.06129	0.00585	3218.06129	0.0015
3217.09693	0.00584	3217.09693	0.0015
3216.13258	0.00578	3216.13258	0.0015
3215.16822	0.00575	3215.16822	0.00149
3214.20386	0.00571	3214.20386	0.00149
3213.2395	0.00566	3213.2395	0.00149
3212.27514	0.00563	3212.27514	0.00149
3211.31079	0.0056	3211.31079	0.00149
3210.34643	0.00558	3210.34643	0.00149
3209.38207	0.00556	3209.38207	0.00149
3208.41771	0.00551	3208.41771	0.00149
3207.45336	0.00543	3207.45336	0.00149
3206.489	0.00537	3206.489	0.00149
3205.52464	0.00533	3205.52464	0.00148
3204.56028	0.00532	3204.56028	0.00146
3203.59593	0.00536	3203.59593	0.00145
3202.63157	0.00537	3202.63157	0.00144
3201.66721	0.0053	3201.66721	0.00144
3200.70285	0.00521	3200.70285	0.00144
3199.7385	0.00519	3199.7385	0.00145
3198.77414	0.00522	3198.77414	0.00145
3197.80978	0.00521	3197.80978	0.00145
3196.84542	0.00521	3196.84542	0.00146
3195.88107	0.00522	3195.88107	0.00146
3194.91671	0.00517	3194.91671	0.00147
3193.95235	0.00515	3193.95235	0.00147
3192.98799	0.00517	3192.98799	0.00146

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3192.02364	0.00515	3192.02364	0.00145
3191.05928	0.0051	3191.05928	0.00142
3190.09492	0.00505	3190.09492	0.0014
3189.13056	0.00497	3189.13056	0.00139
3188.16621	0.00485	3188.16621	0.00138
3187.20185	0.00479	3187.20185	0.00138
3186.23749	0.00485	3186.23749	0.00139
3185.27313	0.00483	3185.27313	0.00138
3184.30877	0.00466	3184.30877	0.00138
3183.34442	0.00454	3183.34442	0.00137
3182.38006	0.00451	3182.38006	0.00136
3181.4157	0.00451	3181.4157	0.00135
3180.45134	0.0045	3180.45134	0.00135
3179.48699	0.00446	3179.48699	0.00134
3178.52263	0.00437	3178.52263	0.00134
3177.55827	0.00427	3177.55827	0.00133
3176.59391	0.00423	3176.59391	0.00133
3175.62956	0.00424	3175.62956	0.00133
3174.6652	0.00424	3174.6652	0.00132
3173.70084	0.00426	3173.70084	0.00132
3172.73648	0.00427	3172.73648	0.00132
3171.77213	0.0042	3171.77213	0.00131
3170.80777	0.00411	3170.80777	0.00131
3169.84341	0.00406	3169.84341	0.00131
3168.87905	0.00402	3168.87905	0.00131
3167.9147	0.00399	3167.9147	0.00131
3166.95034	0.00404	3166.95034	0.00132
3165.98598	0.00409	3165.98598	0.00132
3165.02162	0.00408	3165.02162	0.00131
3164.05727	0.00404	3164.05727	0.00128
3163.09291	0.00395	3163.09291	0.00126
3162.12855	0.00388	3162.12855	0.00124
3161.16419	0.00389	3161.16419	0.00122
3160.19983	0.00399	3160.19983	0.00122
3159.23548	0.00418	3159.23548	0.00122
3158.27112	0.00438	3158.27112	0.00123
3157.30676	0.00445	3157.30676	0.00123
3156.3424	0.00432	3156.3424	0.00124
3155.37805	0.00414	3155.37805	0.00124
3154.41369	0.00411	3154.41369	0.00124
3153.44933	0.00422	3153.44933	0.00124

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3152.48497	0.00425	3152.48497	0.00124
3151.52062	0.00412	3151.52062	0.00125
3150.55626	0.00398	3150.55626	0.00125
3149.5919	0.00386	3149.5919	0.00124
3148.62754	0.00378	3148.62754	0.00124
3147.66319	0.00381	3147.66319	0.00122
3146.69883	0.00385	3146.69883	0.0012
3145.73447	0.00381	3145.73447	0.00119
3144.77011	0.00381	3144.77011	0.00117
3143.80576	0.00387	3143.80576	0.00116
3142.8414	0.00386	3142.8414	0.00115
3141.87704	0.00379	3141.87704	0.00115
3140.91268	0.00371	3140.91268	0.00116
3139.94833	0.00368	3139.94833	0.00117
3138.98397	0.00372	3138.98397	0.00117
3138.01961	0.00377	3138.01961	0.00118
3137.05525	0.00381	3137.05525	0.00118
3136.0909	0.00377	3136.0909	0.00118
3135.12654	0.00362	3135.12654	0.00118
3134.16218	0.00352	3134.16218	0.00117
3133.19782	0.00352	3133.19782	0.00116
3132.23346	0.00356	3132.23346	0.00114
3131.26911	0.00361	3131.26911	0.00112
3130.30475	0.00359	3130.30475	0.0011
3129.34039	0.00349	3129.34039	0.00108
3128.37603	0.00343	3128.37603	0.00107
3127.41168	0.00345	3127.41168	0.00107
3126.44732	0.00342	3126.44732	0.00108
3125.48296	0.00326	3125.48296	0.00109
3124.5186	0.00311	3124.5186	0.00109
3123.55425	0.00312	3123.55425	0.0011
3122.58989	0.00325	3122.58989	0.0011
3121.62553	0.00337	3121.62553	0.0011
3120.66117	0.00347	3120.66117	0.00111
3119.69682	0.00354	3119.69682	0.00112
3118.73246	0.0035	3118.73246	0.00113
3117.7681	0.00345	3117.7681	0.00113
3116.80374	0.00346	3116.80374	0.00112
3115.83939	0.00343	3115.83939	0.00111
3114.87503	0.00338	3114.87503	0.0011
3113.91067	0.00342	3113.91067	0.00108

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3112.94631	0.00349	3112.94631	0.00106
3111.98196	0.00346	3111.98196	0.00106
3111.0176	0.00336	3111.0176	0.00106
3110.05324	0.00329	3110.05324	0.00107
3109.08888	0.00323	3109.08888	0.00107
3108.12452	0.00314	3108.12452	0.00108
3107.16017	0.00301	3107.16017	0.00107
3106.19581	0.00297	3106.19581	0.00106
3105.23145	0.00309	3105.23145	0.00105
3104.26709	0.00323	3104.26709	0.00106
3103.30274	0.00322	3103.30274	0.00107
3102.33838	0.00316	3102.33838	0.00108
3101.37402	0.00317	3101.37402	0.00108
3100.40966	0.00322	3100.40966	0.00108
3099.44531	0.00328	3099.44531	0.00107
3098.48095	0.00333	3098.48095	0.00106
3097.51659	0.00334	3097.51659	0.00105
3096.55223	0.00335	3096.55223	0.00105
3095.58788	0.00339	3095.58788	0.00105
3094.62352	0.00334	3094.62352	0.00106
3093.65916	0.00324	3093.65916	0.00106
3092.6948	0.0032	3092.6948	0.00107
3091.73045	0.0032	3091.73045	0.00107
3090.76609	0.0032	3090.76609	0.00107
3089.80173	0.00325	3089.80173	0.00107
3088.83737	0.00332	3088.83737	0.00106
3087.87302	0.00327	3087.87302	0.00105
3086.90866	0.00319	3086.90866	0.00104
3085.9443	0.00324	3085.9443	0.00103
3084.97994	0.0033	3084.97994	0.00103
3084.01559	0.00331	3084.01559	0.00103
3083.05123	0.00332	3083.05123	0.00104
3082.08687	0.00335	3082.08687	0.00104
3081.12251	0.00333	3081.12251	0.00104
3080.15815	0.00327	3080.15815	0.00105
3079.1938	0.00322	3079.1938	0.00105
3078.22944	0.00319	3078.22944	0.00104
3077.26508	0.0032	3077.26508	0.00104
3076.30072	0.00321	3076.30072	0.00104
3075.33637	0.00317	3075.33637	0.00104
3074.37201	0.00316	3074.37201	0.00104



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3073.40765	0.0032	3073.40765	0.00104
3072.44329	0.00323	3072.44329	0.00104
3071.47894	0.00321	3071.47894	0.00104
3070.51458	0.00315	3070.51458	0.00104
3069.55022	0.00306	3069.55022	0.00104
3068.58586	0.00302	3068.58586	0.00104
3067.62151	0.00305	3067.62151	0.00104
3066.65715	0.00316	3066.65715	0.00103
3065.69279	0.00328	3065.69279	0.00103
3064.72843	0.00327	3064.72843	0.00103
3063.76408	0.00315	3063.76408	0.00102
3062.79972	0.00298	3062.79972	0.00101
3061.83536	0.00285	3061.83536	0.00101
3060.871	0.0028	3060.871	0.00101
3059.90665	0.00278	3059.90665	0.00101
3058.94229	0.00274	3058.94229	0.00101
3057.97793	0.00266	3057.97793	0.00101
3057.01357	0.00264	3057.01357	1.00E-03
3056.04921	0.00276	3056.04921	9.90E-04
3055.08486	0.00285	3055.08486	9.80E-04
3054.1205	0.00281	3054.1205	9.80E-04
3053.15614	0.00272	3053.15614	9.80E-04
3052.19178	0.00266	3052.19178	9.80E-04
3051.22743	0.00265	3051.22743	9.70E-04
3050.26307	0.00269	3050.26307	9.50E-04
3049.29871	0.00269	3049.29871	9.40E-04
3048.33435	0.00265	3048.33435	9.20E-04
3047.37	0.00263	3047.37	9.20E-04
3046.40564	0.00264	3046.40564	9.20E-04
3045.44128	0.00263	3045.44128	9.20E-04
3044.47692	0.00262	3044.47692	9.30E-04
3043.51257	0.00263	3043.51257	9.30E-04
3042.54821	0.00263	3042.54821	9.10E-04
3041.58385	0.0026	3041.58385	9.00E-04
3040.61949	0.00257	3040.61949	8.80E-04
3039.65514	0.00257	3039.65514	8.70E-04
3038.69078	0.0026	3038.69078	8.60E-04
3037.72642	0.0026	3037.72642	8.60E-04
3036.76206	0.00261	3036.76206	8.60E-04
3035.79771	0.00265	3035.79771	8.60E-04
3034.83335	0.00258	3034.83335	8.60E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3033.86899	0.00246	3033.86899	8.60E-04
3032.90463	0.00247	3032.90463	8.60E-04
3031.94027	0.00253	3031.94027	8.70E-04
3030.97592	0.0025	3030.97592	8.60E-04
3030.01156	0.00245	3030.01156	8.50E-04
3029.0472	0.00249	3029.0472	8.50E-04
3028.08284	0.00256	3028.08284	8.50E-04
3027.11849	0.00254	3027.11849	8.40E-04
3026.15413	0.00239	3026.15413	8.30E-04
3025.18977	0.00225	3025.18977	8.20E-04
3024.22541	0.00222	3024.22541	8.20E-04
3023.26106	0.00225	3023.26106	8.10E-04
3022.2967	0.00225	3022.2967	8.00E-04
3021.33234	0.00224	3021.33234	8.00E-04
3020.36798	0.00226	3020.36798	8.10E-04
3019.40363	0.00225	3019.40363	7.90E-04
3018.43927	0.00217	3018.43927	7.30E-04
3017.47491	0.00211	3017.47491	6.60E-04
3016.51055	0.00216	3016.51055	6.00E-04
3015.5462	0.00218	3015.5462	5.90E-04
3014.58184	0.0021	3014.58184	6.20E-04
3013.61748	0.00201	3013.61748	6.80E-04
3012.65312	0.00197	3012.65312	7.60E-04
3011.68877	0.00201	3011.68877	8.20E-04
3010.72441	0.00206	3010.72441	8.20E-04
3009.76005	0.00208	3009.76005	8.00E-04
3008.79569	0.00208	3008.79569	7.70E-04
3007.83134	0.00208	3007.83134	7.50E-04
3006.86698	0.0021	3006.86698	7.50E-04
3005.90262	0.00209	3005.90262	7.50E-04
3004.93826	0.00204	3004.93826	7.60E-04
3003.9739	0.00202	3003.9739	7.70E-04
3003.00955	0.00203	3003.00955	7.70E-04
3002.04519	0.00205	3002.04519	7.60E-04
3001.08083	0.00205	3001.08083	7.50E-04
3000.11647	0.00203	3000.11647	7.50E-04
2999.15212	0.00196	2999.15212	7.40E-04
2998.18776	0.00191	2998.18776	7.40E-04
2997.2234	0.00197	2997.2234	7.40E-04
2996.25904	0.0021	2996.25904	7.40E-04
2995.29469	0.00219	2995.29469	7.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2994.33033	0.00222	2994.33033	7.40E-04
2993.36597	0.00222	2993.36597	7.50E-04
2992.40161	0.00222	2992.40161	7.70E-04
2991.43726	0.0022	2991.43726	7.80E-04
2990.4729	0.00216	2990.4729	7.90E-04
2989.50854	0.00212	2989.50854	8.00E-04
2988.54418	0.00212	2988.54418	8.00E-04
2987.57983	0.00214	2987.57983	8.10E-04
2986.61547	0.00219	2986.61547	8.20E-04
2985.65111	0.00226	2985.65111	8.30E-04
2984.68675	0.00228	2984.68675	8.40E-04
2983.7224	0.00227	2983.7224	8.50E-04
2982.75804	0.00232	2982.75804	8.70E-04
2981.79368	0.0024	2981.79368	8.90E-04
2980.82932	0.00247	2980.82932	9.10E-04
2979.86496	0.00254	2979.86496	9.20E-04
2978.90061	0.00259	2978.90061	8.90E-04
2977.93625	0.00263	2977.93625	8.10E-04
2976.97189	0.00272	2976.97189	7.20E-04
2976.00753	0.00285	2976.00753	6.60E-04
2975.04318	0.00295	2975.04318	6.50E-04
2974.07882	0.00299	2974.07882	7.00E-04
2973.11446	0.00306	2973.11446	7.90E-04
2972.1501	0.0032	2972.1501	9.00E-04
2971.18575	0.00333	2971.18575	9.90E-04
2970.22139	0.00338	2970.22139	0.00103
2969.25703	0.00343	2969.25703	0.00105
2968.29267	0.00348	2968.29267	0.00106
2967.32832	0.00353	2967.32832	0.00106
2966.36396	0.00363	2966.36396	0.00107
2965.3996	0.00379	2965.3996	0.00107
2964.43524	0.00397	2964.43524	0.00107
2963.47089	0.0041	2963.47089	0.00108
2962.50653	0.00419	2962.50653	0.00109
2961.54217	0.00425	2961.54217	0.00111
2960.57781	0.00429	2960.57781	0.00112
2959.61346	0.00435	2959.61346	0.00113
2958.6491	0.00446	2958.6491	0.00114
2957.68474	0.00462	2957.68474	0.00115
2956.72038	0.00474	2956.72038	0.00115
2955.75603	0.0048	2955.75603	0.00114

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2954.79167	0.00491	2954.79167	0.00115
2953.82731	0.00507	2953.82731	0.00115
2952.86295	0.00517	2952.86295	0.00115
2951.89859	0.0052	2951.89859	0.00116
2950.93424	0.00523	2950.93424	0.00117
2949.96988	0.00528	2949.96988	0.00118
2949.00552	0.00527	2949.00552	0.00118
2948.04116	0.00524	2948.04116	0.00118
2947.07681	0.00525	2947.07681	0.00119
2946.11245	0.00531	2946.11245	0.00119
2945.14809	0.00542	2945.14809	0.0012
2944.18373	0.00552	2944.18373	0.00121
2943.21938	0.00556	2943.21938	0.00122
2942.25502	0.00553	2942.25502	0.00124
2941.29066	0.00545	2941.29066	0.00126
2940.3263	0.00541	2940.3263	0.00127
2939.36195	0.00549	2939.36195	0.00129
2938.39759	0.00563	2938.39759	0.00131
2937.43323	0.00574	2937.43323	0.00133
2936.46887	0.00581	2936.46887	0.00136
2935.50452	0.00585	2935.50452	0.00138
2934.54016	0.00594	2934.54016	0.00141
2933.5758	0.0061	2933.5758	0.00144
2932.61144	0.0063	2932.61144	0.00147
2931.64709	0.00645	2931.64709	0.00149
2930.68273	0.00654	2930.68273	0.0015
2929.71837	0.00663	2929.71837	0.00151
2928.75401	0.00675	2928.75401	0.00152
2927.78965	0.00682	2927.78965	0.00153
2926.8253	0.00682	2926.8253	0.00155
2925.86094	0.00686	2925.86094	0.00156
2924.89658	0.00693	2924.89658	0.00157
2923.93222	0.00692	2923.93222	0.00158
2922.96787	0.00689	2922.96787	0.00158
2922.00351	0.00685	2922.00351	0.00159
2921.03915	0.00672	2921.03915	0.00159
2920.07479	0.00658	2920.07479	0.00158
2919.11044	0.00653	2919.11044	0.00156
2918.14608	0.00645	2918.14608	0.00152
2917.18172	0.00631	2917.18172	0.00148
2916.21736	0.00619	2916.21736	0.00144

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2915.25301	0.0061	2915.25301	0.00141
2914.28865	0.00595	2914.28865	0.00138
2913.32429	0.00579	2913.32429	0.00136
2912.35993	0.00566	2912.35993	0.00132
2911.39558	0.00555	2911.39558	0.00129
2910.43122	0.00544	2910.43122	0.00126
2909.46686	0.0054	2909.46686	0.00124
2908.5025	0.0054	2908.5025	0.00122
2907.53815	0.00532	2907.53815	0.00122
2906.57379	0.00519	2906.57379	0.00121
2905.60943	0.0051	2905.60943	0.0012
2904.64507	0.00505	2904.64507	0.00118
2903.68071	0.00492	2903.68071	0.00117
2902.71636	0.00473	2902.71636	0.00115
2901.752	0.00459	2901.752	0.00114
2900.78764	0.00453	2900.78764	0.00113
2899.82328	0.0045	2899.82328	0.00112
2898.85893	0.00441	2898.85893	0.00111
2897.89457	0.00427	2897.89457	0.0011
2896.93021	0.00422	2896.93021	0.00109
2895.96585	0.00425	2895.96585	0.00107
2895.0015	0.00421	2895.0015	0.00106
2894.03714	0.00407	2894.03714	0.00105
2893.07278	0.00391	2893.07278	0.00105
2892.10842	0.00381	2892.10842	0.00105
2891.14407	0.00375	2891.14407	0.00105
2890.17971	0.00367	2890.17971	0.00104
2889.21535	0.00359	2889.21535	0.00103
2888.25099	0.00355	2888.25099	0.00102
2887.28664	0.00352	2887.28664	0.00101
2886.32228	0.00348	2886.32228	1.00E-03
2885.35792	0.00345	2885.35792	1.00E-03
2884.39356	0.00334	2884.39356	1.00E-03
2883.42921	0.0032	2883.42921	1.00E-03
2882.46485	0.00314	2882.46485	1.00E-03
2881.50049	0.00317	2881.50049	1.00E-03
2880.53613	0.00322	2880.53613	0.00101
2879.57178	0.00329	2879.57178	0.00101
2878.60742	0.00336	2878.60742	0.00101
2877.64306	0.00339	2877.64306	0.00101
2876.6787	0.00341	2876.6787	0.00101

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2875.71434	0.00342	2875.71434	0.00101
2874.74999	0.0034	2874.74999	1.00E-03
2873.78563	0.0033	2873.78563	1.00E-03
2872.82127	0.00321	2872.82127	1.00E-03
2871.85691	0.00323	2871.85691	1.00E-03
2870.89256	0.00333	2870.89256	1.00E-03
2869.9282	0.00338	2869.9282	9.90E-04
2868.96384	0.00339	2868.96384	9.80E-04
2867.99948	0.00346	2867.99948	9.60E-04
2867.03513	0.0035	2867.03513	9.40E-04
2866.07077	0.00343	2866.07077	9.30E-04
2865.10641	0.00334	2865.10641	9.40E-04
2864.14205	0.00335	2864.14205	9.50E-04
2863.1777	0.00345	2863.1777	9.80E-04
2862.21334	0.00353	2862.21334	1.00E-03
2861.24898	0.00356	2861.24898	0.00101
2860.28462	0.00357	2860.28462	0.00101
2859.32027	0.00357	2859.32027	1.00E-03
2858.35591	0.00359	2858.35591	1.00E-03
2857.39155	0.00364	2857.39155	0.00101
2856.42719	0.00371	2856.42719	0.00101
2855.46284	0.0038	2855.46284	0.00103
2854.49848	0.00384	2854.49848	0.00104
2853.53412	0.00376	2853.53412	0.00104
2852.56976	0.00364	2852.56976	0.00105
2851.6054	0.0036	2851.6054	0.00105
2850.64105	0.00359	2850.64105	0.00105
2849.67669	0.00355	2849.67669	0.00104
2848.71233	0.00349	2848.71233	0.00103
2847.74797	0.00343	2847.74797	1.00E-03
2846.78362	0.00331	2846.78362	9.60E-04
2845.81926	0.00315	2845.81926	9.20E-04
2844.8549	0.00302	2844.8549	8.80E-04
2843.89054	0.00295	2843.89054	8.50E-04
2842.92619	0.00289	2842.92619	8.40E-04
2841.96183	0.00282	2841.96183	8.20E-04
2840.99747	0.00274	2840.99747	8.10E-04
2840.03311	0.00261	2840.03311	7.90E-04
2839.06876	0.00241	2839.06876	7.80E-04
2838.1044	0.00225	2838.1044	7.60E-04
2837.14004	0.00216	2837.14004	7.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2836.17568	0.00214	2836.17568	7.30E-04
2835.21133	0.00215	2835.21133	7.20E-04
2834.24697	0.00214	2834.24697	7.10E-04
2833.28261	0.00205	2833.28261	7.00E-04
2832.31825	0.00191	2832.31825	6.90E-04
2831.3539	0.0018	2831.3539	6.80E-04
2830.38954	0.00178	2830.38954	6.70E-04
2829.42518	0.00181	2829.42518	6.80E-04
2828.46082	0.00181	2828.46082	6.80E-04
2827.49647	0.00176	2827.49647	6.90E-04
2826.53211	0.00171	2826.53211	6.90E-04
2825.56775	0.00168	2825.56775	6.80E-04
2824.60339	0.00167	2824.60339	6.80E-04
2823.63903	0.00171	2823.63903	6.70E-04
2822.67468	0.00174	2822.67468	6.60E-04
2821.71032	0.00174	2821.71032	6.40E-04
2820.74596	0.00174	2820.74596	6.30E-04
2819.7816	0.00175	2819.7816	6.20E-04
2818.81725	0.00174	2818.81725	6.20E-04
2817.85289	0.00167	2817.85289	6.10E-04
2816.88853	0.0016	2816.88853	6.10E-04
2815.92417	0.0016	2815.92417	6.10E-04
2814.95982	0.00164	2814.95982	6.00E-04
2813.99546	0.00163	2813.99546	6.00E-04
2813.0311	0.00153	2813.0311	5.90E-04
2812.06674	0.00144	2812.06674	5.80E-04
2811.10239	0.00144	2811.10239	5.80E-04
2810.13803	0.00154	2810.13803	5.70E-04
2809.17367	0.00159	2809.17367	5.70E-04
2808.20931	0.00154	2808.20931	5.70E-04
2807.24496	0.00148	2807.24496	5.80E-04
2806.2806	0.00146	2806.2806	5.80E-04
2805.31624	0.00144	2805.31624	5.80E-04
2804.35188	0.00141	2804.35188	5.70E-04
2803.38753	0.00143	2803.38753	5.70E-04
2802.42317	0.00147	2802.42317	5.60E-04
2801.45881	0.00148	2801.45881	5.60E-04
2800.49445	0.00146	2800.49445	5.60E-04
2799.53009	0.00144	2799.53009	5.60E-04
2798.56574	0.00145	2798.56574	5.70E-04
2797.60138	0.00149	2797.60138	5.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2796.63702	0.00148	2796.63702	5.70E-04
2795.67266	0.00142	2795.67266	5.70E-04
2794.70831	0.00138	2794.70831	5.50E-04
2793.74395	0.00138	2793.74395	5.40E-04
2792.77959	0.00135	2792.77959	5.30E-04
2791.81523	0.00132	2791.81523	5.20E-04
2790.85088	0.0013	2790.85088	5.20E-04
2789.88652	0.00127	2789.88652	5.10E-04
2788.92216	0.00121	2788.92216	5.00E-04
2787.9578	0.00116	2787.9578	5.00E-04
2786.99345	0.00118	2786.99345	5.00E-04
2786.02909	0.00122	2786.02909	5.00E-04
2785.06473	0.00125	2785.06473	5.00E-04
2784.10037	0.00128	2784.10037	4.90E-04
2783.13602	0.00126	2783.13602	4.90E-04
2782.17166	0.00117	2782.17166	4.80E-04
2781.2073	0.00107	2781.2073	4.80E-04
2780.24294	0.00105	2780.24294	4.70E-04
2779.27859	0.0011	2779.27859	4.70E-04
2778.31423	0.00113	2778.31423	4.70E-04
2777.34987	0.00109	2777.34987	4.70E-04
2776.38551	0.00109	2776.38551	4.80E-04
2775.42115	0.00114	2775.42115	4.80E-04
2774.4568	0.00122	2774.4568	4.80E-04
2773.49244	0.00125	2773.49244	4.80E-04
2772.52808	0.0012	2772.52808	4.70E-04
2771.56372	0.00115	2771.56372	4.70E-04
2770.59937	0.00113	2770.59937	4.70E-04
2769.63501	0.00112	2769.63501	4.70E-04
2768.67065	0.00108	2768.67065	4.80E-04
2767.70629	0.00106	2767.70629	4.80E-04
2766.74194	0.00108	2766.74194	4.80E-04
2765.77758	0.00112	2765.77758	4.80E-04
2764.81322	0.00114	2764.81322	4.80E-04
2763.84886	0.00111	2763.84886	4.80E-04
2762.88451	0.00104	2762.88451	4.80E-04
2761.92015	1.00E-03	2761.92015	4.80E-04
2760.95579	0.00102	2760.95579	4.80E-04
2759.99143	0.00105	2759.99143	4.80E-04
2759.02708	0.00105	2759.02708	4.80E-04
2758.06272	0.00103	2758.06272	4.70E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2757.09836	0.00103	2757.09836	4.60E-04
2756.134	0.00105	2756.134	4.50E-04
2755.16965	0.00103	2755.16965	4.50E-04
2754.20529	0.00104	2754.20529	4.50E-04
2753.24093	0.0011	2753.24093	4.50E-04
2752.27657	0.00113	2752.27657	4.50E-04
2751.31222	0.00111	2751.31222	4.40E-04
2750.34786	0.00112	2750.34786	4.40E-04
2749.3835	0.00113	2749.3835	4.30E-04
2748.41914	0.00111	2748.41914	4.20E-04
2747.45478	0.00113	2747.45478	4.20E-04
2746.49043	0.00118	2746.49043	4.30E-04
2745.52607	0.0012	2745.52607	4.40E-04
2744.56171	0.00115	2744.56171	4.40E-04
2743.59735	0.00107	2743.59735	4.50E-04
2742.633	0.00104	2742.633	4.50E-04
2741.66864	0.00103	2741.66864	4.50E-04
2740.70428	0.00103	2740.70428	4.40E-04
2739.73992	0.00104	2739.73992	4.40E-04
2738.77557	0.00101	2738.77557	4.40E-04
2737.81121	9.90E-04	2737.81121	4.40E-04
2736.84685	0.00101	2736.84685	4.40E-04
2735.88249	0.00106	2735.88249	4.30E-04
2734.91814	0.0011	2734.91814	4.20E-04
2733.95378	0.0011	2733.95378	4.10E-04
2732.98942	0.00109	2732.98942	4.10E-04
2732.02506	0.00112	2732.02506	4.10E-04
2731.06071	0.0011	2731.06071	4.10E-04
2730.09635	0.00103	2730.09635	4.10E-04
2729.13199	0.00101	2729.13199	4.10E-04
2728.16763	0.00103	2728.16763	4.00E-04
2727.20328	0.00101	2727.20328	3.90E-04
2726.23892	9.80E-04	2726.23892	3.90E-04
2725.27456	1.00E-03	2725.27456	3.90E-04
2724.3102	0.00103	2724.3102	3.90E-04
2723.34584	0.00104	2723.34584	4.00E-04
2722.38149	0.00103	2722.38149	4.10E-04
2721.41713	0.00101	2721.41713	4.10E-04
2720.45277	9.80E-04	2720.45277	4.10E-04
2719.48841	9.20E-04	2719.48841	4.00E-04
2718.52406	8.50E-04	2718.52406	3.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2717.5597	8.10E-04	2717.5597	3.80E-04
2716.59534	8.20E-04	2716.59534	3.70E-04
2715.63098	8.70E-04	2715.63098	3.60E-04
2714.66663	9.10E-04	2714.66663	3.70E-04
2713.70227	8.90E-04	2713.70227	3.70E-04
2712.73791	8.50E-04	2712.73791	3.80E-04
2711.77355	8.20E-04	2711.77355	3.80E-04
2710.8092	7.80E-04	2710.8092	3.80E-04
2709.84484	7.40E-04	2709.84484	3.80E-04
2708.88048	7.40E-04	2708.88048	3.80E-04
2707.91612	8.10E-04	2707.91612	3.80E-04
2706.95177	8.80E-04	2706.95177	3.70E-04
2705.98741	9.10E-04	2705.98741	3.70E-04
2705.02305	9.10E-04	2705.02305	3.70E-04
2704.05869	9.00E-04	2704.05869	3.60E-04
2703.09434	8.90E-04	2703.09434	3.60E-04
2702.12998	8.60E-04	2702.12998	3.50E-04
2701.16562	8.40E-04	2701.16562	3.50E-04
2700.20126	8.40E-04	2700.20126	3.50E-04
2699.23691	8.40E-04	2699.23691	3.50E-04
2698.27255	8.20E-04	2698.27255	3.50E-04
2697.30819	7.90E-04	2697.30819	3.50E-04
2696.34383	7.50E-04	2696.34383	3.50E-04
2695.37947	7.20E-04	2695.37947	3.50E-04
2694.41512	7.70E-04	2694.41512	3.50E-04
2693.45076	8.30E-04	2693.45076	3.50E-04
2692.4864	8.50E-04	2692.4864	3.40E-04
2691.52204	8.70E-04	2691.52204	3.40E-04
2690.55769	8.80E-04	2690.55769	3.40E-04
2689.59333	8.40E-04	2689.59333	3.40E-04
2688.62897	8.00E-04	2688.62897	3.40E-04
2687.66461	8.10E-04	2687.66461	3.40E-04
2686.70026	8.30E-04	2686.70026	3.40E-04
2685.7359	8.40E-04	2685.7359	3.40E-04
2684.77154	8.60E-04	2684.77154	3.40E-04
2683.80718	8.90E-04	2683.80718	3.40E-04
2682.84283	8.90E-04	2682.84283	3.40E-04
2681.87847	8.90E-04	2681.87847	3.30E-04
2680.91411	9.00E-04	2680.91411	3.30E-04
2679.94975	9.20E-04	2679.94975	3.30E-04
2678.9854	9.10E-04	2678.9854	3.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2678.02104	8.60E-04	2678.02104	3.40E-04
2677.05668	8.40E-04	2677.05668	3.40E-04
2676.09232	8.10E-04	2676.09232	3.40E-04
2675.12797	8.00E-04	2675.12797	3.40E-04
2674.16361	8.40E-04	2674.16361	3.40E-04
2673.19925	8.80E-04	2673.19925	3.40E-04
2672.23489	8.70E-04	2672.23489	3.40E-04
2671.27053	8.10E-04	2671.27053	3.30E-04
2670.30618	7.80E-04	2670.30618	3.20E-04
2669.34182	8.00E-04	2669.34182	3.10E-04
2668.37746	8.30E-04	2668.37746	3.10E-04
2667.4131	8.30E-04	2667.4131	3.10E-04
2666.44875	8.30E-04	2666.44875	3.20E-04
2665.48439	8.20E-04	2665.48439	3.20E-04
2664.52003	8.20E-04	2664.52003	3.20E-04
2663.55567	8.30E-04	2663.55567	3.20E-04
2662.59132	8.30E-04	2662.59132	3.20E-04
2661.62696	8.10E-04	2661.62696	3.20E-04
2660.6626	7.90E-04	2660.6626	3.20E-04
2659.69824	7.80E-04	2659.69824	3.20E-04
2658.73389	7.70E-04	2658.73389	3.20E-04
2657.76953	7.70E-04	2657.76953	3.10E-04
2656.80517	7.80E-04	2656.80517	3.00E-04
2655.84081	7.80E-04	2655.84081	3.00E-04
2654.87646	8.00E-04	2654.87646	3.00E-04
2653.9121	8.10E-04	2653.9121	3.00E-04
2652.94774	7.70E-04	2652.94774	3.00E-04
2651.98338	7.10E-04	2651.98338	3.00E-04
2651.01903	6.60E-04	2651.01903	3.00E-04
2650.05467	6.40E-04	2650.05467	2.90E-04
2649.09031	6.70E-04	2649.09031	2.90E-04
2648.12595	7.50E-04	2648.12595	3.00E-04
2647.1616	8.40E-04	2647.1616	3.00E-04
2646.19724	8.60E-04	2646.19724	3.10E-04
2645.23288	7.70E-04	2645.23288	3.10E-04
2644.26852	7.00E-04	2644.26852	3.10E-04
2643.30416	6.90E-04	2643.30416	3.10E-04
2642.33981	6.80E-04	2642.33981	3.00E-04
2641.37545	6.80E-04	2641.37545	3.00E-04
2640.41109	7.00E-04	2640.41109	3.00E-04
2639.44673	7.50E-04	2639.44673	3.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2638.48238	7.70E-04	2638.48238	3.10E-04
2637.51802	7.60E-04	2637.51802	3.10E-04
2636.55366	7.70E-04	2636.55366	3.00E-04
2635.5893	7.90E-04	2635.5893	3.00E-04
2634.62495	8.10E-04	2634.62495	3.00E-04
2633.66059	8.30E-04	2633.66059	3.00E-04
2632.69623	8.10E-04	2632.69623	3.00E-04
2631.73187	7.40E-04	2631.73187	3.00E-04
2630.76752	6.90E-04	2630.76752	3.00E-04
2629.80316	7.00E-04	2629.80316	2.90E-04
2628.8388	6.90E-04	2628.8388	2.90E-04
2627.87444	6.80E-04	2627.87444	3.00E-04
2626.91009	7.20E-04	2626.91009	3.00E-04
2625.94573	8.10E-04	2625.94573	3.00E-04
2624.98137	8.50E-04	2624.98137	2.90E-04
2624.01701	8.30E-04	2624.01701	2.80E-04
2623.05266	8.00E-04	2623.05266	2.70E-04
2622.0883	8.00E-04	2622.0883	2.70E-04
2621.12394	8.00E-04	2621.12394	2.70E-04
2620.15958	7.90E-04	2620.15958	2.70E-04
2619.19522	7.70E-04	2619.19522	2.70E-04
2618.23087	7.90E-04	2618.23087	2.70E-04
2617.26651	7.80E-04	2617.26651	2.70E-04
2616.30215	7.50E-04	2616.30215	2.70E-04
2615.33779	7.70E-04	2615.33779	2.70E-04
2614.37344	8.00E-04	2614.37344	2.70E-04
2613.40908	8.40E-04	2613.40908	2.70E-04
2612.44472	8.60E-04	2612.44472	2.60E-04
2611.48036	8.40E-04	2611.48036	2.60E-04
2610.51601	7.50E-04	2610.51601	2.50E-04
2609.55165	6.70E-04	2609.55165	2.40E-04
2608.58729	6.30E-04	2608.58729	2.40E-04
2607.62293	6.40E-04	2607.62293	2.50E-04
2606.65858	6.90E-04	2606.65858	2.60E-04
2605.69422	7.40E-04	2605.69422	2.60E-04
2604.72986	7.70E-04	2604.72986	2.60E-04
2603.7655	7.60E-04	2603.7655	2.60E-04
2602.80115	7.20E-04	2602.80115	2.50E-04
2601.83679	6.90E-04	2601.83679	2.40E-04
2600.87243	6.90E-04	2600.87243	2.40E-04
2599.90807	7.20E-04	2599.90807	2.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2598.94372	7.40E-04	2598.94372	2.40E-04
2597.97936	7.20E-04	2597.97936	2.30E-04
2597.015	7.10E-04	2597.015	2.30E-04
2596.05064	7.50E-04	2596.05064	2.40E-04
2595.08628	7.60E-04	2595.08628	2.40E-04
2594.12193	7.50E-04	2594.12193	2.40E-04
2593.15757	7.50E-04	2593.15757	2.40E-04
2592.19321	7.20E-04	2592.19321	2.40E-04
2591.22885	6.70E-04	2591.22885	2.40E-04
2590.2645	6.60E-04	2590.2645	2.40E-04
2589.30014	6.80E-04	2589.30014	2.40E-04
2588.33578	6.80E-04	2588.33578	2.50E-04
2587.37142	6.50E-04	2587.37142	2.50E-04
2586.40707	6.30E-04	2586.40707	2.50E-04
2585.44271	6.70E-04	2585.44271	2.50E-04
2584.47835	7.20E-04	2584.47835	2.50E-04
2583.51399	7.00E-04	2583.51399	2.40E-04
2582.54964	6.40E-04	2582.54964	2.40E-04
2581.58528	5.80E-04	2581.58528	2.40E-04
2580.62092	5.80E-04	2580.62092	2.40E-04
2579.65656	6.00E-04	2579.65656	2.30E-04
2578.69221	6.10E-04	2578.69221	2.30E-04
2577.72785	6.00E-04	2577.72785	2.30E-04
2576.76349	6.20E-04	2576.76349	2.30E-04
2575.79913	6.80E-04	2575.79913	2.20E-04
2574.83478	7.20E-04	2574.83478	2.20E-04
2573.87042	6.80E-04	2573.87042	2.10E-04
2572.90606	6.20E-04	2572.90606	2.10E-04
2571.9417	6.00E-04	2571.9417	2.10E-04
2570.97735	6.20E-04	2570.97735	2.10E-04
2570.01299	6.20E-04	2570.01299	2.10E-04
2569.04863	5.90E-04	2569.04863	2.10E-04
2568.08427	5.50E-04	2568.08427	2.10E-04
2567.11991	5.50E-04	2567.11991	2.00E-04
2566.15556	5.90E-04	2566.15556	2.00E-04
2565.1912	6.20E-04	2565.1912	2.00E-04
2564.22684	6.50E-04	2564.22684	2.00E-04
2563.26248	6.80E-04	2563.26248	2.10E-04
2562.29813	7.00E-04	2562.29813	2.10E-04
2561.33377	7.20E-04	2561.33377	2.10E-04
2560.36941	7.30E-04	2560.36941	2.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2559.40505	7.00E-04	2559.40505	2.10E-04
2558.4407	6.10E-04	2558.4407	2.10E-04
2557.47634	5.00E-04	2557.47634	2.10E-04
2556.51198	4.70E-04	2556.51198	2.10E-04
2555.54762	5.50E-04	2555.54762	2.00E-04
2554.58327	6.70E-04	2554.58327	2.00E-04
2553.61891	7.40E-04	2553.61891	2.00E-04
2552.65455	7.30E-04	2552.65455	2.00E-04
2551.69019	7.00E-04	2551.69019	2.00E-04
2550.72584	6.70E-04	2550.72584	1.90E-04
2549.76148	6.70E-04	2549.76148	1.90E-04
2548.79712	6.50E-04	2548.79712	1.90E-04
2547.83276	6.10E-04	2547.83276	1.90E-04
2546.86841	5.70E-04	2546.86841	1.90E-04
2545.90405	5.50E-04	2545.90405	1.90E-04
2544.93969	4.90E-04	2544.93969	1.90E-04
2543.97533	4.70E-04	2543.97533	1.90E-04
2543.01097	5.40E-04	2543.01097	1.90E-04
2542.04662	5.90E-04	2542.04662	1.90E-04
2541.08226	6.00E-04	2541.08226	1.90E-04
2540.1179	5.70E-04	2540.1179	1.90E-04
2539.15354	5.50E-04	2539.15354	1.80E-04
2538.18919	5.70E-04	2538.18919	1.80E-04
2537.22483	5.80E-04	2537.22483	1.80E-04
2536.26047	5.30E-04	2536.26047	1.80E-04
2535.29611	4.80E-04	2535.29611	1.80E-04
2534.33176	4.80E-04	2534.33176	1.90E-04
2533.3674	4.70E-04	2533.3674	1.80E-04
2532.40304	4.40E-04	2532.40304	1.80E-04
2531.43868	4.30E-04	2531.43868	1.70E-04
2530.47433	4.40E-04	2530.47433	1.60E-04
2529.50997	4.40E-04	2529.50997	1.50E-04
2528.54561	4.40E-04	2528.54561	1.50E-04
2527.58125	4.30E-04	2527.58125	1.60E-04
2526.6169	4.30E-04	2526.6169	1.60E-04
2525.65254	4.40E-04	2525.65254	1.70E-04
2524.68818	4.40E-04	2524.68818	1.70E-04
2523.72382	4.20E-04	2523.72382	1.70E-04
2522.75947	4.30E-04	2522.75947	1.60E-04
2521.79511	4.70E-04	2521.79511	1.50E-04
2520.83075	4.90E-04	2520.83075	1.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2519.86639	4.90E-04	2519.86639	1.50E-04
2518.90204	4.80E-04	2518.90204	1.50E-04
2517.93768	4.40E-04	2517.93768	1.50E-04
2516.97332	4.20E-04	2516.97332	1.50E-04
2516.00896	4.40E-04	2516.00896	1.60E-04
2515.0446	4.50E-04	2515.0446	1.60E-04
2514.08025	4.40E-04	2514.08025	1.60E-04
2513.11589	4.20E-04	2513.11589	1.60E-04
2512.15153	3.70E-04	2512.15153	1.60E-04
2511.18717	3.20E-04	2511.18717	1.60E-04
2510.22282	3.50E-04	2510.22282	1.60E-04
2509.25846	4.10E-04	2509.25846	1.60E-04
2508.2941	4.00E-04	2508.2941	1.60E-04
2507.32974	3.50E-04	2507.32974	1.50E-04
2506.36539	3.70E-04	2506.36539	1.50E-04
2505.40103	4.10E-04	2505.40103	1.40E-04
2504.43667	4.30E-04	2504.43667	1.40E-04
2503.47231	4.60E-04	2503.47231	1.30E-04
2502.50796	5.10E-04	2502.50796	1.30E-04
2501.5436	5.30E-04	2501.5436	1.30E-04
2500.57924	5.00E-04	2500.57924	1.40E-04
2499.61488	4.60E-04	2499.61488	1.40E-04
2498.65053	4.30E-04	2498.65053	1.50E-04
2497.68617	4.10E-04	2497.68617	1.50E-04
2496.72181	4.20E-04	2496.72181	1.50E-04
2495.75745	4.40E-04	2495.75745	1.50E-04
2494.7931	4.40E-04	2494.7931	1.50E-04
2493.82874	4.10E-04	2493.82874	1.50E-04
2492.86438	3.50E-04	2492.86438	1.40E-04
2491.90002	3.50E-04	2491.90002	1.30E-04
2490.93566	4.10E-04	2490.93566	1.30E-04
2489.97131	4.40E-04	2489.97131	1.20E-04
2489.00695	4.10E-04	2489.00695	1.20E-04
2488.04259	3.80E-04	2488.04259	1.20E-04
2487.07823	4.10E-04	2487.07823	1.30E-04
2486.11388	4.70E-04	2486.11388	1.30E-04
2485.14952	5.00E-04	2485.14952	1.30E-04
2484.18516	4.70E-04	2484.18516	1.40E-04
2483.2208	4.30E-04	2483.2208	1.40E-04
2482.25645	4.00E-04	2482.25645	1.30E-04
2481.29209	3.60E-04	2481.29209	1.30E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2480.32773	3.50E-04	2480.32773	1.20E-04
2479.36337	3.90E-04	2479.36337	1.20E-04
2478.39902	4.30E-04	2478.39902	1.10E-04
2477.43466	4.20E-04	2477.43466	1.10E-04
2476.4703	4.20E-04	2476.4703	1.20E-04
2475.50594	4.10E-04	2475.50594	1.20E-04
2474.54159	3.90E-04	2474.54159	1.20E-04
2473.57723	4.20E-04	2473.57723	1.20E-04
2472.61287	5.00E-04	2472.61287	1.20E-04
2471.64851	5.50E-04	2471.64851	1.20E-04
2470.68416	5.20E-04	2470.68416	1.20E-04
2469.7198	4.50E-04	2469.7198	1.20E-04
2468.75544	4.10E-04	2468.75544	1.20E-04
2467.79108	3.70E-04	2467.79108	1.20E-04
2466.82672	3.50E-04	2466.82672	1.20E-04
2465.86237	3.80E-04	2465.86237	1.20E-04
2464.89801	4.20E-04	2464.89801	1.20E-04
2463.93365	4.50E-04	2463.93365	1.20E-04
2462.96929	4.70E-04	2462.96929	1.20E-04
2462.00494	4.60E-04	2462.00494	1.20E-04
2461.04058	4.60E-04	2461.04058	1.10E-04
2460.07622	4.60E-04	2460.07622	1.20E-04
2459.11186	4.30E-04	2459.11186	1.20E-04
2458.14751	3.90E-04	2458.14751	1.20E-04
2457.18315	3.90E-04	2457.18315	1.20E-04
2456.21879	4.40E-04	2456.21879	1.20E-04
2455.25443	4.80E-04	2455.25443	1.20E-04
2454.29008	4.80E-04	2454.29008	1.20E-04
2453.32572	4.30E-04	2453.32572	1.10E-04
2452.36136	4.20E-04	2452.36136	1.20E-04
2451.397	4.30E-04	2451.397	1.20E-04
2450.43265	4.20E-04	2450.43265	1.20E-04
2449.46829	4.10E-04	2449.46829	1.20E-04
2448.50393	4.30E-04	2448.50393	1.30E-04
2447.53957	4.80E-04	2447.53957	1.30E-04
2446.57522	5.20E-04	2446.57522	1.40E-04
2445.61086	5.00E-04	2445.61086	1.40E-04
2444.6465	4.40E-04	2444.6465	1.40E-04
2443.68214	4.00E-04	2443.68214	1.40E-04
2442.71779	4.10E-04	2442.71779	1.30E-04
2441.75343	4.10E-04	2441.75343	1.30E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2440.78907	4.10E-04	2440.78907	1.20E-04
2439.82471	4.50E-04	2439.82471	1.20E-04
2438.86035	4.50E-04	2438.86035	1.20E-04
2437.896	3.90E-04	2437.896	1.20E-04
2436.93164	3.50E-04	2436.93164	1.20E-04
2435.96728	3.70E-04	2435.96728	1.20E-04
2435.00292	4.20E-04	2435.00292	1.10E-04
2434.03857	4.40E-04	2434.03857	1.10E-04
2433.07421	4.30E-04	2433.07421	1.00E-04
2432.10985	4.10E-04	2432.10985	1.10E-04
2431.14549	3.90E-04	2431.14549	1.20E-04
2430.18114	3.90E-04	2430.18114	1.40E-04
2429.21678	4.10E-04	2429.21678	1.40E-04
2428.25242	4.30E-04	2428.25242	1.40E-04
2427.28806	4.40E-04	2427.28806	1.30E-04
2426.32371	4.20E-04	2426.32371	1.20E-04
2425.35935	4.00E-04	2425.35935	1.10E-04
2424.39499	3.90E-04	2424.39499	1.00E-04
2423.43063	4.00E-04	2423.43063	1.00E-04
2422.46628	4.50E-04	2422.46628	1.10E-04
2421.50192	4.90E-04	2421.50192	1.10E-04
2420.53756	4.90E-04	2420.53756	1.10E-04
2419.5732	4.40E-04	2419.5732	1.10E-04
2418.60885	4.10E-04	2418.60885	1.00E-04
2417.64449	3.90E-04	2417.64449	1.00E-04
2416.68013	3.70E-04	2416.68013	1.10E-04
2415.71577	3.80E-04	2415.71577	1.10E-04
2414.75141	4.00E-04	2414.75141	1.10E-04
2413.78706	3.80E-04	2413.78706	1.10E-04
2412.8227	3.60E-04	2412.8227	1.10E-04
2411.85834	3.40E-04	2411.85834	1.10E-04
2410.89398	3.00E-04	2410.89398	1.10E-04
2409.92963	2.60E-04	2409.92963	1.20E-04
2408.96527	2.80E-04	2408.96527	1.30E-04
2408.00091	3.20E-04	2408.00091	1.30E-04
2407.03655	3.60E-04	2407.03655	1.20E-04
2406.0722	3.80E-04	2406.0722	1.10E-04
2405.10784	3.60E-04	2405.10784	1.10E-04
2404.14348	3.10E-04	2404.14348	1.10E-04
2403.17912	3.10E-04	2403.17912	1.10E-04
2402.21477	3.30E-04	2402.21477	1.20E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2401.25041	3.30E-04	2401.25041	1.20E-04
2400.28605	3.10E-04	2400.28605	1.20E-04
2399.32169	3.10E-04	2399.32169	1.20E-04
2398.35734	3.20E-04	2398.35734	1.10E-04
2397.39298	3.40E-04	2397.39298	1.00E-04
2396.42862	3.70E-04	2396.42862	1.00E-04
2395.46426	3.90E-04	2395.46426	9.00E-05
2394.49991	4.00E-04	2394.49991	9.00E-05
2393.53555	4.20E-04	2393.53555	9.00E-05
2392.57119	4.10E-04	2392.57119	9.00E-05
2391.60683	3.70E-04	2391.60683	9.00E-05
2390.64248	3.20E-04	2390.64248	9.00E-05
2389.67812	2.80E-04	2389.67812	9.00E-05
2388.71376	2.90E-04	2388.71376	9.00E-05
2387.7494	3.30E-04	2387.7494	9.00E-05
2386.78504	3.70E-04	2386.78504	9.00E-05
2385.82069	3.90E-04	2385.82069	9.00E-05
2384.85633	3.80E-04	2384.85633	7.00E-05
2383.89197	4.10E-04	2383.89197	6.00E-05
2382.92761	4.90E-04	2382.92761	5.00E-05
2381.96326	5.40E-04	2381.96326	4.00E-05
2380.9989	5.80E-04	2380.9989	4.00E-05
2380.03454	6.90E-04	2380.03454	4.00E-05
2379.07018	8.10E-04	2379.07018	5.00E-05
2378.10583	8.40E-04	2378.10583	7.00E-05
2377.14147	8.00E-04	2377.14147	9.00E-05
2376.17711	9.20E-04	2376.17711	1.00E-04
2375.21275	0.00125	2375.21275	1.10E-04
2374.2484	0.00148	2374.2484	1.30E-04
2373.28404	0.00142	2373.28404	1.40E-04
2372.31968	0.00138	2372.31968	1.50E-04
2371.35532	0.00154	2371.35532	1.40E-04
2370.39097	0.00175	2370.39097	1.50E-04
2369.42661	0.00202	2369.42661	1.90E-04
2368.46225	0.00227	2368.46225	2.50E-04
2367.49789	0.00226	2367.49789	3.20E-04
2366.53354	0.00216	2366.53354	3.70E-04
2365.56918	0.00227	2365.56918	4.00E-04
2364.60482	0.00245	2364.60482	4.20E-04
2363.64046	0.00249	2363.64046	4.50E-04
2362.6761	0.00243	2362.6761	4.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2361.71175	0.00231	2361.71175	5.60E-04
2360.74739	0.00208	2360.74739	6.20E-04
2359.78303	0.00199	2359.78303	6.50E-04
2358.81867	0.00219	2358.81867	6.40E-04
2357.85432	0.00243	2357.85432	6.20E-04
2356.88996	0.00241	2356.88996	6.10E-04
2355.9256	0.00216	2355.9256	6.20E-04
2354.96124	0.00192	2354.96124	6.30E-04
2353.99689	0.00187	2353.99689	6.30E-04
2353.03253	0.00189	2353.03253	6.20E-04
2352.06817	0.0017	2352.06817	6.10E-04
2351.10381	0.00137	2351.10381	5.70E-04
2350.13946	0.00114	2350.13946	4.80E-04
2349.1751	0.00112	2349.1751	3.60E-04
2348.21074	0.00123	2348.21074	2.50E-04
2347.24638	0.00141	2347.24638	1.60E-04
2346.28203	0.00158	2346.28203	1.20E-04
2345.31767	0.00174	2345.31767	1.40E-04
2344.35331	0.00187	2344.35331	2.20E-04
2343.38895	0.0019	2343.38895	3.10E-04
2342.4246	0.00182	2342.4246	3.70E-04
2341.46024	0.00175	2341.46024	4.00E-04
2340.49588	0.00175	2340.49588	4.20E-04
2339.53152	0.00171	2339.53152	4.30E-04
2338.56716	0.00158	2338.56716	4.30E-04
2337.60281	0.00159	2337.60281	4.20E-04
2336.63845	0.00174	2336.63845	4.00E-04
2335.67409	0.00184	2335.67409	3.70E-04
2334.70973	0.00187	2334.70973	3.50E-04
2333.74538	0.00187	2333.74538	3.40E-04
2332.78102	0.00179	2332.78102	3.30E-04
2331.81666	0.00166	2331.81666	3.50E-04
2330.8523	0.00151	2330.8523	3.80E-04
2329.88795	0.00143	2329.88795	4.00E-04
2328.92359	0.00149	2328.92359	4.20E-04
2327.95923	0.00158	2327.95923	4.20E-04
2326.99487	0.00157	2326.99487	4.10E-04
2326.03052	0.00154	2326.03052	3.90E-04
2325.06616	0.00151	2325.06616	3.80E-04
2324.1018	0.00141	2324.1018	3.60E-04
2323.13744	0.00134	2323.13744	3.50E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2322.17309	0.00128	2322.17309	3.50E-04
2321.20873	0.00109	2321.20873	3.50E-04
2320.24437	8.90E-04	2320.24437	3.50E-04
2319.28001	8.60E-04	2319.28001	3.50E-04
2318.31566	9.10E-04	2318.31566	3.40E-04
2317.3513	8.70E-04	2317.3513	3.30E-04
2316.38694	8.10E-04	2316.38694	3.00E-04
2315.42258	8.20E-04	2315.42258	2.60E-04
2314.45823	8.80E-04	2314.45823	2.40E-04
2313.49387	8.90E-04	2313.49387	2.20E-04
2312.52951	7.80E-04	2312.52951	2.20E-04
2311.56515	6.80E-04	2311.56515	2.10E-04
2310.60079	6.50E-04	2310.60079	2.10E-04
2309.63644	6.50E-04	2309.63644	2.10E-04
2308.67208	6.20E-04	2308.67208	2.20E-04
2307.70772	5.70E-04	2307.70772	2.10E-04
2306.74336	5.10E-04	2306.74336	2.10E-04
2305.77901	4.40E-04	2305.77901	2.00E-04
2304.81465	4.30E-04	2304.81465	1.80E-04
2303.85029	4.90E-04	2303.85029	1.70E-04
2302.88593	5.40E-04	2302.88593	1.50E-04
2301.92158	5.50E-04	2301.92158	1.40E-04
2300.95722	5.40E-04	2300.95722	1.40E-04
2299.99286	4.80E-04	2299.99286	1.40E-04
2299.0285	4.10E-04	2299.0285	1.30E-04
2298.06415	4.00E-04	2298.06415	1.40E-04
2297.09979	4.20E-04	2297.09979	1.40E-04
2296.13543	4.30E-04	2296.13543	1.30E-04
2295.17107	4.30E-04	2295.17107	1.30E-04
2294.20672	4.20E-04	2294.20672	1.20E-04
2293.24236	4.30E-04	2293.24236	1.10E-04
2292.278	4.30E-04	2292.278	1.00E-04
2291.31364	4.00E-04	2291.31364	1.00E-04
2290.34929	3.40E-04	2290.34929	9.00E-05
2289.38493	2.90E-04	2289.38493	9.00E-05
2288.42057	2.70E-04	2288.42057	9.00E-05
2287.45621	3.00E-04	2287.45621	9.00E-05
2286.49185	3.20E-04	2286.49185	9.00E-05
2285.5275	2.70E-04	2285.5275	9.00E-05
2284.56314	2.10E-04	2284.56314	8.00E-05
2283.59878	1.80E-04	2283.59878	7.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2282.63442	1.90E-04	2282.63442	7.00E-05
2281.67007	2.00E-04	2281.67007	6.00E-05
2280.70571	2.10E-04	2280.70571	7.00E-05
2279.74135	2.50E-04	2279.74135	7.00E-05
2278.77699	2.90E-04	2278.77699	7.00E-05
2277.81264	3.20E-04	2277.81264	8.00E-05
2276.84828	3.70E-04	2276.84828	8.00E-05
2275.88392	3.90E-04	2275.88392	8.00E-05
2274.91956	3.60E-04	2274.91956	8.00E-05
2273.95521	3.20E-04	2273.95521	8.00E-05
2272.99085	3.00E-04	2272.99085	8.00E-05
2272.02649	2.60E-04	2272.02649	7.00E-05
2271.06213	2.00E-04	2271.06213	7.00E-05
2270.09778	1.70E-04	2270.09778	6.00E-05
2269.13342	1.90E-04	2269.13342	6.00E-05
2268.16906	2.10E-04	2268.16906	7.00E-05
2267.2047	2.50E-04	2267.2047	7.00E-05
2266.24035	2.90E-04	2266.24035	8.00E-05
2265.27599	3.10E-04	2265.27599	8.00E-05
2264.31163	3.00E-04	2264.31163	7.00E-05
2263.34727	2.60E-04	2263.34727	7.00E-05
2262.38292	2.40E-04	2262.38292	6.00E-05
2261.41856	2.90E-04	2261.41856	6.00E-05
2260.4542	3.10E-04	2260.4542	6.00E-05
2259.48984	2.70E-04	2259.48984	6.00E-05
2258.52548	2.50E-04	2258.52548	6.00E-05
2257.56113	2.60E-04	2257.56113	6.00E-05
2256.59677	2.60E-04	2256.59677	6.00E-05
2255.63241	2.30E-04	2255.63241	5.00E-05
2254.66805	2.20E-04	2254.66805	5.00E-05
2253.7037	2.30E-04	2253.7037	6.00E-05
2252.73934	2.20E-04	2252.73934	6.00E-05
2251.77498	2.10E-04	2251.77498	7.00E-05
2250.81062	2.00E-04	2250.81062	7.00E-05
2249.84627	2.10E-04	2249.84627	7.00E-05
2248.88191	2.10E-04	2248.88191	7.00E-05
2247.91755	2.10E-04	2247.91755	7.00E-05
2246.95319	2.00E-04	2246.95319	7.00E-05
2245.98884	1.80E-04	2245.98884	8.00E-05
2245.02448	1.50E-04	2245.02448	9.00E-05
2244.06012	1.40E-04	2244.06012	9.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2243.09576	1.50E-04	2243.09576	8.00E-05
2242.13141	1.50E-04	2242.13141	7.00E-05
2241.16705	1.50E-04	2241.16705	6.00E-05
2240.20269	1.90E-04	2240.20269	6.00E-05
2239.23833	2.30E-04	2239.23833	6.00E-05
2238.27398	2.40E-04	2238.27398	6.00E-05
2237.30962	2.40E-04	2237.30962	6.00E-05
2236.34526	2.10E-04	2236.34526	6.00E-05
2235.3809	1.80E-04	2235.3809	6.00E-05
2234.41654	1.80E-04	2234.41654	6.00E-05
2233.45219	1.90E-04	2233.45219	6.00E-05
2232.48783	1.70E-04	2232.48783	6.00E-05
2231.52347	1.50E-04	2231.52347	5.00E-05
2230.55911	1.60E-04	2230.55911	5.00E-05
2229.59476	1.80E-04	2229.59476	4.00E-05
2228.6304	1.90E-04	2228.6304	3.00E-05
2227.66604	1.80E-04	2227.66604	3.00E-05
2226.70168	1.90E-04	2226.70168	3.00E-05
2225.73733	2.30E-04	2225.73733	4.00E-05
2224.77297	2.40E-04	2224.77297	5.00E-05
2223.80861	2.00E-04	2223.80861	6.00E-05
2222.84425	1.60E-04	2222.84425	7.00E-05
2221.8799	1.60E-04	2221.8799	7.00E-05
2220.91554	1.60E-04	2220.91554	7.00E-05
2219.95118	1.40E-04	2219.95118	7.00E-05
2218.98682	1.40E-04	2218.98682	6.00E-05
2218.02247	1.60E-04	2218.02247	5.00E-05
2217.05811	1.70E-04	2217.05811	5.00E-05
2216.09375	1.80E-04	2216.09375	5.00E-05
2215.12939	1.80E-04	2215.12939	6.00E-05
2214.16504	1.80E-04	2214.16504	6.00E-05
2213.20068	1.60E-04	2213.20068	6.00E-05
2212.23632	1.40E-04	2212.23632	6.00E-05
2211.27196	1.40E-04	2211.27196	5.00E-05
2210.30761	1.70E-04	2210.30761	5.00E-05
2209.34325	1.50E-04	2209.34325	5.00E-05
2208.37889	1.00E-04	2208.37889	5.00E-05
2207.41453	8.00E-05	2207.41453	6.00E-05
2206.45017	1.20E-04	2206.45017	6.00E-05
2205.48582	1.50E-04	2205.48582	6.00E-05
2204.52146	1.30E-04	2204.52146	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2203.5571	1.20E-04	2203.5571	5.00E-05
2202.59274	1.40E-04	2202.59274	5.00E-05
2201.62839	1.90E-04	2201.62839	4.00E-05
2200.66403	2.10E-04	2200.66403	4.00E-05
2199.69967	2.00E-04	2199.69967	4.00E-05
2198.73531	1.80E-04	2198.73531	4.00E-05
2197.77096	1.70E-04	2197.77096	4.00E-05
2196.8066	1.80E-04	2196.8066	5.00E-05
2195.84224	1.90E-04	2195.84224	5.00E-05
2194.87788	1.80E-04	2194.87788	5.00E-05
2193.91353	1.70E-04	2193.91353	5.00E-05
2192.94917	1.80E-04	2192.94917	5.00E-05
2191.98481	1.90E-04	2191.98481	5.00E-05
2191.02045	1.60E-04	2191.02045	5.00E-05
2190.0561	1.50E-04	2190.0561	5.00E-05
2189.09174	1.80E-04	2189.09174	5.00E-05
2188.12738	1.90E-04	2188.12738	5.00E-05
2187.16302	1.60E-04	2187.16302	5.00E-05
2186.19867	1.40E-04	2186.19867	5.00E-05
2185.23431	1.50E-04	2185.23431	5.00E-05
2184.26995	1.40E-04	2184.26995	5.00E-05
2183.30559	1.20E-04	2183.30559	5.00E-05
2182.34123	1.20E-04	2182.34123	6.00E-05
2181.37688	1.20E-04	2181.37688	6.00E-05
2180.41252	9.00E-05	2180.41252	6.00E-05
2179.44816	6.00E-05	2179.44816	6.00E-05
2178.4838	7.00E-05	2178.4838	6.00E-05
2177.51945	1.10E-04	2177.51945	6.00E-05
2176.55509	1.60E-04	2176.55509	6.00E-05
2175.59073	1.70E-04	2175.59073	6.00E-05
2174.62637	1.80E-04	2174.62637	6.00E-05
2173.66202	1.80E-04	2173.66202	6.00E-05
2172.69766	1.60E-04	2172.69766	5.00E-05
2171.7333	1.20E-04	2171.7333	4.00E-05
2170.76894	1.00E-04	2170.76894	4.00E-05
2169.80459	8.00E-05	2169.80459	4.00E-05
2168.84023	6.00E-05	2168.84023	3.00E-05
2167.87587	6.00E-05	2167.87587	3.00E-05
2166.91151	8.00E-05	2166.91151	4.00E-05
2165.94716	1.10E-04	2165.94716	4.00E-05
2164.9828	1.20E-04	2164.9828	4.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2164.01844	1.20E-04	2164.01844	5.00E-05
2163.05408	1.40E-04	2163.05408	5.00E-05
2162.08973	1.20E-04	2162.08973	5.00E-05
2161.12537	1.00E-04	2161.12537	5.00E-05
2160.16101	1.00E-04	2160.16101	5.00E-05
2159.19665	1.10E-04	2159.19665	6.00E-05
2158.23229	1.10E-04	2158.23229	6.00E-05
2157.26794	1.30E-04	2157.26794	6.00E-05
2156.30358	1.10E-04	2156.30358	5.00E-05
2155.33922	1.10E-04	2155.33922	4.00E-05
2154.37486	1.40E-04	2154.37486	4.00E-05
2153.41051	1.80E-04	2153.41051	4.00E-05
2152.44615	2.00E-04	2152.44615	4.00E-05
2151.48179	2.00E-04	2151.48179	5.00E-05
2150.51743	2.00E-04	2150.51743	5.00E-05
2149.55308	1.50E-04	2149.55308	5.00E-05
2148.58872	7.00E-05	2148.58872	5.00E-05
2147.62436	4.00E-05	2147.62436	5.00E-05
2146.66	8.00E-05	2146.66	5.00E-05
2145.69565	1.50E-04	2145.69565	6.00E-05
2144.73129	1.80E-04	2144.73129	6.00E-05
2143.76693	1.70E-04	2143.76693	6.00E-05
2142.80257	1.50E-04	2142.80257	6.00E-05
2141.83822	1.60E-04	2141.83822	6.00E-05
2140.87386	1.80E-04	2140.87386	6.00E-05
2139.9095	1.50E-04	2139.9095	5.00E-05
2138.94514	1.10E-04	2138.94514	5.00E-05
2137.98079	1.00E-04	2137.98079	5.00E-05
2137.01643	1.10E-04	2137.01643	4.00E-05
2136.05207	1.40E-04	2136.05207	4.00E-05
2135.08771	1.40E-04	2135.08771	5.00E-05
2134.12336	1.20E-04	2134.12336	6.00E-05
2133.159	1.00E-04	2133.159	6.00E-05
2132.19464	9.00E-05	2132.19464	6.00E-05
2131.23028	9.00E-05	2131.23028	5.00E-05
2130.26592	1.00E-04	2130.26592	4.00E-05
2129.30157	1.10E-04	2129.30157	4.00E-05
2128.33721	1.20E-04	2128.33721	4.00E-05
2127.37285	1.30E-04	2127.37285	4.00E-05
2126.40849	1.50E-04	2126.40849	5.00E-05
2125.44414	1.50E-04	2125.44414	5.00E-05



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2124.47978	1.30E-04	2124.47978	5.00E-05
2123.51542	1.20E-04	2123.51542	5.00E-05
2122.55106	1.20E-04	2122.55106	6.00E-05
2121.58671	1.30E-04	2121.58671	7.00E-05
2120.62235	1.00E-04	2120.62235	7.00E-05
2119.65799	8.00E-05	2119.65799	7.00E-05
2118.69363	8.00E-05	2118.69363	6.00E-05
2117.72928	1.10E-04	2117.72928	5.00E-05
2116.76492	1.20E-04	2116.76492	4.00E-05
2115.80056	1.50E-04	2115.80056	4.00E-05
2114.8362	1.70E-04	2114.8362	5.00E-05
2113.87185	1.60E-04	2113.87185	6.00E-05
2112.90749	1.60E-04	2112.90749	6.00E-05
2111.94313	1.70E-04	2111.94313	6.00E-05
2110.97877	1.50E-04	2110.97877	5.00E-05
2110.01442	1.20E-04	2110.01442	4.00E-05
2109.05006	1.30E-04	2109.05006	4.00E-05
2108.0857	1.50E-04	2108.0857	5.00E-05
2107.12134	1.70E-04	2107.12134	5.00E-05
2106.15698	1.80E-04	2106.15698	5.00E-05
2105.19263	1.90E-04	2105.19263	6.00E-05
2104.22827	1.80E-04	2104.22827	6.00E-05
2103.26391	1.50E-04	2103.26391	6.00E-05
2102.29955	1.40E-04	2102.29955	6.00E-05
2101.3352	1.40E-04	2101.3352	6.00E-05
2100.37084	1.60E-04	2100.37084	6.00E-05
2099.40648	1.90E-04	2099.40648	6.00E-05
2098.44212	1.90E-04	2098.44212	6.00E-05
2097.47777	1.60E-04	2097.47777	6.00E-05
2096.51341	1.00E-04	2096.51341	5.00E-05
2095.54905	8.00E-05	2095.54905	4.00E-05
2094.58469	7.00E-05	2094.58469	4.00E-05
2093.62034	5.00E-05	2093.62034	4.00E-05
2092.65598	6.00E-05	2092.65598	5.00E-05
2091.69162	9.00E-05	2091.69162	6.00E-05
2090.72726	1.30E-04	2090.72726	6.00E-05
2089.76291	1.50E-04	2089.76291	7.00E-05
2088.79855	1.80E-04	2088.79855	8.00E-05
2087.83419	2.20E-04	2087.83419	7.00E-05
2086.86983	2.10E-04	2086.86983	7.00E-05
2085.90548	1.40E-04	2085.90548	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2084.94112	8.00E-05	2084.94112	6.00E-05
2083.97676	8.00E-05	2083.97676	5.00E-05
2083.0124	1.30E-04	2083.0124	4.00E-05
2082.04805	1.70E-04	2082.04805	4.00E-05
2081.08369	1.80E-04	2081.08369	4.00E-05
2080.11933	1.50E-04	2080.11933	4.00E-05
2079.15497	1.50E-04	2079.15497	4.00E-05
2078.19061	2.00E-04	2078.19061	4.00E-05
2077.22626	2.40E-04	2077.22626	4.00E-05
2076.2619	2.10E-04	2076.2619	5.00E-05
2075.29754	1.60E-04	2075.29754	5.00E-05
2074.33318	1.60E-04	2074.33318	5.00E-05
2073.36883	1.80E-04	2073.36883	6.00E-05
2072.40447	1.80E-04	2072.40447	6.00E-05
2071.44011	1.70E-04	2071.44011	6.00E-05
2070.47575	1.40E-04	2070.47575	6.00E-05
2069.5114	1.10E-04	2069.5114	6.00E-05
2068.54704	1.00E-04	2068.54704	6.00E-05
2067.58268	1.10E-04	2067.58268	5.00E-05
2066.61832	1.20E-04	2066.61832	6.00E-05
2065.65397	1.30E-04	2065.65397	6.00E-05
2064.68961	1.20E-04	2064.68961	6.00E-05
2063.72525	6.00E-05	2063.72525	7.00E-05
2062.76089	3.00E-05	2062.76089	6.00E-05
2061.79654	6.00E-05	2061.79654	6.00E-05
2060.83218	1.00E-04	2060.83218	6.00E-05
2059.86782	1.00E-04	2059.86782	5.00E-05
2058.90346	9.00E-05	2058.90346	5.00E-05
2057.93911	1.10E-04	2057.93911	5.00E-05
2056.97475	1.50E-04	2056.97475	5.00E-05
2056.01039	1.80E-04	2056.01039	4.00E-05
2055.04603	2.00E-04	2055.04603	4.00E-05
2054.08167	2.10E-04	2054.08167	4.00E-05
2053.11732	1.90E-04	2053.11732	4.00E-05
2052.15296	1.70E-04	2052.15296	4.00E-05
2051.1886	1.90E-04	2051.1886	4.00E-05
2050.22424	2.20E-04	2050.22424	4.00E-05
2049.25989	2.30E-04	2049.25989	5.00E-05
2048.29553	2.20E-04	2048.29553	5.00E-05
2047.33117	2.00E-04	2047.33117	5.00E-05
2046.36681	1.60E-04	2046.36681	6.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2045.40246	1.20E-04	2045.40246	6.00E-05
2044.4381	1.10E-04	2044.4381	6.00E-05
2043.47374	1.20E-04	2043.47374	6.00E-05
2042.50938	1.40E-04	2042.50938	5.00E-05
2041.54503	1.60E-04	2041.54503	5.00E-05
2040.58067	1.70E-04	2040.58067	4.00E-05
2039.61631	1.60E-04	2039.61631	3.00E-05
2038.65195	1.40E-04	2038.65195	3.00E-05
2037.6876	1.40E-04	2037.6876	3.00E-05
2036.72324	1.80E-04	2036.72324	3.00E-05
2035.75888	1.90E-04	2035.75888	3.00E-05
2034.79452	1.80E-04	2034.79452	3.00E-05
2033.83017	1.80E-04	2033.83017	3.00E-05
2032.86581	1.80E-04	2032.86581	3.00E-05
2031.90145	1.70E-04	2031.90145	4.00E-05
2030.93709	1.40E-04	2030.93709	4.00E-05
2029.97273	1.10E-04	2029.97273	4.00E-05
2029.00838	1.20E-04	2029.00838	4.00E-05
2028.04402	1.40E-04	2028.04402	5.00E-05
2027.07966	1.30E-04	2027.07966	5.00E-05
2026.1153	1.00E-04	2026.1153	4.00E-05
2025.15095	8.00E-05	2025.15095	4.00E-05
2024.18659	8.00E-05	2024.18659	3.00E-05
2023.22223	1.00E-04	2023.22223	2.00E-05
2022.25787	1.20E-04	2022.25787	2.00E-05
2021.29352	1.50E-04	2021.29352	2.00E-05
2020.32916	1.50E-04	2020.32916	2.00E-05
2019.3648	1.30E-04	2019.3648	2.00E-05
2018.40044	1.30E-04	2018.40044	3.00E-05
2017.43609	1.40E-04	2017.43609	3.00E-05
2016.47173	1.50E-04	2016.47173	4.00E-05
2015.50737	1.50E-04	2015.50737	4.00E-05
2014.54301	1.30E-04	2014.54301	4.00E-05
2013.57866	1.10E-04	2013.57866	4.00E-05
2012.6143	1.20E-04	2012.6143	4.00E-05
2011.64994	1.40E-04	2011.64994	4.00E-05
2010.68558	1.00E-04	2010.68558	4.00E-05
2009.72123	5.00E-05	2009.72123	4.00E-05
2008.75687	4.00E-05	2008.75687	4.00E-05
2007.79251	5.00E-05	2007.79251	3.00E-05
2006.82815	5.00E-05	2006.82815	2.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2005.8638	5.00E-05	2005.8638	2.00E-05
2004.89944	7.00E-05	2004.89944	1.00E-05
2003.93508	6.00E-05	2003.93508	1.00E-05
2002.97072	4.00E-05	2002.97072	1.00E-05
2002.00636	3.00E-05	2002.00636	0
2001.04201	2.00E-05	2001.04201	0
2000.07765	3.00E-05	2000.07765	0
1999.11329	6.00E-05	1999.11329	1.00E-05
1998.14893	9.00E-05	1998.14893	2.00E-05
1997.18458	1.30E-04	1997.18458	3.00E-05
1996.22022	1.20E-04	1996.22022	3.00E-05
1995.25586	9.00E-05	1995.25586	3.00E-05
1994.2915	7.00E-05	1994.2915	3.00E-05
1993.32715	7.00E-05	1993.32715	3.00E-05
1992.36279	7.00E-05	1992.36279	3.00E-05
1991.39843	8.00E-05	1991.39843	3.00E-05
1990.43407	7.00E-05	1990.43407	3.00E-05
1899.46972	0	1899.46972	3.00E-05
1888.50536	-3.00E-05	1888.50536	3.00E-05
1887.541	2.00E-05	1887.541	2.00E-05
1886.57664	1.00E-04	1886.57664	2.00E-05
1885.61229	1.30E-04	1885.61229	2.00E-05
1884.64793	1.10E-04	1884.64793	3.00E-05
1883.68357	7.00E-05	1883.68357	3.00E-05
1882.71921	5.00E-05	1882.71921	2.00E-05
1881.75486	4.00E-05	1881.75486	2.00E-05
1880.7905	4.00E-05	1880.7905	1.00E-05
1879.82614	7.00E-05	1879.82614	1.00E-05
1878.86178	1.10E-04	1878.86178	2.00E-05
1877.89742	1.20E-04	1877.89742	3.00E-05
1876.93307	9.00E-05	1876.93307	3.00E-05
1875.96871	4.00E-05	1875.96871	3.00E-05
1875.00435	2.00E-05	1875.00435	3.00E-05
1874.03999	6.00E-05	1874.03999	3.00E-05
1873.07564	8.00E-05	1873.07564	2.00E-05
1872.11128	9.00E-05	1872.11128	2.00E-05
1871.14692	7.00E-05	1871.14692	2.00E-05
1870.18256	3.00E-05	1870.18256	2.00E-05
1869.21821	0	1869.21821	3.00E-05
1868.25385	2.00E-05	1868.25385	4.00E-05
1867.28949	6.00E-05	1867.28949	5.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1966.32513	8.00E-05	1966.32513	6.00E-05
1965.36078	7.00E-05	1965.36078	6.00E-05
1964.39642	8.00E-05	1964.39642	6.00E-05
1963.43206	9.00E-05	1963.43206	5.00E-05
1962.4677	7.00E-05	1962.4677	4.00E-05
1961.50335	5.00E-05	1961.50335	5.00E-05
1960.53899	7.00E-05	1960.53899	5.00E-05
1959.57463	1.00E-04	1959.57463	5.00E-05
1958.61027	9.00E-05	1958.61027	4.00E-05
1957.64592	6.00E-05	1957.64592	3.00E-05
1956.68156	7.00E-05	1956.68156	2.00E-05
1955.7172	9.00E-05	1955.7172	2.00E-05
1954.75284	1.00E-04	1954.75284	3.00E-05
1953.78849	9.00E-05	1953.78849	4.00E-05
1952.82413	6.00E-05	1952.82413	4.00E-05
1951.85977	5.00E-05	1951.85977	4.00E-05
1950.89541	7.00E-05	1950.89541	3.00E-05
1949.93105	9.00E-05	1949.93105	2.00E-05
1948.9667	9.00E-05	1948.9667	2.00E-05
1948.00234	1.00E-04	1948.00234	2.00E-05
1947.03798	1.10E-04	1947.03798	2.00E-05
1946.07362	1.40E-04	1946.07362	3.00E-05
1945.10927	1.70E-04	1945.10927	3.00E-05
1944.14491	1.90E-04	1944.14491	4.00E-05
1943.18055	1.60E-04	1943.18055	5.00E-05
1942.21619	1.00E-04	1942.21619	6.00E-05
1941.25184	4.00E-05	1941.25184	6.00E-05
1940.28748	4.00E-05	1940.28748	6.00E-05
1939.32312	8.00E-05	1939.32312	5.00E-05
1938.35876	1.50E-04	1938.35876	3.00E-05
1937.39441	2.10E-04	1937.39441	3.00E-05
1936.43005	2.10E-04	1936.43005	3.00E-05
1935.46569	1.70E-04	1935.46569	3.00E-05
1934.50133	1.20E-04	1934.50133	4.00E-05
1933.53698	1.00E-04	1933.53698	5.00E-05
1932.57262	1.00E-04	1932.57262	5.00E-05
1931.60826	1.00E-04	1931.60826	5.00E-05
1930.6439	8.00E-05	1930.6439	5.00E-05
1929.67955	7.00E-05	1929.67955	5.00E-05
1928.71519	7.00E-05	1928.71519	5.00E-05
1927.75083	9.00E-05	1927.75083	5.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1926.78647	1.10E-04	1926.78647	4.00E-05
1925.82211	1.00E-04	1925.82211	4.00E-05
1924.85776	9.00E-05	1924.85776	4.00E-05
1923.8934	1.10E-04	1923.8934	5.00E-05
1922.92904	1.40E-04	1922.92904	5.00E-05
1921.96468	1.50E-04	1921.96468	6.00E-05
1921.00033	1.40E-04	1921.00033	5.00E-05
1920.03597	1.60E-04	1920.03597	6.00E-05
1919.07161	1.80E-04	1919.07161	7.00E-05
1918.10725	1.50E-04	1918.10725	8.00E-05
1917.1429	1.20E-04	1917.1429	8.00E-05
1916.17854	1.40E-04	1916.17854	8.00E-05
1915.21418	1.70E-04	1915.21418	8.00E-05
1914.24982	1.90E-04	1914.24982	6.00E-05
1913.28547	2.00E-04	1913.28547	4.00E-05
1912.32111	2.20E-04	1912.32111	4.00E-05
1911.35675	2.50E-04	1911.35675	5.00E-05
1910.39239	2.50E-04	1910.39239	6.00E-05
1909.42804	2.10E-04	1909.42804	6.00E-05
1908.46368	1.90E-04	1908.46368	7.00E-05
1907.49932	2.00E-04	1907.49932	6.00E-05
1906.53496	2.20E-04	1906.53496	6.00E-05
1905.57061	2.30E-04	1905.57061	5.00E-05
1904.60625	2.30E-04	1904.60625	5.00E-05
1903.64189	2.60E-04	1903.64189	4.00E-05
1902.67753	2.90E-04	1902.67753	4.00E-05
1901.71317	3.10E-04	1901.71317	4.00E-05
1900.74882	2.90E-04	1900.74882	3.00E-05
1899.78446	2.50E-04	1899.78446	3.00E-05
1898.8201	2.20E-04	1898.8201	3.00E-05
1897.85574	2.20E-04	1897.85574	3.00E-05
1896.89139	2.10E-04	1896.89139	4.00E-05
1895.92703	2.00E-04	1895.92703	5.00E-05
1894.96267	2.00E-04	1894.96267	6.00E-05
1893.99831	2.20E-04	1893.99831	6.00E-05
1893.03396	2.30E-04	1893.03396	5.00E-05
1892.0696	2.20E-04	1892.0696	5.00E-05
1891.10524	2.00E-04	1891.10524	5.00E-05
1890.14088	1.90E-04	1890.14088	6.00E-05
1889.17653	1.70E-04	1889.17653	7.00E-05
1888.21217	1.70E-04	1888.21217	8.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1887.24781	1.50E-04	1887.24781	8.00E-05
1886.28345	1.40E-04	1886.28345	7.00E-05
1885.3191	1.50E-04	1885.3191	5.00E-05
1884.35474	1.60E-04	1884.35474	4.00E-05
1883.39038	1.60E-04	1883.39038	3.00E-05
1882.42602	1.60E-04	1882.42602	3.00E-05
1881.46167	1.50E-04	1881.46167	3.00E-05
1880.49731	1.30E-04	1880.49731	4.00E-05
1879.53295	1.10E-04	1879.53295	4.00E-05
1878.56859	1.40E-04	1878.56859	4.00E-05
1877.60424	1.80E-04	1877.60424	4.00E-05
1876.63988	1.60E-04	1876.63988	3.00E-05
1875.67552	1.10E-04	1875.67552	3.00E-05
1874.71116	8.00E-05	1874.71116	3.00E-05
1873.7468	8.00E-05	1873.7468	2.00E-05
1872.78245	8.00E-05	1872.78245	1.00E-05
1871.81809	1.00E-04	1871.81809	1.00E-05
1870.85373	1.40E-04	1870.85373	2.00E-05
1869.88937	1.80E-04	1869.88937	6.00E-05
1868.92502	1.80E-04	1868.92502	9.00E-05
1867.96066	1.40E-04	1867.96066	1.20E-04
1866.9963	1.00E-04	1866.9963	1.30E-04
1866.03194	8.00E-05	1866.03194	1.20E-04
1865.06759	8.00E-05	1865.06759	9.00E-05
1864.10323	9.00E-05	1864.10323	6.00E-05
1863.13887	1.00E-04	1863.13887	4.00E-05
1862.17451	1.10E-04	1862.17451	4.00E-05
1861.21016	9.00E-05	1861.21016	4.00E-05
1860.2458	8.00E-05	1860.2458	4.00E-05
1859.28144	8.00E-05	1859.28144	4.00E-05
1858.31708	8.00E-05	1858.31708	4.00E-05
1857.35273	4.00E-05	1857.35273	4.00E-05
1856.38837	2.00E-05	1856.38837	4.00E-05
1855.42401	5.00E-05	1855.42401	5.00E-05
1854.45965	8.00E-05	1854.45965	5.00E-05
1853.4953	9.00E-05	1853.4953	5.00E-05
1852.53094	9.00E-05	1852.53094	5.00E-05
1851.56658	7.00E-05	1851.56658	4.00E-05
1850.60222	6.00E-05	1850.60222	4.00E-05
1849.63786	7.00E-05	1849.63786	4.00E-05
1848.67351	1.00E-04	1848.67351	4.00E-05

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1847.70915	1.10E-04	1847.70915	2.00E-05
1846.74479	1.20E-04	1846.74479	1.00E-05
1845.78043	1.40E-04	1845.78043	4.00E-05
1844.81608	1.00E-04	1844.81608	8.00E-05
1843.85172	6.00E-05	1843.85172	1.10E-04
1842.88736	7.00E-05	1842.88736	1.30E-04
1841.923	8.00E-05	1841.923	1.30E-04
1840.95865	7.00E-05	1840.95865	1.10E-04
1839.99429	7.00E-05	1839.99429	6.00E-05
1839.02993	9.00E-05	1839.02993	3.00E-05
1838.06557	9.00E-05	1838.06557	4.00E-05
1837.10122	1.00E-04	1837.10122	4.00E-05
1836.13686	1.00E-04	1836.13686	4.00E-05
1835.1725	9.00E-05	1835.1725	4.00E-05
1834.20814	6.00E-05	1834.20814	3.00E-05
1833.24379	3.00E-05	1833.24379	2.00E-05
1832.27943	3.00E-05	1832.27943	1.00E-05
1831.31507	6.00E-05	1831.31507	4.00E-05
1830.35071	1.00E-04	1830.35071	7.00E-05
1829.38636	1.20E-04	1829.38636	8.00E-05
1828.422	1.10E-04	1828.422	8.00E-05
1827.45764	9.00E-05	1827.45764	9.00E-05
1826.49328	1.00E-04	1826.49328	8.00E-05
1825.52893	1.10E-04	1825.52893	7.00E-05
1824.56457	9.00E-05	1824.56457	6.00E-05
1823.60021	7.00E-05	1823.60021	7.00E-05
1822.63585	3.00E-05	1822.63585	7.00E-05
1821.67149	0	1821.67149	6.00E-05
1820.70714	1.00E-05	1820.70714	3.00E-05
1819.74278	3.00E-05	1819.74278	2.00E-05
1818.77842	5.00E-05	1818.77842	3.00E-05
1817.81406	8.00E-05	1817.81406	3.00E-05
1816.84971	9.00E-05	1816.84971	3.00E-05
1815.88535	6.00E-05	1815.88535	3.00E-05
1814.92099	2.00E-05	1814.92099	2.00E-05
1813.95663	1.00E-05	1813.95663	1.00E-05
1812.99228	1.00E-05	1812.99228	1.00E-05
1812.02792	3.00E-05	1812.02792	3.00E-05
1811.06356	2.00E-05	1811.06356	4.00E-05
1810.0992	2.00E-05	1810.0992	6.00E-05
1809.13485	5.00E-05	1809.13485	6.00E-05



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1808.17049	8.00E-05	1808.17049	6.00E-05
1807.20613	8.00E-05	1807.20613	5.00E-05
1806.24177	6.00E-05	1806.24177	4.00E-05
1805.27742	5.00E-05	1805.27742	2.00E-05
1804.31306	4.00E-05	1804.31306	2.00E-05
1803.3487	4.00E-05	1803.3487	1.00E-05
1802.38434	5.00E-05	1802.38434	2.00E-05
1801.41999	6.00E-05	1801.41999	3.00E-05
1800.45563	7.00E-05	1800.45563	5.00E-05
1799.49127	8.00E-05	1799.49127	7.00E-05
1798.52691	1.10E-04	1798.52691	7.00E-05
1797.56255	1.10E-04	1797.56255	6.00E-05
1796.5982	7.00E-05	1796.5982	5.00E-05
1795.63384	4.00E-05	1795.63384	2.00E-05
1794.66948	6.00E-05	1794.66948	2.00E-05
1793.70512	1.00E-04	1793.70512	6.00E-05
1792.74077	1.10E-04	1792.74077	1.10E-04
1791.77641	9.00E-05	1791.77641	1.40E-04
1790.81205	6.00E-05	1790.81205	1.60E-04
1789.84769	4.00E-05	1789.84769	1.50E-04
1788.88334	4.00E-05	1788.88334	1.10E-04
1787.91898	2.00E-05	1787.91898	5.00E-05
1786.95462	0	1786.95462	2.00E-05
1785.99026	2.00E-05	1785.99026	4.00E-05
1785.02591	5.00E-05	1785.02591	5.00E-05
1784.06155	7.00E-05	1784.06155	6.00E-05
1783.09719	1.00E-04	1783.09719	7.00E-05
1782.13283	1.20E-04	1782.13283	8.00E-05
1781.16848	1.10E-04	1781.16848	8.00E-05
1780.20412	1.00E-04	1780.20412	8.00E-05
1779.23976	1.30E-04	1779.23976	7.00E-05
1778.2754	1.70E-04	1778.2754	8.00E-05
1777.31105	1.80E-04	1777.31105	7.00E-05
1776.34669	1.60E-04	1776.34669	5.00E-05
1775.38233	1.50E-04	1775.38233	2.00E-05
1774.41797	1.60E-04	1774.41797	4.00E-05
1773.45362	1.70E-04	1773.45362	9.00E-05
1772.48926	1.60E-04	1772.48926	1.40E-04
1771.5249	1.40E-04	1771.5249	1.60E-04
1770.56054	1.40E-04	1770.56054	1.70E-04
1769.59618	1.70E-04	1769.59618	1.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1768.63183	1.80E-04	1768.63183	1.60E-04
1767.66747	1.50E-04	1767.66747	1.30E-04
1766.70311	1.30E-04	1766.70311	1.20E-04
1765.73875	1.20E-04	1765.73875	1.10E-04
1764.7744	9.00E-05	1764.7744	8.00E-05
1763.81004	9.00E-05	1763.81004	5.00E-05
1762.84568	1.70E-04	1762.84568	6.00E-05
1761.88132	2.20E-04	1761.88132	9.00E-05
1760.91697	1.80E-04	1760.91697	1.10E-04
1759.95261	1.50E-04	1759.95261	1.20E-04
1758.98825	1.80E-04	1758.98825	1.40E-04
1758.02389	2.20E-04	1758.02389	1.50E-04
1757.05954	2.20E-04	1757.05954	1.60E-04
1756.09518	2.30E-04	1756.09518	1.80E-04
1755.13082	2.60E-04	1755.13082	2.00E-04
1754.16646	2.80E-04	1754.16646	2.00E-04
1753.20211	2.70E-04	1753.20211	2.10E-04
1752.23775	2.80E-04	1752.23775	2.40E-04
1751.27339	3.00E-04	1751.27339	2.80E-04
1750.30903	3.60E-04	1750.30903	3.50E-04
1749.34468	4.40E-04	1749.34468	4.30E-04
1748.38032	4.70E-04	1748.38032	4.80E-04
1747.41596	4.50E-04	1747.41596	5.00E-04
1746.4516	4.10E-04	1746.4516	4.90E-04
1745.48724	4.20E-04	1745.48724	5.10E-04
1744.52289	4.50E-04	1744.52289	5.30E-04
1743.55853	4.50E-04	1743.55853	5.40E-04
1742.59417	4.60E-04	1742.59417	5.50E-04
1741.62981	5.20E-04	1741.62981	6.00E-04
1740.66546	5.80E-04	1740.66546	6.50E-04
1739.7011	5.70E-04	1739.7011	6.90E-04
1738.73674	5.60E-04	1738.73674	6.90E-04
1737.77238	5.90E-04	1737.77238	6.60E-04
1736.80803	6.50E-04	1736.80803	6.30E-04
1735.84367	7.40E-04	1735.84367	6.50E-04
1734.87931	8.40E-04	1734.87931	7.10E-04
1733.91495	8.70E-04	1733.91495	7.90E-04
1732.9506	8.40E-04	1732.9506	8.60E-04
1731.98624	8.30E-04	1731.98624	9.00E-04
1731.02188	8.40E-04	1731.02188	8.90E-04
1730.05752	8.40E-04	1730.05752	8.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1729.09317	8.60E-04	1729.09317	7.50E-04
1728.12881	8.90E-04	1728.12881	7.30E-04
1727.16445	9.10E-04	1727.16445	7.20E-04
1726.20009	9.50E-04	1726.20009	7.10E-04
1725.23574	9.90E-04	1725.23574	7.00E-04
1724.27138	1.00E-03	1724.27138	7.10E-04
1723.30702	1.00E-03	1723.30702	7.30E-04
1722.34266	0.00105	1722.34266	7.30E-04
1721.3783	0.00112	1721.3783	7.00E-04
1720.41395	0.0012	1720.41395	7.00E-04
1719.44959	0.00128	1719.44959	7.40E-04
1718.48523	0.00133	1718.48523	8.10E-04
1717.52087	0.00133	1717.52087	8.80E-04
1716.55652	0.00136	1716.55652	9.50E-04
1715.59216	0.0014	1715.59216	1.00E-03
1714.6278	0.00141	1714.6278	1.00E-03
1713.66344	0.00143	1713.66344	9.50E-04
1712.69909	0.00145	1712.69909	9.20E-04
1711.73473	0.00146	1711.73473	9.10E-04
1710.77037	0.00146	1710.77037	8.90E-04
1709.80601	0.0015	1709.80601	8.70E-04
1708.84166	0.00158	1708.84166	8.90E-04
1707.8773	0.00167	1707.8773	9.40E-04
1706.91294	0.00175	1706.91294	0.00102
1705.94858	0.00183	1705.94858	0.00111
1704.98423	0.00192	1704.98423	0.00119
1704.01987	0.00204	1704.01987	0.0012
1703.05551	0.00216	1703.05551	0.0012
1702.09115	0.00231	1702.09115	0.00129
1701.1268	0.00249	1701.1268	0.00146
1700.16244	0.00262	1700.16244	0.00163
1699.19808	0.0027	1699.19808	0.00176
1698.23372	0.00283	1698.23372	0.00191
1697.26937	0.00302	1697.26937	0.00205
1696.30501	0.00325	1696.30501	0.00212
1695.34065	0.00352	1695.34065	0.0022
1694.37629	0.00379	1694.37629	0.00233
1693.41193	0.00407	1693.41193	0.00245
1692.44758	0.00438	1692.44758	0.00251
1691.48322	0.0047	1691.48322	0.00253
1690.51886	0.00506	1690.51886	0.00261

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1689.5545	0.00549	1689.5545	0.00275
1688.59015	0.00594	1688.59015	0.00286
1687.62579	0.00638	1687.62579	0.00292
1686.66143	0.00682	1686.66143	0.00304
1685.69707	0.00723	1685.69707	0.00324
1684.73272	0.0077	1684.73272	0.00347
1683.76836	0.00821	1683.76836	0.00368
1682.804	0.00859	1682.804	0.00388
1681.83964	0.00892	1681.83964	0.00403
1680.87529	0.00925	1680.87529	0.0041
1679.91093	0.0096	1679.91093	0.00411
1678.94657	0.00994	1678.94657	0.00415
1677.98221	0.01026	1677.98221	0.00425
1677.01786	0.01056	1677.01786	0.00442
1676.0535	0.01083	1676.0535	0.00459
1675.08914	0.0111	1675.08914	0.00476
1674.12478	0.01136	1674.12478	0.00493
1673.16043	0.01157	1673.16043	0.0051
1672.19607	0.01175	1672.19607	0.00523
1671.23171	0.01194	1671.23171	0.00536
1670.26735	0.01218	1670.26735	0.00554
1669.30299	0.01236	1669.30299	0.00574
1668.33864	0.01241	1668.33864	0.00593
1667.37428	0.01245	1667.37428	0.00608
1666.40992	0.01251	1666.40992	0.0062
1665.44556	0.01256	1665.44556	0.0063
1664.48121	0.01261	1664.48121	0.00643
1663.51685	0.01262	1663.51685	0.0066
1662.55249	0.01256	1662.55249	0.00679
1661.58813	0.01253	1661.58813	0.00695
1660.62378	0.01252	1660.62378	0.00709
1659.65942	0.01248	1659.65942	0.00721
1658.69506	0.01241	1658.69506	0.00728
1657.7307	0.01231	1657.7307	0.00732
1656.76635	0.0122	1656.76635	0.00734
1655.80199	0.01211	1655.80199	0.00738
1654.83763	0.01206	1654.83763	0.00749
1653.87327	0.01196	1653.87327	0.00765
1652.90892	0.01155	1652.90892	0.00778
1651.94456	0.0112	1651.94456	0.00785
1650.9802	0.01104	1650.9802	0.00785

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1650.01584	0.01088	1650.01584	0.00777
1649.05149	0.0107	1649.05149	0.00762
1648.08713	0.01053	1648.08713	0.00753
1647.12277	0.01033	1647.12277	0.00753
1646.15841	0.01005	1646.15841	0.00755
1645.19406	0.00975	1645.19406	0.00754
1644.2297	0.00953	1644.2297	0.0075
1643.26534	0.00933	1643.26534	0.00744
1642.30098	0.00914	1642.30098	0.00736
1641.33662	0.00897	1641.33662	0.00728
1640.37227	0.00878	1640.37227	0.00723
1639.40791	0.00861	1639.40791	0.00718
1638.44355	0.00848	1638.44355	0.00712
1637.47919	0.00839	1637.47919	0.00709
1636.51484	0.00833	1636.51484	0.00708
1635.55048	0.00812	1635.55048	0.00706
1634.58612	0.00786	1634.58612	0.00699
1633.62176	0.00775	1633.62176	0.00689
1632.65741	0.00766	1632.65741	0.00673
1631.69305	0.00757	1631.69305	0.00654
1630.72869	0.00754	1630.72869	0.00632
1629.76433	0.00756	1629.76433	0.00615
1628.79998	0.0076	1628.79998	0.00599
1627.83562	0.00768	1627.83562	0.00582
1626.87126	0.0078	1626.87126	0.00563
1625.9069	0.00793	1625.9069	0.00543
1624.94255	0.00809	1624.94255	0.00526
1623.97819	0.00833	1623.97819	0.00509
1623.01383	0.00867	1623.01383	0.00492
1622.04947	0.00904	1622.04947	0.00477
1621.08512	0.00942	1621.08512	0.0046
1620.12076	0.00984	1620.12076	0.00441
1619.1564	0.0103	1619.1564	0.00424
1618.19204	0.01077	1618.19204	0.00413
1617.22768	0.01134	1617.22768	0.00406
1616.26333	0.01207	1616.26333	0.00399
1615.29897	0.01267	1615.29897	0.00391
1614.33461	0.01314	1614.33461	0.00381
1613.37025	0.01356	1613.37025	0.00369
1612.4059	0.01393	1612.4059	0.00356
1611.44154	0.01423	1611.44154	0.00345

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1610.47718	0.01442	1610.47718	0.00338
1609.51282	0.01446	1609.51282	0.00331
1608.54847	0.01434	1608.54847	0.00324
1607.58411	0.01405	1607.58411	0.00317
1606.61975	0.01364	1606.61975	0.00309
1605.65539	0.01319	1605.65539	0.00301
1604.69104	0.01274	1604.69104	0.00293
1603.72668	0.01224	1603.72668	0.00286
1602.76232	0.0117	1602.76232	0.0028
1601.79796	0.01116	1601.79796	0.00274
1600.83361	0.01069	1600.83361	0.00268
1599.86925	0.01028	1599.86925	0.00262
1598.90489	0.00995	1598.90489	0.00257
1597.94053	0.00974	1597.94053	0.00251
1596.97618	0.00964	1596.97618	0.00246
1596.01182	0.00965	1596.01182	0.00242
1595.04746	0.00978	1595.04746	0.00238
1594.0831	0.01006	1594.0831	0.00236
1593.11874	0.01045	1593.11874	0.00233
1592.15439	0.01094	1592.15439	0.00232
1591.19003	0.01149	1591.19003	0.00231
1590.22567	0.01205	1590.22567	0.00231
1589.26131	0.01255	1589.26131	0.00231
1588.29696	0.0129	1588.29696	0.00232
1587.3326	0.01306	1587.3326	0.00233
1586.36824	0.01298	1586.36824	0.00232
1585.40388	0.01268	1585.40388	0.00232
1584.43953	0.01221	1584.43953	0.00231
1583.47517	0.01161	1583.47517	0.00231
1582.51081	0.01093	1582.51081	0.00231
1581.54645	0.01025	1581.54645	0.00231
1580.5821	0.0096	1580.5821	0.00229
1579.61774	0.00896	1579.61774	0.00225
1578.65338	0.00838	1578.65338	0.00224
1577.68902	0.00792	1577.68902	0.00227
1576.72467	0.00742	1576.72467	0.00233
1575.76031	0.00678	1575.76031	0.00239
1574.79595	0.00634	1574.79595	0.00244
1573.83159	0.00611	1573.83159	0.00246
1572.86724	0.00597	1572.86724	0.00243
1571.90288	0.00595	1571.90288	0.00241

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1570.93852	0.00601	1570.93852	0.00244
1569.97416	0.00608	1569.97416	0.00252
1569.00981	0.00618	1569.00981	0.00259
1568.04545	0.00635	1568.04545	0.00265
1567.08109	0.00654	1567.08109	0.00271
1566.11673	0.00676	1566.11673	0.00276
1565.15237	0.00706	1565.15237	0.0028
1564.18802	0.00742	1564.18802	0.00285
1563.22366	0.00779	1563.22366	0.00288
1562.2593	0.00814	1562.2593	0.0029
1561.29494	0.0085	1561.29494	0.003
1560.33059	0.0089	1560.33059	0.00319
1559.36623	0.00943	1559.36623	0.00342
1558.40187	0.01001	1558.40187	0.00364
1557.43751	0.01046	1557.43751	0.00378
1556.47316	0.01077	1556.47316	0.00385
1555.5088	0.01105	1555.5088	0.00385
1554.54444	0.01143	1554.54444	0.00383
1553.58008	0.01188	1553.58008	0.00385
1552.61573	0.01228	1552.61573	0.00393
1551.65137	0.01266	1551.65137	0.00403
1550.68701	0.01307	1550.68701	0.0041
1549.72265	0.01351	1549.72265	0.00414
1548.7583	0.01389	1548.7583	0.00418
1547.79394	0.01423	1547.79394	0.00423
1546.82958	0.01457	1546.82958	0.00427
1545.86522	0.01491	1545.86522	0.00429
1544.90087	0.0152	1544.90087	0.00431
1543.93651	0.01541	1543.93651	0.00435
1542.97215	0.01558	1542.97215	0.00438
1542.00779	0.0157	1542.00779	0.00441
1541.04343	0.01579	1541.04343	0.00445
1540.07908	0.01578	1540.07908	0.0045
1539.11472	0.01553	1539.11472	0.00451
1538.15036	0.01522	1538.15036	0.00445
1537.186	0.01498	1537.186	0.00433
1536.22165	0.01473	1536.22165	0.0042
1535.25729	0.01447	1535.25729	0.00409
1534.29293	0.01414	1534.29293	0.00402
1533.32857	0.01361	1533.32857	0.00399
1532.36422	0.01308	1532.36422	0.00396

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1531.39986	0.01266	1531.39986	0.00388
1530.4355	0.01224	1530.4355	0.00379
1529.47114	0.0118	1529.47114	0.00367
1528.50679	0.01132	1528.50679	0.00357
1527.54243	0.01081	1527.54243	0.00351
1526.57807	0.01034	1526.57807	0.00346
1525.61371	0.00986	1525.61371	0.00341
1524.64936	0.0094	1524.64936	0.00333
1523.685	0.00911	1523.685	0.00327
1522.72064	0.00886	1522.72064	0.00325
1521.75628	0.00849	1521.75628	0.00323
1520.79193	0.00801	1520.79193	0.00319
1519.82757	0.00764	1519.82757	0.00314
1518.86321	0.00743	1518.86321	0.0031
1517.89885	0.00727	1517.89885	0.00303
1516.9345	0.00711	1516.9345	0.00294
1515.97014	0.00704	1515.97014	0.00284
1515.00578	0.00706	1515.00578	0.00275
1514.04142	0.00715	1514.04142	0.00266
1513.07706	0.00733	1513.07706	0.00253
1512.11271	0.00768	1512.11271	0.00241
1511.14835	0.00818	1511.14835	0.00232
1510.18399	0.00877	1510.18399	0.00223
1509.21963	0.00951	1509.21963	0.00217
1508.25528	0.01037	1508.25528	0.00216
1507.29092	0.01145	1507.29092	0.00217
1506.32656	0.01268	1506.32656	0.00216
1505.3622	0.01344	1505.3622	0.0021
1504.39785	0.01369	1504.39785	0.00199
1503.43349	0.01365	1503.43349	0.00182
1502.46913	0.01338	1502.46913	0.00161
1501.50477	0.01294	1501.50477	0.00145
1500.54042	0.01252	1500.54042	0.00135
1499.57606	0.0122	1499.57606	0.00128
1498.6117	0.01203	1498.6117	0.00123
1497.64734	0.01208	1497.64734	0.00121
1496.68299	0.01248	1496.68299	0.0012
1495.71863	0.01338	1495.71863	0.00119
1494.75427	0.01462	1494.75427	0.00115
1493.78991	0.01619	1493.78991	0.00112
1492.82556	0.01818	1492.82556	0.00112



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1491.8612	0.02042	1491.8612	0.00114
1490.89684	0.02287	1490.89684	0.00119
1489.93248	0.02521	1489.93248	0.00124
1488.96812	0.02654	1488.96812	0.00127
1488.00377	0.02658	1488.00377	0.00125
1487.03941	0.02533	1487.03941	0.00116
1486.07505	0.02326	1486.07505	0.00102
1485.11069	0.02101	1485.11069	8.70E-04
1484.14634	0.01874	1484.14634	7.50E-04
1483.18198	0.01669	1483.18198	6.50E-04
1482.21762	0.01501	1482.21762	5.80E-04
1481.25326	0.01354	1481.25326	5.40E-04
1480.28891	0.01223	1480.28891	5.10E-04
1479.32455	0.01115	1479.32455	4.90E-04
1478.36019	0.01027	1478.36019	5.00E-04
1477.39583	0.00952	1477.39583	5.20E-04
1476.43148	0.00878	1476.43148	5.40E-04
1475.46712	0.00815	1475.46712	5.80E-04
1474.50276	0.00773	1474.50276	6.70E-04
1473.5384	0.00732	1473.5384	7.80E-04
1472.57405	0.00686	1472.57405	8.80E-04
1471.60969	0.00652	1471.60969	9.60E-04
1470.64533	0.00633	1470.64533	0.00105
1469.68097	0.00623	1469.68097	0.00112
1468.71662	0.00618	1468.71662	0.00115
1467.75226	0.00619	1467.75226	0.00117
1466.7879	0.00625	1466.7879	0.00124
1465.82354	0.00634	1465.82354	0.00133
1464.85918	0.00641	1464.85918	0.0014
1463.89483	0.00646	1463.89483	0.00145
1462.93047	0.00653	1462.93047	0.00149
1461.96611	0.0066	1461.96611	0.00152
1461.00175	0.00671	1461.00175	0.00154
1460.0374	0.0069	1460.0374	0.00157
1459.07304	0.00711	1459.07304	0.00166
1458.10868	0.00728	1458.10868	0.00178
1457.14432	0.0074	1457.14432	0.0019
1456.17997	0.00757	1456.17997	0.00199
1455.21561	0.00775	1455.21561	0.00204
1454.25125	0.00787	1454.25125	0.00205
1453.28689	0.00797	1453.28689	0.00201

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1452.32254	0.00813	1452.32254	0.00195
1451.35818	0.00831	1451.35818	0.00192
1450.39382	0.00842	1450.39382	0.0019
1449.42946	0.00843	1449.42946	0.0019
1448.46511	0.00836	1448.46511	0.00189
1447.50075	0.00828	1447.50075	0.00187
1446.53639	0.0083	1446.53639	0.00185
1445.57203	0.00833	1445.57203	0.00181
1444.60768	0.00825	1444.60768	0.00176
1443.64332	0.00817	1443.64332	0.00169
1442.67896	0.00811	1442.67896	0.00163
1441.7146	0.00802	1441.7146	0.00159
1440.75025	0.00792	1440.75025	0.00155
1439.78589	0.00779	1439.78589	0.00151
1438.82153	0.0076	1438.82153	0.00151
1437.85717	0.00741	1437.85717	0.00151
1436.89281	0.0072	1436.89281	0.00149
1435.92846	0.00703	1435.92846	0.00144
1434.9641	0.00695	1434.9641	0.00137
1433.99974	0.00689	1433.99974	0.00129
1433.03538	0.00685	1433.03538	0.00119
1432.07103	0.00684	1432.07103	0.00111
1431.10667	0.00684	1431.10667	0.00106
1430.14231	0.0068	1430.14231	0.00103
1429.17795	0.00673	1429.17795	9.80E-04
1428.2136	0.0067	1428.2136	9.40E-04
1427.24924	0.00669	1427.24924	9.00E-04
1426.28488	0.00673	1426.28488	8.70E-04
1425.32052	0.00681	1425.32052	8.70E-04
1424.35617	0.00694	1424.35617	8.90E-04
1423.39181	0.00709	1423.39181	9.00E-04
1422.42745	0.00723	1422.42745	9.10E-04
1421.46309	0.00738	1421.46309	9.40E-04
1420.49874	0.00756	1420.49874	9.90E-04
1419.53438	0.00777	1419.53438	0.00103
1418.57002	0.00789	1418.57002	0.00108
1417.60566	0.00793	1417.60566	0.00112
1416.64131	0.00795	1416.64131	0.00112
1415.67695	0.00796	1415.67695	0.00106
1414.71259	0.00792	1414.71259	9.70E-04
1413.74823	0.00783	1413.74823	9.10E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1412.78387	0.00768	1412.78387	8.70E-04
1411.81952	0.00744	1411.81952	8.70E-04
1410.85516	0.00713	1410.85516	9.00E-04
1409.8908	0.00679	1409.8908	9.40E-04
1408.92644	0.00642	1408.92644	9.70E-04
1407.96209	0.00605	1407.96209	9.70E-04
1406.99773	0.00577	1406.99773	9.60E-04
1406.03337	0.00554	1406.03337	9.50E-04
1405.06901	0.00522	1405.06901	9.50E-04
1404.10466	0.00484	1404.10466	9.40E-04
1403.1403	0.00451	1403.1403	9.20E-04
1402.17594	0.00425	1402.17594	8.90E-04
1401.21158	0.00406	1401.21158	8.80E-04
1400.24723	0.00387	1400.24723	8.70E-04
1399.28287	0.00358	1399.28287	8.80E-04
1398.31851	0.00331	1398.31851	8.80E-04
1397.35415	0.0032	1397.35415	9.00E-04
1396.3898	0.00313	1396.3898	9.30E-04
1395.42544	0.003	1395.42544	9.60E-04
1394.46108	0.00285	1394.46108	9.90E-04
1393.49672	0.00277	1393.49672	0.00102
1392.53237	0.00276	1392.53237	0.00103
1391.56801	0.00278	1391.56801	0.00102
1390.60365	0.00284	1390.60365	1.00E-03
1389.63929	0.00291	1389.63929	0.00101
1388.67494	0.00301	1388.67494	0.00106
1387.71058	0.00308	1387.71058	0.00111
1386.74622	0.0031	1386.74622	0.00115
1385.78186	0.0031	1385.78186	0.00118
1384.8175	0.00309	1384.8175	0.00118
1383.85315	0.00307	1383.85315	0.00116
1382.88879	0.00302	1382.88879	0.00113
1381.92443	0.00296	1381.92443	0.0011
1380.96007	0.00292	1380.96007	0.00109
1379.99572	0.00295	1379.99572	0.00108
1379.03136	0.00299	1379.03136	0.00108
1378.067	0.00295	1378.067	0.00106
1377.10264	0.00287	1377.10264	0.00105
1376.13829	0.00281	1376.13829	0.00102
1375.17393	0.00277	1375.17393	9.90E-04
1374.20957	0.0027	1374.20957	9.40E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1373.24521	0.00262	1373.24521	8.90E-04
1372.28086	0.00258	1372.28086	8.30E-04
1371.3165	0.00261	1371.3165	7.70E-04
1370.35214	0.00266	1370.35214	7.00E-04
1369.38778	0.00267	1369.38778	6.40E-04
1368.42343	0.00271	1368.42343	5.90E-04
1367.45907	0.00283	1367.45907	5.50E-04
1366.49471	0.00296	1366.49471	5.10E-04
1365.53035	0.00306	1365.53035	4.80E-04
1364.566	0.00315	1364.566	4.50E-04
1363.60164	0.00321	1363.60164	4.20E-04
1362.63728	0.0032	1362.63728	3.70E-04
1361.67292	0.0031	1361.67292	3.20E-04
1360.70856	0.00293	1360.70856	2.50E-04
1359.74421	0.00275	1359.74421	1.80E-04
1358.77985	0.00263	1358.77985	1.20E-04
1357.81549	0.0026	1357.81549	7.00E-05
1356.85113	0.00265	1356.85113	4.00E-05
1355.88678	0.00271	1355.88678	2.00E-05
1354.92242	0.00277	1354.92242	0
1353.95806	0.00286	1353.95806	-1.00E-05
1352.9937	0.00297	1352.9937	-2.00E-05
1352.02935	0.00311	1352.02935	-2.00E-05
1351.06499	0.00324	1351.06499	-2.00E-05
1350.10063	0.00334	1350.10063	-1.00E-05
1349.13627	0.00345	1349.13627	-1.00E-05
1348.17192	0.00358	1348.17192	-2.00E-05
1347.20756	0.0037	1347.20756	-3.00E-05
1346.2432	0.00383	1346.2432	-4.00E-05
1345.27884	0.00399	1345.27884	-4.00E-05
1344.31449	0.00421	1344.31449	-5.00E-05
1343.35013	0.00443	1343.35013	-4.00E-05
1342.38577	0.0046	1342.38577	-2.00E-05
1341.42141	0.00477	1341.42141	1.00E-05
1340.45706	0.00497	1340.45706	4.00E-05
1339.4927	0.00522	1339.4927	7.00E-05
1338.52834	0.0055	1338.52834	9.00E-05
1337.56398	0.00579	1337.56398	1.00E-04
1336.59963	0.00609	1336.59963	1.00E-04
1335.63527	0.00644	1335.63527	1.00E-04
1334.67091	0.00684	1334.67091	1.00E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1333.70655	0.00726	1333.70655	1.00E-04
1332.74219	0.0077	1332.74219	1.10E-04
1331.77784	0.00816	1331.77784	1.40E-04
1330.81348	0.00866	1330.81348	1.70E-04
1329.84912	0.00916	1329.84912	2.10E-04
1328.88476	0.0096	1328.88476	2.50E-04
1327.92041	0.0099	1327.92041	2.90E-04
1326.95605	0.01009	1326.95605	3.10E-04
1325.99169	0.01025	1325.99169	3.30E-04
1325.02733	0.01036	1325.02733	3.60E-04
1324.06298	0.01037	1324.06298	3.80E-04
1323.09862	0.01027	1323.09862	4.10E-04
1322.13426	0.01008	1322.13426	4.40E-04
1321.1699	0.00983	1321.1699	4.70E-04
1320.20555	0.0096	1320.20555	5.00E-04
1319.24119	0.00938	1319.24119	5.20E-04
1318.27683	0.00915	1318.27683	5.30E-04
1317.31247	0.00889	1317.31247	5.30E-04
1316.34812	0.00864	1316.34812	5.40E-04
1315.38376	0.00849	1315.38376	5.50E-04
1314.4194	0.00847	1314.4194	5.70E-04
1313.45504	0.00852	1313.45504	5.90E-04
1312.49069	0.00862	1312.49069	6.20E-04
1311.52633	0.00876	1311.52633	6.50E-04
1310.56197	0.00893	1310.56197	6.90E-04
1309.59761	0.0091	1309.59761	7.10E-04
1308.63325	0.00921	1308.63325	7.20E-04
1307.6689	0.0092	1307.6689	7.30E-04
1306.70454	0.00912	1306.70454	7.40E-04
1305.74018	0.00906	1305.74018	7.40E-04
1304.77582	0.00905	1304.77582	7.40E-04
1303.81147	0.00907	1303.81147	7.50E-04
1302.84711	0.00912	1302.84711	7.60E-04
1301.88275	0.0092	1301.88275	7.70E-04
1300.91839	0.0093	1300.91839	7.80E-04
1299.95404	0.00945	1299.95404	7.90E-04
1298.98968	0.0097	1298.98968	8.00E-04
1298.02532	0.01004	1298.02532	8.20E-04
1297.06096	0.01033	1297.06096	8.50E-04
1296.09661	0.01049	1296.09661	8.60E-04
1295.13225	0.01054	1295.13225	8.70E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1294.16789	0.01049	1294.16789	8.80E-04
1293.20353	0.01028	1293.20353	8.80E-04
1292.23918	0.00991	1292.23918	8.80E-04
1291.27482	0.00947	1291.27482	8.80E-04
1290.31046	0.00905	1290.31046	8.80E-04
1289.3461	0.00871	1289.3461	8.80E-04
1288.38175	0.00844	1288.38175	8.60E-04
1287.41739	0.00824	1287.41739	8.30E-04
1286.45303	0.00804	1286.45303	8.10E-04
1285.48867	0.00778	1285.48867	7.90E-04
1284.52431	0.00754	1284.52431	7.80E-04
1283.55996	0.00736	1283.55996	7.80E-04
1282.5956	0.00717	1282.5956	7.70E-04
1281.63124	0.00699	1281.63124	7.70E-04
1280.66688	0.00685	1280.66688	7.70E-04
1279.70253	0.00671	1279.70253	7.70E-04
1278.73817	0.00661	1278.73817	7.80E-04
1277.77381	0.00656	1277.77381	7.90E-04
1276.80945	0.00654	1276.80945	7.90E-04
1275.8451	0.00652	1275.8451	8.00E-04
1274.88074	0.00652	1274.88074	8.10E-04
1273.91638	0.00658	1273.91638	8.20E-04
1272.95202	0.00665	1272.95202	8.40E-04
1271.98767	0.00673	1271.98767	8.70E-04
1271.02331	0.00685	1271.02331	9.00E-04
1270.05895	0.00706	1270.05895	9.30E-04
1269.09459	0.0074	1269.09459	9.80E-04
1268.13024	0.00779	1268.13024	0.00103
1267.16588	0.00819	1267.16588	0.00108
1266.20152	0.00867	1266.20152	0.00113
1265.23716	0.00922	1265.23716	0.00119
1264.27281	0.00983	1264.27281	0.00125
1263.30845	0.01052	1263.30845	0.00132
1262.34409	0.01131	1262.34409	0.0014
1261.37973	0.01219	1261.37973	0.00148
1260.41538	0.0132	1260.41538	0.00156
1259.45102	0.01435	1259.45102	0.00165
1258.48666	0.01556	1258.48666	0.00174
1257.5223	0.0168	1257.5223	0.00184
1256.55794	0.0181	1256.55794	0.00192
1255.59359	0.01942	1255.59359	0.002

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1254.62923	0.02072	1254.62923	0.00208
1253.66487	0.022	1253.66487	0.00215
1252.70051	0.02326	1252.70051	0.00223
1251.73616	0.02442	1251.73616	0.00232
1250.7718	0.02541	1250.7718	0.00241
1249.80744	0.02627	1249.80744	0.00248
1248.84308	0.02703	1248.84308	0.00254
1247.87873	0.02762	1247.87873	0.0026
1246.91437	0.02807	1246.91437	0.00266
1245.95001	0.0284	1245.95001	0.00271
1244.98565	0.02858	1244.98565	0.00276
1244.0213	0.02857	1244.0213	0.00278
1243.05694	0.02831	1243.05694	0.0028
1242.09258	0.02779	1242.09258	0.0028
1241.12822	0.02712	1241.12822	0.00279
1240.16387	0.02635	1240.16387	0.00277
1239.19951	0.02541	1239.19951	0.00275
1238.23515	0.02427	1238.23515	0.00271
1237.27079	0.02302	1237.27079	0.00266
1236.30644	0.02175	1236.30644	0.0026
1235.34208	0.02049	1235.34208	0.00253
1234.37772	0.01924	1234.37772	0.00246
1233.41336	0.01799	1233.41336	0.00239
1232.449	0.01671	1232.449	0.00231
1231.48465	0.01546	1231.48465	0.00224
1230.52029	0.0143	1230.52029	0.00216
1229.55593	0.01322	1229.55593	0.00209
1228.59157	0.01218	1228.59157	0.00203
1227.62722	0.01122	1227.62722	0.00196
1226.66286	0.01035	1226.66286	0.0019
1225.6985	0.00955	1225.6985	0.00182
1224.73414	0.00881	1224.73414	0.00174
1223.76979	0.00812	1223.76979	0.00166
1222.80543	0.00753	1222.80543	0.00157
1221.84107	0.00703	1221.84107	0.00149
1220.87671	0.00658	1220.87671	0.00141
1219.91236	0.00615	1219.91236	0.00134
1218.948	0.00576	1218.948	0.00126
1217.98364	0.00542	1217.98364	0.00117
1217.01928	0.0051	1217.01928	0.00108
1216.05493	0.00481	1216.05493	1.00E-03

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1215.09057	0.00458	1215.09057	9.20E-04
1214.12621	0.00443	1214.12621	8.60E-04
1213.16185	0.00434	1213.16185	8.10E-04
1212.1975	0.00426	1212.1975	7.60E-04
1211.23314	0.0042	1211.23314	7.10E-04
1210.26878	0.00421	1210.26878	6.50E-04
1209.30442	0.00427	1209.30442	5.80E-04
1208.34007	0.00433	1208.34007	5.20E-04
1207.37571	0.00436	1207.37571	4.60E-04
1206.41135	0.00435	1206.41135	4.00E-04
1205.44699	0.0043	1205.44699	3.40E-04
1204.48263	0.00422	1204.48263	2.80E-04
1203.51828	0.00411	1203.51828	2.20E-04
1202.55392	0.00396	1202.55392	1.70E-04
1201.58956	0.00377	1201.58956	1.30E-04
1200.6252	0.0036	1200.6252	8.00E-05
1199.66085	0.00341	1199.66085	5.00E-05
1198.69649	0.0032	1198.69649	2.00E-05
1197.73213	0.00303	1197.73213	0
1196.76777	0.00292	1196.76777	-3.00E-05
1195.80342	0.00282	1195.80342	-5.00E-05
1194.83906	0.00274	1194.83906	-8.00E-05
1193.8747	0.00267	1193.8747	-1.00E-04
1192.91034	0.00258	1192.91034	-1.30E-04
1191.94599	0.00252	1191.94599	-1.50E-04
1190.98163	0.00255	1190.98163	-1.70E-04
1190.01727	0.00259	1190.01727	-1.90E-04
1189.05291	0.00259	1189.05291	-2.00E-04
1188.08856	0.00257	1188.08856	-2.00E-04
1187.1242	0.00259	1187.1242	-1.90E-04
1186.15984	0.00265	1186.15984	-1.60E-04
1185.19548	0.00275	1185.19548	-1.20E-04
1184.23113	0.00288	1184.23113	-8.00E-05
1183.26677	0.00306	1183.26677	-5.00E-05
1182.30241	0.00329	1182.30241	-1.00E-05
1181.33805	0.00358	1181.33805	4.00E-05
1180.37369	0.00392	1180.37369	9.00E-05
1179.40934	0.00438	1179.40934	1.50E-04
1178.44498	0.00497	1178.44498	2.30E-04
1177.48062	0.00566	1177.48062	3.00E-04
1176.51626	0.00642	1176.51626	3.80E-04



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1175.55191	0.00726	1175.55191	4.70E-04
1174.58755	0.00816	1174.58755	5.40E-04
1173.62319	0.00908	1173.62319	6.20E-04
1172.65883	0.00991	1172.65883	6.90E-04
1171.69448	0.01056	1171.69448	7.60E-04
1170.73012	0.01103	1170.73012	8.50E-04
1169.76576	0.01128	1169.76576	9.30E-04
1168.8014	0.01117	1168.8014	9.90E-04
1167.83705	0.01068	1167.83705	0.00103
1166.87269	0.00993	1166.87269	0.00105
1165.90833	0.00908	1165.90833	0.00105
1164.94397	0.00827	1164.94397	0.00104
1163.97962	0.00759	1163.97962	0.00105
1163.01526	0.00705	1163.01526	0.00108
1162.0509	0.00657	1162.0509	0.0011
1161.08654	0.00625	1161.08654	0.00114
1160.12219	0.00636	1160.12219	0.00119
1159.15783	0.00707	1159.15783	0.00125
1158.19347	0.00836	1158.19347	0.00134
1157.22911	0.01018	1157.22911	0.00146
1156.26475	0.01234	1156.26475	0.00159
1155.3004	0.01451	1155.3004	0.00174
1154.33604	0.01629	1154.33604	0.00188
1153.37168	0.01745	1153.37168	0.00201
1152.40732	0.01799	1152.40732	0.00209
1151.44297	0.01793	1151.44297	0.00212
1150.47861	0.01733	1150.47861	0.00208
1149.51425	0.01636	1149.51425	0.00198
1148.54989	0.01509	1148.54989	0.00184
1147.58554	0.01354	1147.58554	0.00167
1146.62118	0.01188	1146.62118	0.00148
1145.65682	0.01034	1145.65682	0.00129
1144.69246	0.00898	1144.69246	0.00107
1143.72811	0.00785	1143.72811	8.10E-04
1142.76375	0.00699	1142.76375	5.30E-04
1141.79939	0.00623	1141.79939	2.90E-04
1140.83503	0.0055	1140.83503	1.40E-04
1139.87068	0.00501	1139.87068	1.00E-04
1138.90632	0.00477	1138.90632	1.90E-04
1137.94196	0.00453	1137.94196	3.80E-04
1136.9776	0.00425	1136.9776	5.90E-04

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1136.01325	0.00404	1136.01325	7.60E-04
1135.04889	0.00394	1135.04889	9.30E-04
1134.08453	0.00389	1134.08453	0.00111
1133.12017	0.00381	1133.12017	0.00132
1132.15582	0.00368	1132.15582	0.00152
1131.19146	0.00365	1131.19146	0.00171
1130.2271	0.00379	1130.2271	0.00188
1129.26274	0.00389	1129.26274	0.00202
1128.29838	0.00386	1128.29838	0.00217
1127.33403	0.00393	1127.33403	0.00237
1126.36967	0.00418	1126.36967	0.00261
1125.40531	0.00435	1125.40531	0.00284
1124.44095	0.00426	1124.44095	0.00304
1123.4766	0.00405	1123.4766	0.00323
1122.51224	0.004	1122.51224	0.00337
1121.54788	0.00419	1121.54788	0.00349
1120.58352	0.00442	1120.58352	0.00361
1119.61917	0.00461	1119.61917	0.00375
1118.65481	0.00494	1118.65481	0.00389
1117.69045	0.00541	1117.69045	0.004
1116.72609	0.00587	1116.72609	0.0041
1115.76174	0.0063	1115.76174	0.00422
1114.79738	0.00687	1114.79738	0.00435
1113.83302	0.00768	1113.83302	0.00447
1112.86866	0.00868	1112.86866	0.00458
1111.90431	0.00975	1111.90431	0.0047
1110.93995	0.01093	1110.93995	0.00482
1109.97559	0.01217	1109.97559	0.0049
1109.01123	0.01325	1109.01123	0.00497
1108.04688	0.01398	1108.04688	0.00505
1107.08252	0.01436	1107.08252	0.00512
1106.11816	0.01439	1106.11816	0.00519
1105.1538	0.01392	1105.1538	0.00525
1104.18944	0.01302	1104.18944	0.00528
1103.22509	0.01204	1103.22509	0.00529
1102.26073	0.01107	1102.26073	0.00527
1101.29637	0.01	1101.29637	0.00525
1100.33201	0.00897	1100.33201	0.00522
1099.36766	0.00817	1099.36766	0.00518
1098.4033	0.00751	1098.4033	0.00515
1097.43894	0.00691	1097.43894	0.00515

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1096.47458	0.00633	1096.47458	0.00515
1095.51023	0.00574	1095.51023	0.00516
1094.54587	0.00522	1094.54587	0.00516
1093.58151	0.00477	1093.58151	0.00518
1092.61715	0.00439	1092.61715	0.00522
1091.6528	0.00417	1091.6528	0.00523
1090.68844	0.00409	1090.68844	0.00523
1089.72408	0.00409	1089.72408	0.00521
1088.75972	0.00408	1088.75972	0.00521
1087.79537	0.00399	1087.79537	0.0052
1086.83101	0.00397	1086.83101	0.0052
1085.86665	0.00409	1085.86665	0.00523
1084.90229	0.0042	1084.90229	0.00529
1083.93794	0.00437	1083.93794	0.00536
1082.97358	0.00471	1082.97358	0.00543
1082.00922	0.00499	1082.00922	0.0055
1081.04486	0.00493	1081.04486	0.00557
1080.08051	0.00464	1080.08051	0.0056
1079.11615	0.00436	1079.11615	0.00559
1078.15179	0.00416	1078.15179	0.00556
1077.18743	0.00407	1077.18743	0.0055
1076.22307	0.00402	1076.22307	0.00544
1075.25872	0.00391	1075.25872	0.00539
1074.29436	0.00375	1074.29436	0.00538
1073.33	0.0035	1073.33	0.00536
1072.36564	0.00315	1072.36564	0.00534
1071.40129	0.00279	1071.40129	0.0053
1070.43693	0.0025	1070.43693	0.00526
1069.47257	0.00222	1069.47257	0.00521
1068.50821	0.00198	1068.50821	0.00515
1067.54386	0.00182	1067.54386	0.0051
1066.5795	0.0017	1066.5795	0.00505
1065.61514	0.00158	1065.61514	0.00499
1064.65078	0.00148	1064.65078	0.00494
1063.68643	0.00141	1063.68643	0.00491
1062.72207	0.00131	1062.72207	0.0049
1061.75771	0.00124	1061.75771	0.0049
1060.79335	0.00118	1060.79335	0.0049
1059.829	0.00114	1059.829	0.0049
1058.86464	0.00111	1058.86464	0.0049
1057.90028	0.00105	1057.90028	0.00489

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1056.93592	9.40E-04	1056.93592	0.00489
1055.97157	8.40E-04	1055.97157	0.0049
1055.00721	7.40E-04	1055.00721	0.00489
1054.04285	6.30E-04	1054.04285	0.00488
1053.07849	6.30E-04	1053.07849	0.00488
1052.11413	7.40E-04	1052.11413	0.00488
1051.14978	7.90E-04	1051.14978	0.00488
1050.18542	7.20E-04	1050.18542	0.00488
1049.22106	6.80E-04	1049.22106	0.00487
1048.2567	6.80E-04	1048.2567	0.00485
1047.29235	5.80E-04	1047.29235	0.0048
1046.32799	4.30E-04	1046.32799	0.00474
1045.36363	3.60E-04	1045.36363	0.00469
1044.39927	3.80E-04	1044.39927	0.00464
1043.43492	4.70E-04	1043.43492	0.00459
1042.47056	5.30E-04	1042.47056	0.00454
1041.5062	4.60E-04	1041.5062	0.00449
1040.54184	3.50E-04	1040.54184	0.00445
1039.57749	3.40E-04	1039.57749	0.00443
1038.61313	3.70E-04	1038.61313	0.0044
1037.64877	3.90E-04	1037.64877	0.00438
1036.68441	4.40E-04	1036.68441	0.00437
1035.72006	4.50E-04	1035.72006	0.00433
1034.7557	4.00E-04	1034.7557	0.00427
1033.79134	4.10E-04	1033.79134	0.00418
1032.82698	4.30E-04	1032.82698	0.0041
1031.86263	3.70E-04	1031.86263	0.00401
1030.89827	2.90E-04	1030.89827	0.0039
1029.93391	2.80E-04	1029.93391	0.00379
1028.96955	3.10E-04	1028.96955	0.00369
1028.0052	3.00E-04	1028.0052	0.00362
1027.04084	2.00E-04	1027.04084	0.00355
1026.07648	1.20E-04	1026.07648	0.00348
1025.11212	1.60E-04	1025.11212	0.00338
1024.14776	2.60E-04	1024.14776	0.00325
1023.18341	3.50E-04	1023.18341	0.00309
1022.21905	4.80E-04	1022.21905	0.00294
1021.25469	7.50E-04	1021.25469	0.00283
1020.29033	0.00107	1020.29033	0.00276
1019.32598	0.00139	1019.32598	0.00269
1018.36162	0.00189	1018.36162	0.0026

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1017.39726	0.00256	1017.39726	0.00251
1016.4329	0.00325	1016.4329	0.0024
1015.46855	0.00374	1015.46855	0.00228
1014.50419	0.0039	1014.50419	0.00215
1013.53983	0.00371	1013.53983	0.00202
1012.57547	0.00331	1012.57547	0.00187
1011.61112	0.00293	1011.61112	0.0017
1010.64676	0.00256	1010.64676	0.00152
1009.6824	0.00214	1009.6824	0.00136
1008.71804	0.00182	1008.71804	0.0012
1007.75369	0.00155	1007.75369	0.00105
1006.78933	0.00125	1006.78933	8.90E-04
1005.82497	0.00102	1005.82497	7.50E-04
1004.86061	9.10E-04	1004.86061	6.40E-04
1003.89626	8.10E-04	1003.89626	5.40E-04
1002.9319	7.80E-04	1002.9319	4.30E-04
1001.96754	9.20E-04	1001.96754	4.30E-04
1001.00318	0.00104	1001.00318	4.30E-04
1000.03882	0.00101	1000.03882	4.30E-04
999.07447	9.80E-04	999.07447	4.30E-04
998.11011	0.00101		
997.14575	0.00102		
996.18139	0.00103		
995.21704	0.00101		
994.25268	9.20E-04		
993.28832	9.30E-04		
992.32396	0.00114		
991.35961	0.00134		
990.39525	0.00146		
989.43089	0.00152		
988.46653	0.00154		
987.50218	0.00163		
986.53782	0.00178		
985.57346	0.00195		
984.6091	0.00211		
983.64475	0.00211		
982.68039	0.00186		
981.71603	0.00162		
980.75167	0.0017		
979.78732	0.00208		
978.82296	0.0025		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
977.8586	0.00273		
976.89424	0.00281		
975.92988	0.00289		
974.96553	0.00301		
974.00117	0.00311		
973.03681	0.00314		
972.07245	0.00307		
971.1081	0.00298		
970.14374	0.0031		
969.17938	0.00339		
968.21502	0.00347		
967.25067	0.00332		
966.28631	0.00322		
965.32195	0.00328		
964.35759	0.00346		
963.39324	0.0036		
962.42888	0.00358		
961.46452	0.00345		
960.50016	0.0033		
959.53581	0.00316		
958.57145	0.00314		
957.60709	0.00339		
956.64273	0.00363		
955.67838	0.00357		
954.71402	0.00346		
953.74966	0.00355		
952.7853	0.00364		
951.82095	0.00363		
950.85659	0.0036		
949.89223	0.0035		
948.92787	0.00342		
947.96351	0.00339		
946.99916	0.0034		
946.0348	0.00351		
945.07044	0.00349		
944.10608	0.00315		
943.14173	0.00282		
942.17737	0.0029		
941.21301	0.00324		
940.24865	0.00338		
939.2843	0.00337		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
938.31994	0.00348		
937.35558	0.00368		
936.39122	0.00378		
935.42687	0.0036		
934.46251	0.00327		
933.49815	0.00323		
932.53379	0.0035		
931.56944	0.00388		
930.60508	0.00427		
929.64072	0.00451		
928.67636	0.00462		
927.71201	0.00476		
926.74765	0.00482		
925.78329	0.00482		
924.81893	0.00483		
923.85457	0.00483		
922.89022	0.00492		
921.92586	0.00523		
920.9615	0.00539		
919.99714	0.0051		
919.03279	0.00487		
918.06843	0.00508		
917.10407	0.00556		
916.13971	0.00639		
915.17536	0.00727		
914.211	0.00761		
913.24664	0.00771		
912.28228	0.00806		
911.31793	0.00828		
910.35357	0.00819		
909.38921	0.00839		
908.42485	0.00883		
907.4605	0.00888		
906.49614	0.00865		
905.53178	0.00872		
904.56742	0.00887		
903.60307	0.00863		
902.63871	0.00834		
901.67435	0.00825		
900.70999	0.00827		
899.74564	0.00838		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
898.78128	0.00825		
897.81692	0.00783		
896.85256	0.00773		
895.8882	0.00799		
894.92385	0.00801		
893.95949	0.00793		
892.99513	0.00817		
892.03077	0.00857		
891.06642	0.0087		
890.10206	0.00862		
889.1377	0.00876		
888.17334	0.00902		
887.20899	0.00924		
886.24463	0.00949		
885.28027	0.00963		
884.31591	0.00978		
883.35156	0.00979		
882.3872	0.00946		
881.42284	0.00949		
880.45848	0.01033		
879.49413	0.01114		
878.52977	0.01113		
877.56541	0.01073		
876.60105	0.01074		
875.6367	0.0112		
874.67234	0.0115		
873.70798	0.01159		
872.74362	0.01158		
871.77926	0.01124		
870.81491	0.01084		
869.85055	0.01039		
868.88619	0.00935		
867.92183	0.0082		
866.95748	0.00789		
865.99312	0.00844		
865.02876	0.00903		
864.0644	0.00913		
863.10005	0.00888		
862.13569	0.00856		
861.17133	0.00832		
860.20697	0.00818		



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
859.24262	0.00809		
858.27826	0.00819		
857.3139	0.00831		
856.34954	0.00812		
855.38519	0.00783		
854.42083	0.00789		
853.45647	0.00827		
852.49211	0.00839		
851.52776	0.00793		
850.5634	0.00743		
849.59904	0.00739		
848.63468	0.00739		
847.67032	0.00664		
846.70597	0.00555		
845.74161	0.00536		
844.77725	0.00596		
843.81289	0.00649		
842.84854	0.00674		
841.88418	0.00688		
840.91982	0.00715		
839.95546	0.00747		
838.99111	0.00763		
838.02675	0.00779		
837.06239	0.00812		
836.09803	0.00855		
835.13368	0.0088		
834.16932	0.00883		
833.20496	0.00902		
832.2406	0.00919		
831.27625	0.00906		
830.31189	0.00906		
829.34753	0.00907		
828.38317	0.00868		
827.41882	0.00839		
826.45446	0.0086		
825.4901	0.00865		
824.52574	0.00805		
823.56139	0.0074		
822.59703	0.0074		
821.63267	0.00789		
820.66831	0.00812		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
819.70395	0.00789		
818.7396	0.0077		
817.77524	0.00767		
816.81088	0.00779		
815.84652	0.00806		
814.88217	0.00789		
813.91781	0.00722		
812.95345	0.00664		
811.98909	0.00626		
811.02474	0.00615		
810.06038	0.00645		
809.09602	0.00682		
808.13166	0.00688		
807.16731	0.00659		
806.20295	0.0062		
805.23859	0.00603		
804.27423	0.00579		
803.30988	0.00515		
802.34552	0.00457		
801.38116	0.0045		
800.4168	0.00469		
799.45245	0.00489		
798.48809	0.00511		
797.52373	0.0055		
796.55937	0.00597		
795.59501	0.00641		
794.63066	0.00685		
793.6663	0.00713		
792.70194	0.00718		
791.73758	0.00703		
790.77323	0.00657		
789.80887	0.0061		
788.84451	0.00629		
787.88015	0.00688		
786.9158	0.00683		
785.95144	0.00639		
784.98708	0.00661		
784.02272	0.00692		
783.05837	0.00676		
782.09401	0.0067		
781.12965	0.00681		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
780.16529	0.00679		
779.20094	0.00692		
778.23658	0.00728		
777.27222	0.0072		
776.30786	0.0065		
775.34351	0.00597		
774.37915	0.00611		
773.41479	0.00638		
772.45043	0.00639		
771.48608	0.00656		
770.52172	0.00698		
769.55736	0.00723		
768.593	0.00713		
767.62864	0.00696		
766.66429	0.00724		
765.69993	0.00766		
764.73557	0.00753		
763.77121	0.00714		
762.80686	0.00737		
761.8425	0.00826		
760.87814	0.00839		
759.91378	0.00734		
758.94943	0.00675		
757.98507	0.00725		
757.02071	0.00782		
756.05635	0.00825		
755.092	0.00859		
754.12764	0.00843		
753.16328	0.0082		
752.19892	0.00847		
751.23457	0.00852		
750.27021	0.00809		
749.30585	0.00799		
748.34149	0.00811		
747.37714	0.00792		
746.41278	0.00818		
745.44842	0.00924		
744.48406	0.00981		
743.5197	0.00913		
742.55535	0.00802		
741.59099	0.00744		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
740.62663	0.00783		
739.66227	0.00918		
738.69792	0.01056		
737.73356	0.01075		
736.7692	0.00978		
735.80484	0.00882		
734.84049	0.00854		
733.87613	0.00872		
732.91177	0.00897		
731.94741	0.00891		
730.98306	0.00853		
730.0187	0.00845		
729.05434	0.00892		
728.08998	0.0093		
727.12563	0.00921		
726.16127	0.00867		
725.19691	0.0081		
724.23255	0.00808		
723.2682	0.00831		
722.30384	0.00809		
721.33948	0.00759		
720.37512	0.00715		
719.41076	0.00675		
718.44641	0.00661		
717.48205	0.00669		
716.51769	0.00659		
715.55333	0.00632		
714.58898	0.00604		
713.62462	0.00565		
712.66026	0.00507		
711.6959	0.00446		
710.73155	0.00404		
709.76719	0.00374		
708.80283	0.00334		
707.83847	0.00291		
706.87412	0.00272		
705.90976	0.00285		
704.9454	0.00315		
703.98104	0.00344		
703.01669	0.00373		
702.05233	0.00409		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
701.08797	0.00445		
700.12361	0.0048		
699.15926	0.00517		
698.1949	0.00551		
697.23054	0.00586		
696.26618	0.00626		
695.30183	0.00646		
694.33747	0.0063		
693.37311	0.00606		
692.40875	0.00598		
691.44439	0.00599		
690.48004	0.00597		
689.51568	0.00588		
688.55132	0.00583		
687.58696	0.00596		
686.62261	0.00608		
685.65825	0.00588		
684.69389	0.00542		
683.72953	0.00493		
682.76518	0.00452		
681.80082	0.00422		
680.83646	0.004		
679.8721	0.00376		
678.90775	0.00328		
677.94339	0.00279		
676.97903	0.00256		
676.01467	0.00248		
675.05032	0.00239		
674.08596	0.00227		
673.1216	0.00227		
672.15724	0.00241		
671.19289	0.00245		
670.22853	0.00242		
669.26417	0.0025		
668.29981	0.00239		
667.33545	0.00224		
666.3711	0.00266		
665.40674	0.00299		
664.44238	0.0029		
663.47802	0.00252		
662.51367	0.0021		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
661.54931	0.00194		
660.58495	0.00218		
659.62059	0.00258		
658.65624	0.00265		
657.69188	0.00234		
656.72752	0.00207		
655.76316	0.00189		
654.79881	0.00153		
653.83445	0.00115		
652.87009	0.0012		
651.90573	0.00157		
650.94138	0.00195		
649.97702	0.00225		
649.01266	0.00243		
648.0483	0.00237		
647.08395	0.00213		
646.11959	0.00187		
645.15523	0.00165		
644.19087	0.00166		
643.22652	0.00211		
642.26216	0.00281		
641.2978	0.00341		
640.33344	0.00383		
639.36908	0.00385		
638.40473	0.00354		
637.44037	0.00359		
636.47601	0.00398		
635.51165	0.00416		
634.5473	0.00422		
633.58294	0.00429		
632.61858	0.00411		
631.65422	0.00402		
630.68987	0.00461		
629.72551	0.00562		
628.76115	0.00653		
627.79679	0.00741		
626.83244	0.00785		
625.86808	0.00759		
624.90372	0.00691		
623.93936	0.00588		
622.97501	0.00473		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
622.01065	0.00399		
621.04629	0.00452		
620.08193	0.00606		
619.11758	0.00683		
618.15322	0.00641		
617.18886	0.00619		
616.2245	0.0067		
615.26014	0.00729		
614.29579	0.00729		
613.33143	0.00679		
612.36707	0.00688		
611.40271	0.00757		
610.43836	0.00808		
609.474	0.00833		
608.50964	0.00734		
607.54528	0.00528		
606.58093	0.00446		
605.61657	0.00512		
604.65221	0.00576		
603.68785	0.00627		
602.7235	0.00776		
601.75914	0.00991		
600.79478	0.01046		
599.83042	0.00939		
598.86607	0.00869		
597.90171	0.00851		
596.93735	0.00855		
595.97299	0.00876		
595.00864	0.00844		
594.04428	0.00812		
593.07992	0.00865		
592.11556	0.00932		
591.15121	0.00952		
590.18685	0.00919		
589.22249	0.0078		
588.25813	0.00595		
587.29377	0.00551		
586.32942	0.00653		
585.36506	0.00763		
584.4007	0.00804		
583.43634	0.00734		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
582.47199	0.00579		
581.50763	0.00508		
580.54327	0.00628		
579.57891	0.00795		
578.61456	0.00849		
577.6502	0.00818		
576.68584	0.00773		
575.72148	0.00721		
574.75713	0.00643		
573.79277	0.0058		
572.82841	0.00619		
571.86405	0.0072		
570.8997	0.00816		
569.93534	0.00952		
568.97098	0.01036		
568.00662	0.00937		
567.04227	0.00749		
566.07791	0.00632		
565.11355	0.00645		
564.14919	0.00711		
563.18483	0.00764		
562.22048	0.00867		
561.25612	0.00995		
560.29176	0.01019		
559.3274	0.00955		
558.36305	0.009		
557.39869	0.0081		
556.43433	0.00681		
555.46997	0.00665		
554.50562	0.00718		
553.54126	0.00717		
552.5769	0.00676		
551.61254	0.006		
550.64819	0.00559		
549.68383	0.0062		
548.71947	0.00746		
547.75511	0.00864		
546.79076	0.00846		
545.8264	0.00722		
544.86204	0.0071		
543.89768	0.00833		



Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
542.93333	0.00804		
541.96897	0.00537		
541.00461	0.00385		
540.04025	0.00408		
539.07589	0.0036		
538.11154	0.00339		
537.14718	0.00487		
536.18282	0.00644		
535.21846	0.00607		
534.25411	0.00397		
533.28975	0.00269		
532.32539	0.00353		
531.36103	0.0049		
530.39668	0.00524		
529.43232	0.00466		
528.46796	0.0033		
527.5036	0.0019		
526.53925	0.00219		
525.57489	0.00376		
524.61053	0.00497		
523.64617	0.00518		
522.68182	0.00464		
521.71746	0.00441		
520.7531	0.004		
519.78874	0.0027		
518.82439	0.00235		
517.86003	0.00349		
516.89567	0.00423		
515.93131	0.00422		
514.96696	0.00436		
514.0026	0.0042		
513.03824	0.00416		
512.07388	0.00503		
511.10952	0.00572		
510.14517	0.00579		
509.18081	0.00605		
508.21645	0.00637		
507.25209	0.00604		
506.28774	0.00484		
505.32338	0.00325		
504.35902	0.00143		

Virgin Membrane		Fouled by real wastewater effluent after 30 min	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
503.39466	0		
502.43031	-5.30E-04		
501.46595	7.60E-04		
500.50159	0.00119		
499.53723	0		

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3998.22658	2.00E-05	3998.2266	5.00E-05
3997.26223	2.00E-05	3997.2622	5.00E-05
3996.29787	2.00E-05	3996.2979	5.00E-05
3995.33351	2.00E-05	3995.3335	5.00E-05
3994.36915	2.00E-05	3994.3692	5.00E-05
3993.4048	1.00E-05	3993.4048	6.00E-05
3992.44044	2.00E-05	3992.4404	8.00E-05
3991.47608	3.00E-05	3991.4761	9.00E-05
3990.51172	4.00E-05	3990.5117	9.00E-05
3989.54737	4.00E-05	3989.5474	8.00E-05
3988.58301	4.00E-05	3988.583	7.00E-05
3987.61865	4.00E-05	3987.6187	6.00E-05
3986.65429	4.00E-05	3986.6543	7.00E-05
3985.68994	5.00E-05	3985.6899	9.00E-05
3984.72558	6.00E-05	3984.7256	9.00E-05
3983.76122	7.00E-05	3983.7612	8.00E-05
3982.79686	7.00E-05	3982.7969	6.00E-05
3981.8325	5.00E-05	3981.8325	5.00E-05
3980.86815	4.00E-05	3980.8682	6.00E-05
3979.90379	4.00E-05	3979.9038	8.00E-05
3978.93943	4.00E-05	3978.9394	1.10E-04
3977.97507	6.00E-05	3977.9751	1.30E-04
3977.01072	9.00E-05	3977.0107	1.30E-04
3976.04636	1.10E-04	3976.0464	1.10E-04
3975.082	1.20E-04	3975.082	9.00E-05
3974.11764	1.20E-04	3974.1176	8.00E-05
3973.15329	1.10E-04	3973.1533	8.00E-05
3972.18893	9.00E-05	3972.1889	9.00E-05
3971.22457	6.00E-05	3971.2246	1.00E-04
3970.26021	4.00E-05	3970.2602	1.00E-04
3969.29586	2.00E-05	3969.2959	8.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3968.3315	2.00E-05	3968.3315	7.00E-05
3967.36714	2.00E-05	3967.3671	6.00E-05
3966.40278	2.00E-05	3966.4028	5.00E-05
3965.43843	4.00E-05	3965.4384	5.00E-05
3964.47407	4.00E-05	3964.4741	3.00E-05
3963.50971	5.00E-05	3963.5097	2.00E-05
3962.54535	5.00E-05	3962.5454	1.00E-05
3961.581	5.00E-05	3961.581	2.00E-05
3960.61664	5.00E-05	3960.6166	3.00E-05
3959.65228	6.00E-05	3959.6523	6.00E-05
3958.68792	8.00E-05	3958.6879	8.00E-05
3957.72357	1.00E-04	3957.7236	9.00E-05
3956.75921	1.00E-04	3956.7592	9.00E-05
3955.79485	9.00E-05	3955.7949	9.00E-05
3954.83049	7.00E-05	3954.8305	8.00E-05
3953.86613	6.00E-05	3953.8661	8.00E-05
3952.90178	6.00E-05	3952.9018	8.00E-05
3951.93742	8.00E-05	3951.9374	9.00E-05
3950.97306	1.00E-04	3950.9731	9.00E-05
3950.0087	1.20E-04	3950.0087	8.00E-05
3949.04435	1.20E-04	3949.0444	7.00E-05
3948.07999	1.10E-04	3948.08	7.00E-05
3947.11563	9.00E-05	3947.1156	7.00E-05
3946.15127	1.00E-04	3946.1513	8.00E-05
3945.18692	1.10E-04	3945.1869	8.00E-05
3944.22256	1.20E-04	3944.2226	8.00E-05
3943.2582	1.20E-04	3943.2582	9.00E-05
3942.29384	1.20E-04	3942.2938	8.00E-05
3941.32949	1.00E-04	3941.3295	8.00E-05
3940.36513	8.00E-05	3940.3651	8.00E-05
3939.40077	6.00E-05	3939.4008	9.00E-05
3938.43641	6.00E-05	3938.4364	9.00E-05
3937.47206	7.00E-05	3937.4721	9.00E-05
3936.5077	9.00E-05	3936.5077	9.00E-05
3935.54334	1.30E-04	3935.5433	1.00E-04
3934.57898	1.60E-04	3934.579	1.10E-04
3933.61463	1.80E-04	3933.6146	1.10E-04
3932.65027	1.90E-04	3932.6503	1.20E-04
3931.68591	1.70E-04	3931.6859	1.30E-04
3930.72155	1.40E-04	3930.7216	1.30E-04
3929.75719	1.00E-04	3929.7572	1.20E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3928.79284	9.00E-05	3928.7928	1.20E-04
3927.82848	1.10E-04	3927.8285	1.10E-04
3926.86412	1.30E-04	3926.8641	1.00E-04
3925.89976	1.60E-04	3925.8998	9.00E-05
3924.93541	1.70E-04	3924.9354	1.00E-04
3923.97105	1.90E-04	3923.9711	1.10E-04
3923.00669	1.90E-04	3923.0067	1.10E-04
3922.04233	1.80E-04	3922.0423	1.30E-04
3921.07798	1.70E-04	3921.078	1.50E-04
3920.11362	1.90E-04	3920.1136	1.60E-04
3919.14926	2.10E-04	3919.1493	1.60E-04
3918.1849	2.10E-04	3918.1849	1.60E-04
3917.22055	1.90E-04	3917.2206	1.60E-04
3916.25619	1.70E-04	3916.2562	1.60E-04
3915.29183	1.50E-04	3915.2918	1.50E-04
3914.32747	1.00E-04	3914.3275	1.30E-04
3913.36312	7.00E-05	3913.3631	1.20E-04
3912.39876	4.00E-05	3912.3988	1.10E-04
3911.4344	3.00E-05	3911.4344	1.00E-04
3910.47004	2.00E-05	3910.47	1.10E-04
3909.50569	4.00E-05	3909.5057	1.20E-04
3908.54133	8.00E-05	3908.5413	1.40E-04
3907.57697	1.60E-04	3907.577	1.50E-04
3906.61261	2.30E-04	3906.6126	1.70E-04
3905.64825	2.90E-04	3905.6483	1.80E-04
3904.6839	3.30E-04	3904.6839	1.70E-04
3903.71954	3.30E-04	3903.7195	1.70E-04
3902.75518	3.30E-04	3902.7552	1.70E-04
3901.79082	3.20E-04	3901.7908	1.60E-04
3900.82647	3.10E-04	3900.8265	1.40E-04
3899.86211	2.90E-04	3899.8621	1.30E-04
3898.89775	2.50E-04	3898.8978	1.40E-04
3897.93339	1.90E-04	3897.9334	1.50E-04
3896.96904	1.30E-04	3896.969	1.50E-04
3896.00468	1.00E-04	3896.0047	1.60E-04
3895.04032	1.40E-04	3895.0403	1.80E-04
3894.07596	2.20E-04	3894.076	1.70E-04
3893.11161	2.70E-04	3893.1116	1.50E-04
3892.14725	2.90E-04	3892.1473	1.40E-04
3891.18289	2.60E-04	3891.1829	1.50E-04
3890.21853	2.00E-04	3890.2185	1.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3889.25418	1.80E-04	3889.2542	1.90E-04
3888.28982	2.00E-04	3888.2898	1.90E-04
3887.32546	2.40E-04	3887.3255	2.10E-04
3886.3611	2.70E-04	3886.3611	2.00E-04
3885.39675	2.60E-04	3885.3968	1.90E-04
3884.43239	2.40E-04	3884.4324	2.10E-04
3883.46803	2.40E-04	3883.468	2.20E-04
3882.50367	2.50E-04	3882.5037	2.10E-04
3881.53932	2.80E-04	3881.5393	2.00E-04
3880.57496	2.90E-04	3880.575	1.90E-04
3879.6106	2.50E-04	3879.6106	1.70E-04
3878.64624	1.90E-04	3878.6462	1.70E-04
3877.68188	1.60E-04	3877.6819	1.80E-04
3876.71753	1.80E-04	3876.7175	1.90E-04
3875.75317	2.20E-04	3875.7532	1.90E-04
3874.78881	2.50E-04	3874.7888	2.00E-04
3873.82445	2.90E-04	3873.8245	2.30E-04
3872.8601	3.50E-04	3872.8601	2.40E-04
3871.89574	3.90E-04	3871.8957	2.20E-04
3870.93138	3.90E-04	3870.9314	2.10E-04
3869.96702	3.60E-04	3869.967	2.20E-04
3869.00267	3.40E-04	3869.0027	2.20E-04
3868.03831	3.00E-04	3868.0383	2.00E-04
3867.07395	2.70E-04	3867.074	1.90E-04
3866.10959	2.70E-04	3866.1096	1.90E-04
3865.14524	3.20E-04	3865.1452	1.60E-04
3864.18088	3.40E-04	3864.1809	1.20E-04
3863.21652	3.10E-04	3863.2165	9.00E-05
3862.25216	2.50E-04	3862.2522	1.10E-04
3861.28781	2.00E-04	3861.2878	1.40E-04
3860.32345	1.90E-04	3860.3235	1.40E-04
3859.35909	1.80E-04	3859.3591	1.30E-04
3858.39473	2.00E-04	3858.3947	1.70E-04
3857.43038	3.10E-04	3857.4304	2.00E-04
3856.46602	4.50E-04	3856.466	1.60E-04
3855.50166	5.70E-04	3855.5017	1.50E-04
3854.5373	6.30E-04	3854.5373	1.60E-04
3853.57294	6.20E-04	3853.5729	1.80E-04
3852.60859	5.40E-04	3852.6086	2.00E-04
3851.64423	4.10E-04	3851.6442	2.30E-04
3850.67987	2.80E-04	3850.6799	2.60E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3849.71551	2.00E-04	3849.7155	2.50E-04
3848.75116	1.50E-04	3848.7512	2.00E-04
3847.7868	1.50E-04	3847.7868	1.70E-04
3846.82244	1.70E-04	3846.8224	1.40E-04
3845.85808	2.00E-04	3845.8581	1.20E-04
3844.89373	2.30E-04	3844.8937	1.40E-04
3843.92937	2.80E-04	3843.9294	1.70E-04
3842.96501	3.30E-04	3842.965	2.00E-04
3842.00065	3.90E-04	3842.0007	2.50E-04
3841.0363	4.50E-04	3841.0363	2.80E-04
3840.07194	4.90E-04	3840.0719	2.80E-04
3839.10758	4.90E-04	3839.1076	2.70E-04
3838.14322	4.70E-04	3838.1432	2.60E-04
3837.17887	4.10E-04	3837.1789	2.30E-04
3836.21451	3.40E-04	3836.2145	2.10E-04
3835.25015	2.90E-04	3835.2502	2.10E-04
3834.28579	2.80E-04	3834.2858	2.10E-04
3833.32144	2.80E-04	3833.3214	1.90E-04
3832.35708	2.40E-04	3832.3571	1.80E-04
3831.39272	1.90E-04	3831.3927	1.90E-04
3830.42836	1.90E-04	3830.4284	2.00E-04
3829.46401	2.00E-04	3829.464	1.80E-04
3828.49965	2.20E-04	3828.4997	1.80E-04
3827.53529	2.40E-04	3827.5353	2.00E-04
3826.57093	2.50E-04	3826.5709	2.10E-04
3825.60657	2.50E-04	3825.6066	2.30E-04
3824.64222	3.00E-04	3824.6422	2.50E-04
3823.67786	3.80E-04	3823.6779	2.40E-04
3822.7135	4.60E-04	3822.7135	2.10E-04
3821.74914	4.90E-04	3821.7491	1.90E-04
3820.78479	4.70E-04	3820.7848	1.90E-04
3819.82043	4.40E-04	3819.8204	2.20E-04
3818.85607	4.20E-04	3818.8561	2.40E-04
3817.89171	3.90E-04	3817.8917	2.50E-04
3816.92736	3.70E-04	3816.9274	2.50E-04
3815.963	3.60E-04	3815.963	2.30E-04
3814.99864	2.90E-04	3814.9986	2.10E-04
3814.03428	2.00E-04	3814.0343	2.00E-04
3813.06993	1.20E-04	3813.0699	2.00E-04
3812.10557	1.10E-04	3812.1056	2.10E-04
3811.14121	1.50E-04	3811.1412	2.20E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3810.17685	2.10E-04	3810.1769	2.10E-04
3809.2125	2.70E-04	3809.2125	1.80E-04
3808.24814	2.80E-04	3808.2481	1.60E-04
3807.28378	2.70E-04	3807.2838	1.60E-04
3806.31942	2.60E-04	3806.3194	1.80E-04
3805.35507	2.90E-04	3805.3551	2.20E-04
3804.39071	3.60E-04	3804.3907	2.40E-04
3803.42635	4.30E-04	3803.4264	2.30E-04
3802.46199	4.60E-04	3802.462	2.00E-04
3801.49763	4.30E-04	3801.4976	1.70E-04
3800.53328	3.60E-04	3800.5333	1.60E-04
3799.56892	2.90E-04	3799.5689	1.80E-04
3798.60456	2.30E-04	3798.6046	2.00E-04
3797.6402	2.30E-04	3797.6402	2.30E-04
3796.67585	2.50E-04	3796.6759	2.10E-04
3795.71149	2.40E-04	3795.7115	1.80E-04
3794.74713	1.90E-04	3794.7471	1.60E-04
3793.78277	1.40E-04	3793.7828	1.50E-04
3792.81842	1.10E-04	3792.8184	1.60E-04
3791.85406	1.20E-04	3791.8541	1.50E-04
3790.8897	1.20E-04	3790.8897	1.40E-04
3789.92534	1.10E-04	3789.9253	1.50E-04
3788.96099	1.20E-04	3788.961	1.60E-04
3787.99663	1.40E-04	3787.9966	1.60E-04
3787.03227	1.70E-04	3787.0323	1.60E-04
3786.06791	1.80E-04	3786.0679	1.50E-04
3785.10356	1.90E-04	3785.1036	1.60E-04
3784.1392	1.90E-04	3784.1392	1.70E-04
3783.17484	2.10E-04	3783.1748	1.80E-04
3782.21048	2.40E-04	3782.2105	1.90E-04
3781.24613	2.70E-04	3781.2461	1.80E-04
3780.28177	2.70E-04	3780.2818	1.70E-04
3779.31741	2.40E-04	3779.3174	1.60E-04
3778.35305	2.00E-04	3778.3531	1.50E-04
3777.38869	1.50E-04	3777.3887	1.50E-04
3776.42434	1.10E-04	3776.4243	1.60E-04
3775.45998	1.00E-04	3775.46	1.60E-04
3774.49562	1.20E-04	3774.4956	1.70E-04
3773.53126	1.80E-04	3773.5313	1.90E-04
3772.56691	2.60E-04	3772.5669	1.90E-04
3771.60255	3.10E-04	3771.6026	1.90E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3770.63819	3.20E-04	3770.6382	1.90E-04
3769.67383	3.20E-04	3769.6738	2.10E-04
3768.70948	3.10E-04	3768.7095	2.20E-04
3767.74512	2.90E-04	3767.7451	2.10E-04
3766.78076	2.60E-04	3766.7808	2.10E-04
3765.8164	2.50E-04	3765.8164	2.00E-04
3764.85205	2.40E-04	3764.8521	1.70E-04
3763.88769	2.20E-04	3763.8877	1.60E-04
3762.92333	2.30E-04	3762.9233	1.60E-04
3761.95897	2.50E-04	3761.959	1.80E-04
3760.99462	2.80E-04	3760.9946	1.90E-04
3760.03026	3.10E-04	3760.0303	2.00E-04
3759.0659	3.30E-04	3759.0659	2.00E-04
3758.10154	3.10E-04	3758.1015	2.00E-04
3757.13719	2.80E-04	3757.1372	2.10E-04
3756.17283	3.10E-04	3756.1728	2.50E-04
3755.20847	4.00E-04	3755.2085	2.40E-04
3754.24411	4.80E-04	3754.2441	2.30E-04
3753.27976	5.50E-04	3753.2798	2.60E-04
3752.3154	6.30E-04	3752.3154	2.80E-04
3751.35104	6.40E-04	3751.351	2.60E-04
3750.38668	5.60E-04	3750.3867	2.60E-04
3749.42232	4.50E-04	3749.4223	3.10E-04
3748.45797	4.50E-04	3748.458	3.80E-04
3747.49361	5.50E-04	3747.4936	3.60E-04
3746.52925	6.20E-04	3746.5293	2.90E-04
3745.56489	6.60E-04	3745.5649	2.50E-04
3744.60054	6.60E-04	3744.6005	2.10E-04
3743.63618	5.80E-04	3743.6362	1.50E-04
3742.67182	4.30E-04	3742.6718	1.40E-04
3741.70746	3.00E-04	3741.7075	1.90E-04
3740.74311	2.80E-04	3740.7431	2.70E-04
3739.77875	3.70E-04	3739.7788	3.00E-04
3738.81439	4.90E-04	3738.8144	3.00E-04
3737.85003	6.00E-04	3737.85	3.10E-04
3736.88568	6.90E-04	3736.8857	3.30E-04
3735.92132	7.50E-04	3735.9213	3.50E-04
3734.95696	7.60E-04	3734.957	3.60E-04
3733.9926	7.20E-04	3733.9926	3.40E-04
3733.02825	6.20E-04	3733.0283	3.10E-04
3732.06389	5.10E-04	3732.0639	2.90E-04



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3731.09953	4.20E-04	3731.0995	2.60E-04
3730.13517	3.70E-04	3730.1352	2.30E-04
3729.17082	3.50E-04	3729.1708	2.30E-04
3728.20646	3.50E-04	3728.2065	2.40E-04
3727.2421	3.80E-04	3727.2421	2.60E-04
3726.27774	4.10E-04	3726.2777	2.70E-04
3725.31338	4.30E-04	3725.3134	2.70E-04
3724.34903	4.30E-04	3724.349	2.50E-04
3723.38467	4.00E-04	3723.3847	2.30E-04
3722.42031	3.80E-04	3722.4203	2.10E-04
3721.45595	3.70E-04	3721.456	1.80E-04
3720.4916	3.30E-04	3720.4916	1.60E-04
3719.52724	2.80E-04	3719.5272	1.70E-04
3718.56288	2.60E-04	3718.5629	2.00E-04
3717.59852	2.50E-04	3717.5985	2.30E-04
3716.63417	2.50E-04	3716.6342	2.50E-04
3715.66981	2.90E-04	3715.6698	2.80E-04
3714.70545	3.80E-04	3714.7055	2.80E-04
3713.74109	4.70E-04	3713.7411	2.80E-04
3712.77674	5.40E-04	3712.7767	2.90E-04
3711.81238	5.70E-04	3711.8124	2.80E-04
3710.84802	5.30E-04	3710.848	2.60E-04
3709.88366	4.50E-04	3709.8837	2.50E-04
3708.91931	3.50E-04	3708.9193	2.50E-04
3707.95495	2.90E-04	3707.955	2.40E-04
3706.99059	2.40E-04	3706.9906	2.10E-04
3706.02623	2.30E-04	3706.0262	2.00E-04
3705.06188	2.70E-04	3705.0619	1.90E-04
3704.09752	3.30E-04	3704.0975	1.60E-04
3703.13316	3.70E-04	3703.1332	1.40E-04
3702.1688	3.80E-04	3702.1688	1.50E-04
3701.20445	3.60E-04	3701.2045	1.80E-04
3700.24009	3.20E-04	3700.2401	2.10E-04
3699.27573	2.70E-04	3699.2757	2.40E-04
3698.31137	2.30E-04	3698.3114	2.60E-04
3697.34701	2.20E-04	3697.347	2.60E-04
3696.38266	2.10E-04	3696.3827	2.50E-04
3695.4183	2.20E-04	3695.4183	2.50E-04
3694.45394	2.70E-04	3694.4539	2.50E-04
3693.48958	3.30E-04	3693.4896	2.60E-04
3692.52523	4.20E-04	3692.5252	2.80E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3691.56087	5.30E-04	3691.5609	3.00E-04
3690.59651	5.90E-04	3690.5965	3.00E-04
3689.63215	5.80E-04	3689.6322	3.00E-04
3688.6678	5.10E-04	3688.6678	3.00E-04
3687.70344	4.20E-04	3687.7034	3.00E-04
3686.73908	3.20E-04	3686.7391	2.60E-04
3685.77472	2.30E-04	3685.7747	2.20E-04
3684.81037	1.80E-04	3684.8104	1.90E-04
3683.84601	2.00E-04	3683.846	1.70E-04
3682.88165	2.40E-04	3682.8817	1.40E-04
3681.91729	2.70E-04	3681.9173	1.40E-04
3680.95294	3.10E-04	3680.9529	1.70E-04
3679.98858	3.80E-04	3679.9886	2.30E-04
3679.02422	5.00E-04	3679.0242	2.90E-04
3678.05986	6.50E-04	3678.0599	3.00E-04
3677.09551	7.30E-04	3677.0955	3.00E-04
3676.13115	7.30E-04	3676.1312	3.10E-04
3675.16679	6.80E-04	3675.1668	3.20E-04
3674.20243	6.10E-04	3674.2024	3.20E-04
3673.23807	5.40E-04	3673.2381	3.00E-04
3672.27372	5.10E-04	3672.2737	2.90E-04
3671.30936	5.50E-04	3671.3094	2.90E-04
3670.345	5.80E-04	3670.345	2.70E-04
3669.38064	5.40E-04	3669.3806	2.60E-04
3668.41629	4.50E-04	3668.4163	2.70E-04
3667.45193	3.50E-04	3667.4519	2.80E-04
3666.48757	2.80E-04	3666.4876	2.80E-04
3665.52321	2.50E-04	3665.5232	2.60E-04
3664.55886	2.50E-04	3664.5589	2.40E-04
3663.5945	2.60E-04	3663.5945	2.30E-04
3662.63014	2.70E-04	3662.6301	2.20E-04
3661.66578	2.70E-04	3661.6658	2.20E-04
3660.70143	2.80E-04	3660.7014	2.30E-04
3659.73707	3.30E-04	3659.7371	2.30E-04
3658.77271	4.00E-04	3658.7727	2.10E-04
3657.80835	4.50E-04	3657.8084	2.10E-04
3656.844	4.60E-04	3656.844	2.20E-04
3655.87964	4.40E-04	3655.8796	2.30E-04
3654.91528	4.20E-04	3654.9153	2.60E-04
3653.95092	4.20E-04	3653.9509	2.80E-04
3652.98657	4.80E-04	3652.9866	3.00E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3652.02221	6.00E-04	3652.0222	3.20E-04
3651.05785	7.30E-04	3651.0579	3.40E-04
3650.09349	8.20E-04	3650.0935	3.60E-04
3649.12913	8.20E-04	3649.1291	3.80E-04
3648.16478	7.40E-04	3648.1648	3.90E-04
3647.20042	6.30E-04	3647.2004	4.00E-04
3646.23606	5.30E-04	3646.2361	3.90E-04
3645.2717	4.50E-04	3645.2717	3.60E-04
3644.30735	3.90E-04	3644.3074	3.20E-04
3643.34299	3.60E-04	3643.343	3.20E-04
3642.37863	3.70E-04	3642.3786	3.10E-04
3641.41427	3.70E-04	3641.4143	3.10E-04
3640.44992	3.70E-04	3640.4499	3.10E-04
3639.48556	3.70E-04	3639.4856	3.30E-04
3638.5212	3.60E-04	3638.5212	3.40E-04
3637.55684	3.80E-04	3637.5568	3.60E-04
3636.59249	4.10E-04	3636.5925	3.50E-04
3635.62813	4.20E-04	3635.6281	3.50E-04
3634.66377	4.30E-04	3634.6638	3.50E-04
3633.69941	4.60E-04	3633.6994	3.80E-04
3632.73506	5.40E-04	3632.7351	4.10E-04
3631.7707	6.70E-04	3631.7707	4.20E-04
3630.80634	7.70E-04	3630.8063	4.10E-04
3629.84198	8.20E-04	3629.842	4.10E-04
3628.87763	8.00E-04	3628.8776	4.10E-04
3627.91327	7.20E-04	3627.9133	4.10E-04
3626.94891	6.00E-04	3626.9489	4.10E-04
3625.98455	4.90E-04	3625.9846	4.20E-04
3625.0202	4.40E-04	3625.0202	4.30E-04
3624.05584	4.60E-04	3624.0558	4.10E-04
3623.09148	5.10E-04	3623.0915	3.90E-04
3622.12712	5.60E-04	3622.1271	3.90E-04
3621.16276	6.20E-04	3621.1628	4.00E-04
3620.19841	6.60E-04	3620.1984	4.10E-04
3619.23405	6.70E-04	3619.2341	4.20E-04
3618.26969	6.40E-04	3618.2697	4.40E-04
3617.30533	5.90E-04	3617.3053	4.50E-04
3616.34098	5.70E-04	3616.341	4.50E-04
3615.37662	5.80E-04	3615.3766	4.40E-04
3614.41226	5.80E-04	3614.4123	4.30E-04
3613.4479	5.90E-04	3613.4479	4.20E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3612.48355	6.00E-04	3612.4836	4.20E-04
3611.51919	6.00E-04	3611.5192	4.20E-04
3610.55483	6.10E-04	3610.5548	4.20E-04
3609.59047	6.30E-04	3609.5905	4.30E-04
3608.62612	6.40E-04	3608.6261	4.30E-04
3607.66176	6.30E-04	3607.6618	4.20E-04
3606.6974	5.80E-04	3606.6974	4.10E-04
3605.73304	5.30E-04	3605.733	4.20E-04
3604.76869	5.10E-04	3604.7687	4.20E-04
3603.80433	5.10E-04	3603.8043	4.00E-04
3602.83997	5.30E-04	3602.84	4.00E-04
3601.87561	5.50E-04	3601.8756	4.00E-04
3600.91126	5.60E-04	3600.9113	4.00E-04
3599.9469	5.50E-04	3599.9469	4.10E-04
3598.98254	5.60E-04	3598.9825	4.20E-04
3598.01818	5.70E-04	3598.0182	4.20E-04
3597.05382	6.00E-04	3597.0538	4.00E-04
3596.08947	6.30E-04	3596.0895	3.70E-04
3595.12511	6.40E-04	3595.1251	3.40E-04
3594.16075	6.40E-04	3594.1608	3.40E-04
3593.19639	6.20E-04	3593.1964	3.60E-04
3592.23204	6.20E-04	3592.232	4.00E-04
3591.26768	6.40E-04	3591.2677	4.40E-04
3590.30332	6.90E-04	3590.3033	4.70E-04
3589.33896	7.40E-04	3589.339	4.80E-04
3588.37461	7.60E-04	3588.3746	4.80E-04
3587.41025	7.40E-04	3587.4103	4.60E-04
3586.44589	6.80E-04	3586.4459	4.60E-04
3585.48153	6.00E-04	3585.4815	4.70E-04
3584.51718	5.20E-04	3584.5172	4.70E-04
3583.55282	4.70E-04	3583.5528	4.70E-04
3582.58846	4.60E-04	3582.5885	4.60E-04
3581.6241	4.60E-04	3581.6241	4.40E-04
3580.65975	4.70E-04	3580.6598	4.20E-04
3579.69539	4.90E-04	3579.6954	4.00E-04
3578.73103	5.10E-04	3578.731	4.10E-04
3577.76667	5.30E-04	3577.7667	4.40E-04
3576.80232	5.50E-04	3576.8023	4.70E-04
3575.83796	5.70E-04	3575.838	4.90E-04
3574.8736	5.70E-04	3574.8736	5.00E-04
3573.90924	5.60E-04	3573.9092	4.90E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3572.94489	5.50E-04	3572.9449	4.70E-04
3571.98053	5.50E-04	3571.9805	4.60E-04
3571.01617	5.90E-04	3571.0162	4.70E-04
3570.05181	6.70E-04	3570.0518	4.90E-04
3569.08745	7.80E-04	3569.0875	5.10E-04
3568.1231	8.50E-04	3568.1231	5.30E-04
3567.15874	8.60E-04	3567.1587	5.60E-04
3566.19438	8.30E-04	3566.1944	5.70E-04
3565.23002	7.70E-04	3565.23	5.90E-04
3564.26567	7.00E-04	3564.2657	5.90E-04
3563.30131	6.60E-04	3563.3013	5.80E-04
3562.33695	6.40E-04	3562.337	5.40E-04
3561.37259	6.20E-04	3561.3726	5.00E-04
3560.40824	6.00E-04	3560.4082	4.80E-04
3559.44388	5.70E-04	3559.4439	4.70E-04
3558.47952	5.50E-04	3558.4795	4.70E-04
3557.51516	5.40E-04	3557.5152	4.80E-04
3556.55081	5.60E-04	3556.5508	4.80E-04
3555.58645	6.00E-04	3555.5865	4.90E-04
3554.62209	6.40E-04	3554.6221	4.90E-04
3553.65773	6.80E-04	3553.6577	5.10E-04
3552.69338	6.90E-04	3552.6934	5.30E-04
3551.72902	7.00E-04	3551.729	5.60E-04
3550.76466	6.90E-04	3550.7647	5.70E-04
3549.8003	6.80E-04	3549.8003	5.80E-04
3548.83595	6.90E-04	3548.836	5.80E-04
3547.87159	7.10E-04	3547.8716	5.80E-04
3546.90723	7.20E-04	3546.9072	5.80E-04
3545.94287	7.20E-04	3545.9429	5.90E-04
3544.97851	7.00E-04	3544.9785	6.00E-04
3544.01416	6.70E-04	3544.0142	6.10E-04
3543.0498	6.30E-04	3543.0498	6.10E-04
3542.08544	6.00E-04	3542.0854	6.10E-04
3541.12108	5.80E-04	3541.1211	6.10E-04
3540.15673	5.80E-04	3540.1567	6.20E-04
3539.19237	6.00E-04	3539.1924	6.10E-04
3538.22801	6.30E-04	3538.228	6.00E-04
3537.26365	6.50E-04	3537.2637	5.80E-04
3536.2993	6.70E-04	3536.2993	5.60E-04
3535.33494	6.70E-04	3535.3349	5.60E-04
3534.37058	6.60E-04	3534.3706	5.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3533.40622	6.50E-04	3533.4062	5.90E-04
3532.44187	6.50E-04	3532.4419	6.00E-04
3531.47751	6.80E-04	3531.4775	6.20E-04
3530.51315	7.10E-04	3530.5132	6.20E-04
3529.54879	7.30E-04	3529.5488	6.20E-04
3528.58444	7.50E-04	3528.5844	6.10E-04
3527.62008	7.50E-04	3527.6201	6.10E-04
3526.65572	7.50E-04	3526.6557	6.10E-04
3525.69136	7.40E-04	3525.6914	6.10E-04
3524.72701	7.40E-04	3524.727	6.10E-04
3523.76265	7.50E-04	3523.7627	6.20E-04
3522.79829	7.50E-04	3522.7983	6.40E-04
3521.83393	7.50E-04	3521.8339	6.50E-04
3520.86958	7.40E-04	3520.8696	6.50E-04
3519.90522	7.30E-04	3519.9052	6.70E-04
3518.94086	7.40E-04	3518.9409	6.80E-04
3517.9765	7.40E-04	3517.9765	6.80E-04
3517.01214	7.40E-04	3517.0121	6.80E-04
3516.04779	7.30E-04	3516.0478	6.80E-04
3515.08343	7.30E-04	3515.0834	6.70E-04
3514.11907	7.20E-04	3514.1191	6.60E-04
3513.15471	7.20E-04	3513.1547	6.60E-04
3512.19036	7.40E-04	3512.1904	6.70E-04
3511.226	7.50E-04	3511.226	6.80E-04
3510.26164	7.60E-04	3510.2616	6.80E-04
3509.29728	7.60E-04	3509.2973	6.70E-04
3508.33293	7.50E-04	3508.3329	6.70E-04
3507.36857	7.60E-04	3507.3686	6.80E-04
3506.40421	7.80E-04	3506.4042	6.90E-04
3505.43985	8.10E-04	3505.4399	7.20E-04
3504.4755	8.40E-04	3504.4755	7.40E-04
3503.51114	8.60E-04	3503.5111	7.60E-04
3502.54678	8.50E-04	3502.5468	7.70E-04
3501.58242	8.30E-04	3501.5824	7.70E-04
3500.61807	8.00E-04	3500.6181	7.80E-04
3499.65371	7.80E-04	3499.6537	7.70E-04
3498.68935	7.80E-04	3498.6894	7.70E-04
3497.72499	8.00E-04	3497.725	7.60E-04
3496.76064	8.00E-04	3496.7606	7.50E-04
3495.79628	8.00E-04	3495.7963	7.40E-04
3494.83192	8.00E-04	3494.8319	7.50E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3493.86756	8.00E-04	3493.8676	7.60E-04
3492.9032	8.00E-04	3492.9032	7.70E-04
3491.93885	8.10E-04	3491.9389	7.90E-04
3490.97449	8.30E-04	3490.9745	8.00E-04
3490.01013	8.50E-04	3490.0101	8.10E-04
3489.04577	8.50E-04	3489.0458	8.10E-04
3488.08142	8.50E-04	3488.0814	8.10E-04
3487.11706	8.50E-04	3487.1171	8.20E-04
3486.1527	8.40E-04	3486.1527	8.30E-04
3485.18834	8.50E-04	3485.1883	8.60E-04
3484.22399	8.60E-04	3484.224	8.90E-04
3483.25963	8.80E-04	3483.2596	9.00E-04
3482.29527	8.80E-04	3482.2953	8.90E-04
3481.33091	8.70E-04	3481.3309	8.80E-04
3480.36656	8.60E-04	3480.3666	8.70E-04
3479.4022	8.50E-04	3479.4022	8.70E-04
3478.43784	8.70E-04	3478.4378	8.80E-04
3477.47348	9.00E-04	3477.4735	8.80E-04
3476.50913	9.30E-04	3476.5091	8.90E-04
3475.54477	9.50E-04	3475.5448	8.90E-04
3474.58041	9.50E-04	3474.5804	8.90E-04
3473.61605	9.30E-04	3473.6161	8.80E-04
3472.6517	9.10E-04	3472.6517	8.70E-04
3471.68734	8.90E-04	3471.6873	8.70E-04
3470.72298	8.90E-04	3470.723	8.70E-04
3469.75862	9.00E-04	3469.7586	8.70E-04
3468.79426	9.20E-04	3468.7943	8.80E-04
3467.82991	9.30E-04	3467.8299	8.90E-04
3466.86555	9.30E-04	3466.8656	9.10E-04
3465.90119	9.30E-04	3465.9012	9.30E-04
3464.93683	9.30E-04	3464.9368	9.40E-04
3463.97248	9.30E-04	3463.9725	9.50E-04
3463.00812	9.30E-04	3463.0081	9.50E-04
3462.04376	9.50E-04	3462.0438	9.40E-04
3461.0794	9.70E-04	3461.0794	9.30E-04
3460.11505	9.80E-04	3460.1151	9.30E-04
3459.15069	1.00E-03	3459.1507	9.30E-04
3458.18633	0.00101	3458.1863	9.50E-04
3457.22197	0.00102	3457.222	9.60E-04
3456.25762	0.00103	3456.2576	9.70E-04
3455.29326	0.00103	3455.2933	9.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3454.3289	0.00102	3454.3289	9.70E-04
3453.36454	0.00101	3453.3645	9.70E-04
3452.40019	1.00E-03	3452.4002	9.70E-04
3451.43583	1.00E-03	3451.4358	9.70E-04
3450.47147	0.00101	3450.4715	9.70E-04
3449.50711	0.00104	3449.5071	9.60E-04
3448.54276	0.00105	3448.5428	9.60E-04
3447.5784	0.00104	3447.5784	9.60E-04
3446.61404	0.00102	3446.614	9.80E-04
3445.64968	1.00E-03	3445.6497	0.00101
3444.68533	9.90E-04	3444.6853	0.00103
3443.72097	9.80E-04	3443.721	0.00103
3442.75661	9.90E-04	3442.7566	0.00103
3441.79225	1.00E-03	3441.7923	0.00101
3440.82789	0.00102	3440.8279	1.00E-03
3439.86354	0.00103	3439.8635	1.00E-03
3438.89918	0.00105	3438.8992	0.00102
3437.93482	0.00106	3437.9348	0.00105
3436.97046	0.00107	3436.9705	0.00107
3436.00611	0.00106	3436.0061	0.00108
3435.04175	0.00105	3435.0418	0.00108
3434.07739	0.00105	3434.0774	0.00108
3433.11303	0.00105	3433.113	0.00107
3432.14868	0.00106	3432.1487	0.00106
3431.18432	0.00108	3431.1843	0.00106
3430.21996	0.00111	3430.22	0.00105
3429.2556	0.00113	3429.2556	0.00105
3428.29125	0.00115	3428.2913	0.00105
3427.32689	0.00115	3427.3269	0.00105
3426.36253	0.00115	3426.3625	0.00107
3425.39817	0.00114	3425.3982	0.00108
3424.43382	0.00114	3424.4338	0.0011
3423.46946	0.00115	3423.4695	0.00111
3422.5051	0.00116	3422.5051	0.00112
3421.54074	0.00118	3421.5407	0.00113
3420.57639	0.00119	3420.5764	0.00114
3419.61203	0.00119	3419.612	0.00115
3418.64767	0.00118	3418.6477	0.00116
3417.68331	0.00116	3417.6833	0.00116
3416.71895	0.00114	3416.719	0.00116
3415.7546	0.00114	3415.7546	0.00116



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3414.79024	0.00115	3414.7902	0.00117
3413.82588	0.00116	3413.8259	0.00118
3412.86152	0.00117	3412.8615	0.0012
3411.89717	0.00117	3411.8972	0.00121
3410.93281	0.00116	3410.9328	0.00122
3409.96845	0.00114	3409.9685	0.00123
3409.00409	0.00114	3409.0041	0.00123
3408.03974	0.00114	3408.0397	0.00122
3407.07538	0.00116	3407.0754	0.00121
3406.11102	0.00118	3406.111	0.0012
3405.14666	0.0012	3405.1467	0.00119
3404.18231	0.00121	3404.1823	0.00119
3403.21795	0.00122	3403.218	0.00119
3402.25359	0.00122	3402.2536	0.00121
3401.28923	0.00122	3401.2892	0.00122
3400.32488	0.00122	3400.3249	0.00123
3399.36052	0.00122	3399.3605	0.00123
3398.39616	0.00122	3398.3962	0.00123
3397.4318	0.00123	3397.4318	0.00123
3396.46745	0.00124	3396.4675	0.00125
3395.50309	0.00127	3395.5031	0.00126
3394.53873	0.00129	3394.5387	0.00127
3393.57437	0.00132	3393.5744	0.00128
3392.61002	0.00133	3392.61	0.00128
3391.64566	0.00132	3391.6457	0.00128
3390.6813	0.00129	3390.6813	0.00128
3389.71694	0.00127	3389.7169	0.00127
3388.75258	0.00126	3388.7526	0.00126
3387.78823	0.00126	3387.7882	0.00126
3386.82387	0.00127	3386.8239	0.00126
3385.85951	0.00129	3385.8595	0.00126
3384.89515	0.00131	3384.8952	0.00128
3383.9308	0.00132	3383.9308	0.00129
3382.96644	0.00131	3382.9664	0.0013
3382.00208	0.00131	3382.0021	0.00131
3381.03772	0.00132	3381.0377	0.00131
3380.07337	0.00134	3380.0734	0.00131
3379.10901	0.00135	3379.109	0.00131
3378.14465	0.00135	3378.1447	0.00131
3377.18029	0.00134	3377.1803	0.0013
3376.21594	0.00132	3376.2159	0.0013

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3375.25158	0.0013	3375.2516	0.00129
3374.28722	0.0013	3374.2872	0.00129
3373.32286	0.00132	3373.3229	0.0013
3372.35851	0.00135	3372.3585	0.00131
3371.39415	0.00137	3371.3942	0.00132
3370.42979	0.00138	3370.4298	0.00134
3369.46543	0.00138	3369.4654	0.00135
3368.50108	0.00136	3368.5011	0.00136
3367.53672	0.00134	3367.5367	0.00137
3366.57236	0.00132	3366.5724	0.00137
3365.608	0.00132	3365.608	0.00136
3364.64364	0.00133	3364.6436	0.00137
3363.67929	0.00135	3363.6793	0.00137
3362.71493	0.00137	3362.7149	0.00138
3361.75057	0.00139	3361.7506	0.00139
3360.78621	0.00141	3360.7862	0.0014
3359.82186	0.00142	3359.8219	0.00141
3358.8575	0.00142	3358.8575	0.00142
3357.89314	0.00143	3357.8931	0.00142
3356.92878	0.00143	3356.9288	0.00141
3355.96443	0.00143	3355.9644	0.00141
3355.00007	0.00142	3355.0001	0.00142
3354.03571	0.00141	3354.0357	0.00141
3353.07135	0.00141	3353.0714	0.00141
3352.107	0.00141	3352.107	0.0014
3351.14264	0.00141	3351.1426	0.0014
3350.17828	0.00143	3350.1783	0.00139
3349.21392	0.00143	3349.2139	0.00139
3348.24957	0.00143	3348.2496	0.0014
3347.28521	0.00142	3347.2852	0.00141
3346.32085	0.00142	3346.3209	0.00142
3345.35649	0.00142	3345.3565	0.00142
3344.39214	0.00142	3344.3921	0.00142
3343.42778	0.00142	3343.4278	0.00142
3342.46342	0.00143	3342.4634	0.00141
3341.49906	0.00143	3341.4991	0.00141
3340.5347	0.00144	3340.5347	0.00141
3339.57035	0.00145	3339.5704	0.00141
3338.60599	0.00146	3338.606	0.00143
3337.64163	0.00148	3337.6416	0.00144
3336.67727	0.00148	3336.6773	0.00145

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3335.71292	0.00149	3335.7129	0.00146
3334.74856	0.00149	3334.7486	0.00148
3333.7842	0.00149	3333.7842	0.00149
3332.81984	0.00149	3332.8198	0.00148
3331.85549	0.00148	3331.8555	0.00148
3330.89113	0.00148	3330.8911	0.00147
3329.92677	0.00148	3329.9268	0.00146
3328.96241	0.00148	3328.9624	0.00145
3327.99806	0.00149	3327.9981	0.00145
3327.0337	0.00151	3327.0337	0.00146
3326.06934	0.00152	3326.0693	0.00147
3325.10498	0.00151	3325.105	0.00148
3324.14063	0.0015	3324.1406	0.00148
3323.17627	0.00148	3323.1763	0.00148
3322.21191	0.00146	3322.2119	0.00147
3321.24755	0.00146	3321.2476	0.00146
3320.2832	0.00146	3320.2832	0.00145
3319.31884	0.00146	3319.3188	0.00146
3318.35448	0.00145	3318.3545	0.00147
3317.39012	0.00145	3317.3901	0.00149
3316.42577	0.00144	3316.4258	0.0015
3315.46141	0.00144	3315.4614	0.0015
3314.49705	0.00145	3314.4971	0.00149
3313.53269	0.00147	3313.5327	0.00148
3312.56833	0.0015	3312.5683	0.00147
3311.60398	0.00152	3311.604	0.00147
3310.63962	0.00153	3310.6396	0.00148
3309.67526	0.00153	3309.6753	0.00148
3308.7109	0.00153	3308.7109	0.00149
3307.74655	0.00153	3307.7466	0.0015
3306.78219	0.00152	3306.7822	0.0015
3305.81783	0.00151	3305.8178	0.0015
3304.85347	0.00151	3304.8535	0.00149
3303.88912	0.00151	3303.8891	0.00148
3302.92476	0.00149	3302.9248	0.00148
3301.9604	0.00147	3301.9604	0.00148
3300.99604	0.00146	3300.996	0.00148
3300.03169	0.00145	3300.0317	0.00149
3299.06733	0.00145	3299.0673	0.00149
3298.10297	0.00146	3298.103	0.00147
3297.13861	0.00147	3297.1386	0.00145

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3296.17426	0.00148	3296.1743	0.00144
3295.2099	0.00148	3295.2099	0.00143
3294.24554	0.00148	3294.2455	0.00143
3293.28118	0.00148	3293.2812	0.00144
3292.31683	0.00148	3292.3168	0.00145
3291.35247	0.00148	3291.3525	0.00146
3290.38811	0.00148	3290.3881	0.00147
3289.42375	0.00148	3289.4238	0.00147
3288.45939	0.00148	3288.4594	0.00146
3287.49504	0.00147	3287.495	0.00146
3286.53068	0.00146	3286.5307	0.00146
3285.56632	0.00145	3285.5663	0.00146
3284.60196	0.00144	3284.602	0.00147
3283.63761	0.00143	3283.6376	0.00148
3282.67325	0.00143	3282.6733	0.00148
3281.70889	0.00144	3281.7089	0.00147
3280.74453	0.00146	3280.7445	0.00146
3279.78018	0.00148	3279.7802	0.00144
3278.81582	0.00149	3278.8158	0.00141
3277.85146	0.00149	3277.8515	0.0014
3276.8871	0.00149	3276.8871	0.0014
3275.92275	0.00148	3275.9228	0.00141
3274.95839	0.00147	3274.9584	0.00142
3273.99403	0.00147	3273.994	0.00143
3273.02967	0.00146	3273.0297	0.00143
3272.06532	0.00146	3272.0653	0.00142
3271.10096	0.00145	3271.101	0.0014
3270.1366	0.00144	3270.1366	0.00139
3269.17224	0.00143	3269.1722	0.00138
3268.20789	0.00142	3268.2079	0.00138
3267.24353	0.00142	3267.2435	0.00138
3266.27917	0.00142	3266.2792	0.00138
3265.31481	0.00143	3265.3148	0.00138
3264.35046	0.00144	3264.3505	0.00138
3263.3861	0.00145	3263.3861	0.00137
3262.42174	0.00145	3262.4217	0.00137
3261.45738	0.00144	3261.4574	0.00136
3260.49302	0.00143	3260.493	0.00135
3259.52867	0.00141	3259.5287	0.00135
3258.56431	0.00141	3258.5643	0.00135
3257.59995	0.00141	3257.6	0.00135

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3256.63559	0.00141	3256.6356	0.00136
3255.67124	0.00142	3255.6712	0.00137
3254.70688	0.00143	3254.7069	0.00137
3253.74252	0.00143	3253.7425	0.00135
3252.77816	0.00142	3252.7782	0.00133
3251.81381	0.0014	3251.8138	0.00129
3250.84945	0.00139	3250.8495	0.00127
3249.88509	0.00138	3249.8851	0.00125
3248.92073	0.00138	3248.9207	0.00126
3247.95638	0.00137	3247.9564	0.00127
3246.99202	0.00137	3246.992	0.00129
3246.02766	0.00136	3246.0277	0.0013
3245.0633	0.00135	3245.0633	0.0013
3244.09895	0.00134	3244.099	0.00129
3243.13459	0.00134	3243.1346	0.00128
3242.17023	0.00133	3242.1702	0.00128
3241.20587	0.00133	3241.2059	0.00126
3240.24152	0.00133	3240.2415	0.00125
3239.27716	0.00133	3239.2772	0.00122
3238.3128	0.00133	3238.3128	0.0012
3237.34844	0.00132	3237.3484	0.00118
3236.38408	0.00132	3236.3841	0.00118
3235.41973	0.00132	3235.4197	0.00118
3234.45537	0.00132	3234.4554	0.00119
3233.49101	0.00132	3233.491	0.00119
3232.52665	0.00134	3232.5267	0.0012
3231.5623	0.00135	3231.5623	0.00121
3230.59794	0.00135	3230.5979	0.0012
3229.63358	0.00133	3229.6336	0.00119
3228.66922	0.00131	3228.6692	0.00118
3227.70487	0.00129	3227.7049	0.00117
3226.74051	0.00127	3226.7405	0.00116
3225.77615	0.00126	3225.7762	0.00114
3224.81179	0.00126	3224.8118	0.00113
3223.84744	0.00127	3223.8474	0.00112
3222.88308	0.00127	3222.8831	0.00111
3221.91872	0.00127	3221.9187	0.00111
3220.95436	0.00127	3220.9544	0.00111
3219.99001	0.00127	3219.99	0.00111
3219.02565	0.00125	3219.0257	0.00111
3218.06129	0.00125	3218.0613	0.0011

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3217.09693	0.00125	3217.0969	0.00109
3216.13258	0.00125	3216.1326	0.00109
3215.16822	0.00125	3215.1682	0.00109
3214.20386	0.00126	3214.2039	0.00109
3213.2395	0.00126	3213.2395	0.00109
3212.27514	0.00127	3212.2751	0.00109
3211.31079	0.00128	3211.3108	0.00108
3210.34643	0.00127	3210.3464	0.00107
3209.38207	0.00126	3209.3821	0.00105
3208.41771	0.00125	3208.4177	0.00105
3207.45336	0.00123	3207.4534	0.00105
3206.489	0.00122	3206.489	0.00106
3205.52464	0.00122	3205.5246	0.00107
3204.56028	0.00121	3204.5603	0.00107
3203.59593	0.00119	3203.5959	0.00108
3202.63157	0.00117	3202.6316	0.00108
3201.66721	0.00116	3201.6672	0.00107
3200.70285	0.00116	3200.7029	0.00106
3199.7385	0.00116	3199.7385	0.00106
3198.77414	0.00117	3198.7741	0.00105
3197.80978	0.00117	3197.8098	0.00104
3196.84542	0.00116	3196.8454	0.00104
3195.88107	0.00115	3195.8811	0.00103
3194.91671	0.00115	3194.9167	0.00102
3193.95235	0.00115	3193.9524	0.00101
3192.98799	0.00116	3192.988	1.00E-03
3192.02364	0.00116	3192.0236	1.00E-03
3191.05928	0.00116	3191.0593	9.90E-04
3190.09492	0.00115	3190.0949	9.80E-04
3189.13056	0.00114	3189.1306	9.60E-04
3188.16621	0.00112	3188.1662	9.50E-04
3187.20185	0.00111	3187.2019	9.40E-04
3186.23749	0.00109	3186.2375	9.30E-04
3185.27313	0.00108	3185.2731	9.20E-04
3184.30877	0.00108	3184.3088	9.10E-04
3183.34442	0.00108	3183.3444	9.00E-04
3182.38006	0.00107	3182.3801	8.80E-04
3181.4157	0.00107	3181.4157	8.70E-04
3180.45134	0.00108	3180.4513	8.60E-04
3179.48699	0.00108	3179.487	8.50E-04
3178.52263	0.00108	3178.5226	8.50E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3177.55827	0.00108	3177.5583	8.50E-04
3176.59391	0.00108	3176.5939	8.40E-04
3175.62956	0.00108	3175.6296	8.40E-04
3174.6652	0.00108	3174.6652	8.30E-04
3173.70084	0.00108	3173.7008	8.20E-04
3172.73648	0.00108	3172.7365	8.30E-04
3171.77213	0.00108	3171.7721	8.40E-04
3170.80777	0.00108	3170.8078	8.50E-04
3169.84341	0.00108	3169.8434	8.70E-04
3168.87905	0.00108	3168.8791	8.60E-04
3167.9147	0.00107	3167.9147	8.40E-04
3166.95034	0.00106	3166.9503	8.10E-04
3165.98598	0.00105	3165.986	7.90E-04
3165.02162	0.00103	3165.0216	7.80E-04
3164.05727	0.00102	3164.0573	7.80E-04
3163.09291	0.00102	3163.0929	7.90E-04
3162.12855	0.00102	3162.1286	8.00E-04
3161.16419	0.00103	3161.1642	8.10E-04
3160.19983	0.00103	3160.1998	8.10E-04
3159.23548	0.00104	3159.2355	8.10E-04
3158.27112	0.00105	3158.2711	7.90E-04
3157.30676	0.00105	3157.3068	7.80E-04
3156.3424	0.00106	3156.3424	7.70E-04
3155.37805	0.00107	3155.3781	7.70E-04
3154.41369	0.00107	3154.4137	7.80E-04
3153.44933	0.00108	3153.4493	7.90E-04
3152.48497	0.00108	3152.485	8.00E-04
3151.52062	0.00107	3151.5206	8.00E-04
3150.55626	0.00106	3150.5563	8.00E-04
3149.5919	0.00105	3149.5919	7.90E-04
3148.62754	0.00105	3148.6275	7.80E-04
3147.66319	0.00104	3147.6632	7.70E-04
3146.69883	0.00103	3146.6988	7.60E-04
3145.73447	0.00101	3145.7345	7.50E-04
3144.77011	1.00E-03	3144.7701	7.40E-04
3143.80576	9.90E-04	3143.8058	7.40E-04
3142.8414	9.90E-04	3142.8414	7.30E-04
3141.87704	9.90E-04	3141.877	7.40E-04
3140.91268	1.00E-03	3140.9127	7.50E-04
3139.94833	0.00101	3139.9483	7.50E-04
3138.98397	0.00101	3138.984	7.40E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3138.01961	1.00E-03	3138.0196	7.30E-04
3137.05525	9.80E-04	3137.0553	7.10E-04
3136.0909	9.80E-04	3136.0909	6.90E-04
3135.12654	9.80E-04	3135.1265	6.80E-04
3134.16218	9.80E-04	3134.1622	6.70E-04
3133.19782	9.80E-04	3133.1978	6.60E-04
3132.23346	9.80E-04	3132.2335	6.60E-04
3131.26911	9.80E-04	3131.2691	6.60E-04
3130.30475	9.70E-04	3130.3048	6.60E-04
3129.34039	9.60E-04	3129.3404	6.60E-04
3128.37603	9.60E-04	3128.376	6.50E-04
3127.41168	9.50E-04	3127.4117	6.40E-04
3126.44732	9.50E-04	3126.4473	6.30E-04
3125.48296	9.50E-04	3125.483	6.30E-04
3124.5186	9.60E-04	3124.5186	6.40E-04
3123.55425	9.70E-04	3123.5543	6.50E-04
3122.58989	9.80E-04	3122.5899	6.60E-04
3121.62553	9.90E-04	3121.6255	6.70E-04
3120.66117	9.90E-04	3120.6612	6.80E-04
3119.69682	9.90E-04	3119.6968	6.80E-04
3118.73246	9.90E-04	3118.7325	6.70E-04
3117.7681	1.00E-03	3117.7681	6.60E-04
3116.80374	1.00E-03	3116.8037	6.50E-04
3115.83939	0.00101	3115.8394	6.50E-04
3114.87503	0.00101	3114.875	6.40E-04
3113.91067	0.00101	3113.9107	6.40E-04
3112.94631	1.00E-03	3112.9463	6.30E-04
3111.98196	9.90E-04	3111.982	6.30E-04
3111.0176	9.80E-04	3111.0176	6.30E-04
3110.05324	9.70E-04	3110.0532	6.40E-04
3109.08888	9.70E-04	3109.0889	6.40E-04
3108.12452	9.70E-04	3108.1245	6.30E-04
3107.16017	9.60E-04	3107.1602	6.20E-04
3106.19581	9.50E-04	3106.1958	6.10E-04
3105.23145	9.40E-04	3105.2315	6.00E-04
3104.26709	9.30E-04	3104.2671	6.00E-04
3103.30274	9.40E-04	3103.3027	6.10E-04
3102.33838	9.50E-04	3102.3384	6.20E-04
3101.37402	9.70E-04	3101.374	6.30E-04
3100.40966	9.80E-04	3100.4097	6.30E-04
3099.44531	9.80E-04	3099.4453	6.40E-04



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3098.48095	9.80E-04	3098.481	6.30E-04
3097.51659	9.80E-04	3097.5166	6.20E-04
3096.55223	9.80E-04	3096.5522	6.10E-04
3095.58788	9.70E-04	3095.5879	6.00E-04
3094.62352	9.70E-04	3094.6235	5.90E-04
3093.65916	9.70E-04	3093.6592	5.90E-04
3092.6948	9.80E-04	3092.6948	6.00E-04
3091.73045	9.80E-04	3091.7305	6.20E-04
3090.76609	1.00E-03	3090.7661	6.50E-04
3089.80173	0.00101	3089.8017	6.60E-04
3088.83737	0.00102	3088.8374	6.70E-04
3087.87302	0.00102	3087.873	6.70E-04
3086.90866	1.00E-03	3086.9087	6.70E-04
3085.9443	9.80E-04	3085.9443	6.70E-04
3084.97994	9.70E-04	3084.9799	6.60E-04
3084.01559	9.60E-04	3084.0156	6.50E-04
3083.05123	9.70E-04	3083.0512	6.40E-04
3082.08687	9.90E-04	3082.0869	6.30E-04
3081.12251	0.00101	3081.1225	6.30E-04
3080.15815	0.00103	3080.1582	6.30E-04
3079.1938	0.00103	3079.1938	6.40E-04
3078.22944	0.00103	3078.2294	6.40E-04
3077.26508	0.00102	3077.2651	6.30E-04
3076.30072	0.00101	3076.3007	6.10E-04
3075.33637	9.90E-04	3075.3364	6.00E-04
3074.37201	9.90E-04	3074.372	5.90E-04
3073.40765	9.90E-04	3073.4077	5.90E-04
3072.44329	9.90E-04	3072.4433	5.80E-04
3071.47894	1.00E-03	3071.4789	5.80E-04
3070.51458	1.00E-03	3070.5146	5.80E-04
3069.55022	1.00E-03	3069.5502	5.80E-04
3068.58586	1.00E-03	3068.5859	5.80E-04
3067.62151	9.80E-04	3067.6215	5.70E-04
3066.65715	9.60E-04	3066.6572	5.60E-04
3065.69279	9.50E-04	3065.6928	5.50E-04
3064.72843	9.30E-04	3064.7284	5.40E-04
3063.76408	9.30E-04	3063.7641	5.30E-04
3062.79972	9.40E-04	3062.7997	5.20E-04
3061.83536	9.50E-04	3061.8354	5.20E-04
3060.871	9.60E-04	3060.871	5.10E-04
3059.90665	9.60E-04	3059.9067	5.10E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3058.94229	9.50E-04	3058.9423	5.00E-04
3057.97793	9.40E-04	3057.9779	5.00E-04
3057.01357	9.20E-04	3057.0136	5.00E-04
3056.04921	9.10E-04	3056.0492	5.00E-04
3055.08486	9.10E-04	3055.0849	5.00E-04
3054.1205	9.10E-04	3054.1205	4.90E-04
3053.15614	9.20E-04	3053.1561	4.80E-04
3052.19178	9.20E-04	3052.1918	4.70E-04
3051.22743	9.10E-04	3051.2274	4.70E-04
3050.26307	9.00E-04	3050.2631	4.60E-04
3049.29871	8.80E-04	3049.2987	4.70E-04
3048.33435	8.60E-04	3048.3344	4.80E-04
3047.37	8.50E-04	3047.37	4.90E-04
3046.40564	8.60E-04	3046.4056	5.00E-04
3045.44128	8.70E-04	3045.4413	5.00E-04
3044.47692	8.80E-04	3044.4769	5.00E-04
3043.51257	8.80E-04	3043.5126	4.90E-04
3042.54821	8.70E-04	3042.5482	4.80E-04
3041.58385	8.60E-04	3041.5839	4.60E-04
3040.61949	8.50E-04	3040.6195	4.50E-04
3039.65514	8.40E-04	3039.6551	4.40E-04
3038.69078	8.20E-04	3038.6908	4.30E-04
3037.72642	8.10E-04	3037.7264	4.30E-04
3036.76206	8.00E-04	3036.7621	4.30E-04
3035.79771	7.80E-04	3035.7977	4.40E-04
3034.83335	7.80E-04	3034.8334	4.40E-04
3033.86899	7.70E-04	3033.869	4.40E-04
3032.90463	7.60E-04	3032.9046	4.30E-04
3031.94027	7.40E-04	3031.9403	4.20E-04
3030.97592	7.30E-04	3030.9759	4.20E-04
3030.01156	7.20E-04	3030.0116	4.20E-04
3029.0472	7.10E-04	3029.0472	4.20E-04
3028.08284	7.00E-04	3028.0828	4.20E-04
3027.11849	7.00E-04	3027.1185	4.30E-04
3026.15413	6.90E-04	3026.1541	4.30E-04
3025.18977	6.90E-04	3025.1898	4.30E-04
3024.22541	7.00E-04	3024.2254	4.20E-04
3023.26106	7.10E-04	3023.2611	4.00E-04
3022.2967	7.20E-04	3022.2967	4.00E-04
3021.33234	7.30E-04	3021.3323	3.90E-04
3020.36798	7.40E-04	3020.368	3.80E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
3019.40363	7.10E-04	3019.4036	3.80E-04
3018.43927	6.10E-04	3018.4393	3.70E-04
3017.47491	4.70E-04	3017.4749	3.60E-04
3016.51055	3.60E-04	3016.5106	3.50E-04
3015.5462	3.10E-04	3015.5462	3.40E-04
3014.58184	3.30E-04	3014.5818	3.40E-04
3013.61748	4.10E-04	3013.6175	3.40E-04
3012.65312	5.40E-04	3012.6531	3.50E-04
3011.68877	6.40E-04	3011.6888	3.50E-04
3010.72441	6.80E-04	3010.7244	3.50E-04
3009.76005	6.80E-04	3009.7601	3.50E-04
3008.79569	6.60E-04	3008.7957	3.40E-04
3007.83134	6.40E-04	3007.8313	3.40E-04
3006.86698	6.20E-04	3006.867	3.40E-04
3005.90262	6.10E-04	3005.9026	3.40E-04
3004.93826	6.10E-04	3004.9383	3.40E-04
3003.9739	6.00E-04	3003.9739	3.40E-04
3003.00955	6.00E-04	3003.0096	3.40E-04
3002.04519	5.90E-04	3002.0452	3.30E-04
3001.08083	5.80E-04	3001.0808	3.30E-04
3000.11647	5.70E-04	3000.1165	3.30E-04
2999.15212	5.60E-04	2999.1521	3.30E-04
2998.18776	5.50E-04	2998.1878	3.30E-04
2997.2234	5.50E-04	2997.2234	3.30E-04
2996.25904	5.50E-04	2996.259	3.30E-04
2995.29469	5.60E-04	2995.2947	3.30E-04
2994.33033	5.70E-04	2994.3303	3.30E-04
2993.36597	5.80E-04	2993.366	3.30E-04
2992.40161	5.80E-04	2992.4016	3.30E-04
2991.43726	5.80E-04	2991.4373	3.30E-04
2990.4729	5.80E-04	2990.4729	3.30E-04
2989.50854	5.90E-04	2989.5085	3.20E-04
2988.54418	6.10E-04	2988.5442	3.20E-04
2987.57983	6.40E-04	2987.5798	3.30E-04
2986.61547	6.70E-04	2986.6155	3.30E-04
2985.65111	6.90E-04	2985.6511	3.40E-04
2984.68675	7.10E-04	2984.6868	3.50E-04
2983.7224	7.30E-04	2983.7224	3.60E-04
2982.75804	7.50E-04	2982.758	3.70E-04
2981.79368	7.70E-04	2981.7937	3.70E-04
2980.82932	7.80E-04	2980.8293	3.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2979.86496	7.80E-04	2979.865	3.60E-04
2978.90061	7.20E-04	2978.9006	3.50E-04
2977.93625	5.70E-04	2977.9363	3.50E-04
2976.97189	3.90E-04	2976.9719	3.50E-04
2976.00753	2.40E-04	2976.0075	3.60E-04
2975.04318	1.90E-04	2975.0432	3.70E-04
2974.07882	2.40E-04	2974.0788	3.60E-04
2973.11446	3.80E-04	2973.1145	3.50E-04
2972.1501	5.70E-04	2972.1501	3.50E-04
2971.18575	7.30E-04	2971.1858	3.50E-04
2970.22139	8.00E-04	2970.2214	3.70E-04
2969.25703	8.10E-04	2969.257	3.80E-04
2968.29267	8.10E-04	2968.2927	3.80E-04
2967.32832	8.00E-04	2967.3283	3.80E-04
2966.36396	7.90E-04	2966.364	3.70E-04
2965.3996	7.90E-04	2965.3996	3.70E-04
2964.43524	7.90E-04	2964.4352	3.80E-04
2963.47089	7.90E-04	2963.4709	4.00E-04
2962.50653	7.90E-04	2962.5065	4.10E-04
2961.54217	7.90E-04	2961.5422	4.20E-04
2960.57781	7.90E-04	2960.5778	4.30E-04
2959.61346	8.00E-04	2959.6135	4.30E-04
2958.6491	8.10E-04	2958.6491	4.30E-04
2957.68474	8.20E-04	2957.6847	4.40E-04
2956.72038	8.30E-04	2956.7204	4.60E-04
2955.75603	8.50E-04	2955.756	4.60E-04
2954.79167	8.60E-04	2954.7917	4.70E-04
2953.82731	8.80E-04	2953.8273	4.90E-04
2952.86295	8.80E-04	2952.863	5.00E-04
2951.89859	8.90E-04	2951.8986	5.20E-04
2950.93424	8.90E-04	2950.9342	5.20E-04
2949.96988	9.10E-04	2949.9699	5.30E-04
2949.00552	9.30E-04	2949.0055	5.40E-04
2948.04116	9.50E-04	2948.0412	5.40E-04
2947.07681	9.70E-04	2947.0768	5.40E-04
2946.11245	9.80E-04	2946.1125	5.40E-04
2945.14809	9.90E-04	2945.1481	5.50E-04
2944.18373	9.80E-04	2944.1837	5.60E-04
2943.21938	9.80E-04	2943.2194	5.60E-04
2942.25502	9.90E-04	2942.255	5.70E-04
2941.29066	9.90E-04	2941.2907	5.80E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2940.3263	1.00E-03	2940.3263	5.80E-04
2939.36195	0.00101	2939.362	5.80E-04
2938.39759	0.00102	2938.3976	5.80E-04
2937.43323	0.00103	2937.4332	5.70E-04
2936.46887	0.00103	2936.4689	5.70E-04
2935.50452	0.00104	2935.5045	5.60E-04
2934.54016	0.00104	2934.5402	5.70E-04
2933.5758	0.00104	2933.5758	5.70E-04
2932.61144	0.00105	2932.6114	5.70E-04
2931.64709	0.00105	2931.6471	5.70E-04
2930.68273	0.00105	2930.6827	5.60E-04
2929.71837	0.00104	2929.7184	5.50E-04
2928.75401	0.00103	2928.754	5.40E-04
2927.78965	0.00102	2927.7897	5.50E-04
2926.8253	0.00101	2926.8253	5.60E-04
2925.86094	0.00102	2925.8609	5.60E-04
2924.89658	0.00103	2924.8966	5.50E-04
2923.93222	0.00103	2923.9322	5.30E-04
2922.96787	0.00103	2922.9679	5.20E-04
2922.00351	0.00103	2922.0035	5.10E-04
2921.03915	0.00103	2921.0392	5.10E-04
2920.07479	0.00104	2920.0748	5.20E-04
2919.11044	0.00105	2919.1104	5.30E-04
2918.14608	0.00105	2918.1461	5.40E-04
2917.18172	0.00105	2917.1817	5.30E-04
2916.21736	0.00104	2916.2174	5.30E-04
2915.25301	0.00103	2915.253	5.20E-04
2914.28865	0.00102	2914.2887	5.20E-04
2913.32429	1.00E-03	2913.3243	5.30E-04
2912.35993	9.90E-04	2912.3599	5.30E-04
2911.39558	9.80E-04	2911.3956	5.30E-04
2910.43122	9.80E-04	2910.4312	5.30E-04
2909.46686	9.80E-04	2909.4669	5.20E-04
2908.5025	9.70E-04	2908.5025	5.10E-04
2907.53815	9.60E-04	2907.5382	5.00E-04
2906.57379	9.60E-04	2906.5738	5.00E-04
2905.60943	9.50E-04	2905.6094	4.90E-04
2904.64507	9.50E-04	2904.6451	4.90E-04
2903.68071	9.60E-04	2903.6807	4.80E-04
2902.71636	9.60E-04	2902.7164	4.70E-04
2901.752	9.60E-04	2901.752	4.60E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2900.78764	9.50E-04	2900.7876	4.40E-04
2899.82328	9.40E-04	2899.8233	4.30E-04
2898.85893	9.30E-04	2898.8589	4.20E-04
2897.89457	9.30E-04	2897.8946	4.10E-04
2896.93021	9.20E-04	2896.9302	4.00E-04
2895.96585	9.20E-04	2895.9659	4.00E-04
2895.0015	9.20E-04	2895.0015	4.00E-04
2894.03714	9.20E-04	2894.0371	4.00E-04
2893.07278	9.10E-04	2893.0728	3.90E-04
2892.10842	9.00E-04	2892.1084	3.80E-04
2891.14407	8.90E-04	2891.1441	3.60E-04
2890.17971	8.70E-04	2890.1797	3.50E-04
2889.21535	8.50E-04	2889.2154	3.60E-04
2888.25099	8.40E-04	2888.251	3.60E-04
2887.28664	8.30E-04	2887.2866	3.60E-04
2886.32228	8.30E-04	2886.3223	3.60E-04
2885.35792	8.30E-04	2885.3579	3.50E-04
2884.39356	8.30E-04	2884.3936	3.40E-04
2883.42921	8.30E-04	2883.4292	3.30E-04
2882.46485	8.30E-04	2882.4649	3.20E-04
2881.50049	8.30E-04	2881.5005	3.10E-04
2880.53613	8.40E-04	2880.5361	3.10E-04
2879.57178	8.40E-04	2879.5718	3.00E-04
2878.60742	8.50E-04	2878.6074	3.00E-04
2877.64306	8.40E-04	2877.6431	3.00E-04
2876.6787	8.30E-04	2876.6787	3.00E-04
2875.71434	8.20E-04	2875.7143	2.90E-04
2874.74999	8.20E-04	2874.75	2.90E-04
2873.78563	8.20E-04	2873.7856	2.90E-04
2872.82127	8.30E-04	2872.8213	2.90E-04
2871.85691	8.40E-04	2871.8569	3.00E-04
2870.89256	8.40E-04	2870.8926	3.00E-04
2869.9282	8.40E-04	2869.9282	3.00E-04
2868.96384	8.30E-04	2868.9638	2.90E-04
2867.99948	8.20E-04	2867.9995	2.80E-04
2867.03513	8.20E-04	2867.0351	2.70E-04
2866.07077	8.20E-04	2866.0708	2.60E-04
2865.10641	8.10E-04	2865.1064	2.50E-04
2864.14205	8.00E-04	2864.1421	2.50E-04
2863.1777	7.90E-04	2863.1777	2.50E-04
2862.21334	7.80E-04	2862.2133	2.40E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2861.24898	7.80E-04	2861.249	2.40E-04
2860.28462	7.80E-04	2860.2846	2.40E-04
2859.32027	7.90E-04	2859.3203	2.50E-04
2858.35591	8.00E-04	2858.3559	2.60E-04
2857.39155	8.00E-04	2857.3916	2.60E-04
2856.42719	8.00E-04	2856.4272	2.70E-04
2855.46284	8.00E-04	2855.4628	2.70E-04
2854.49848	8.00E-04	2854.4985	2.70E-04
2853.53412	8.10E-04	2853.5341	2.70E-04
2852.56976	8.10E-04	2852.5698	2.80E-04
2851.6054	8.00E-04	2851.6054	2.90E-04
2850.64105	7.90E-04	2850.6411	2.90E-04
2849.67669	7.70E-04	2849.6767	2.80E-04
2848.71233	7.60E-04	2848.7123	2.70E-04
2847.74797	7.60E-04	2847.748	2.50E-04
2846.78362	7.60E-04	2846.7836	2.40E-04
2845.81926	7.60E-04	2845.8193	2.30E-04
2844.8549	7.50E-04	2844.8549	2.30E-04
2843.89054	7.50E-04	2843.8905	2.30E-04
2842.92619	7.40E-04	2842.9262	2.30E-04
2841.96183	7.30E-04	2841.9618	2.20E-04
2840.99747	7.30E-04	2840.9975	2.20E-04
2840.03311	7.20E-04	2840.0331	2.10E-04
2839.06876	7.20E-04	2839.0688	2.00E-04
2838.1044	7.10E-04	2838.1044	1.90E-04
2837.14004	7.10E-04	2837.14	1.90E-04
2836.17568	7.10E-04	2836.1757	1.90E-04
2835.21133	7.20E-04	2835.2113	1.90E-04
2834.24697	7.30E-04	2834.247	1.90E-04
2833.28261	7.30E-04	2833.2826	1.90E-04
2832.31825	7.30E-04	2832.3183	1.80E-04
2831.3539	7.20E-04	2831.3539	1.80E-04
2830.38954	7.10E-04	2830.3895	1.70E-04
2829.42518	7.00E-04	2829.4252	1.70E-04
2828.46082	7.00E-04	2828.4608	1.80E-04
2827.49647	7.00E-04	2827.4965	1.80E-04
2826.53211	7.00E-04	2826.5321	1.70E-04
2825.56775	7.00E-04	2825.5678	1.70E-04
2824.60339	7.00E-04	2824.6034	1.60E-04
2823.63903	7.00E-04	2823.639	1.60E-04
2822.67468	7.00E-04	2822.6747	1.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2821.71032	7.00E-04	2821.7103	1.80E-04
2820.74596	6.90E-04	2820.746	1.90E-04
2819.7816	6.80E-04	2819.7816	1.90E-04
2818.81725	6.70E-04	2818.8173	1.90E-04
2817.85289	6.70E-04	2817.8529	1.80E-04
2816.88853	6.60E-04	2816.8885	1.60E-04
2815.92417	6.70E-04	2815.9242	1.60E-04
2814.95982	6.70E-04	2814.9598	1.70E-04
2813.99546	6.70E-04	2813.9955	1.70E-04
2813.0311	6.60E-04	2813.0311	1.60E-04
2812.06674	6.50E-04	2812.0667	1.60E-04
2811.10239	6.50E-04	2811.1024	1.60E-04
2810.13803	6.40E-04	2810.138	1.50E-04
2809.17367	6.40E-04	2809.1737	1.40E-04
2808.20931	6.50E-04	2808.2093	1.40E-04
2807.24496	6.60E-04	2807.245	1.50E-04
2806.2806	6.80E-04	2806.2806	1.40E-04
2805.31624	7.00E-04	2805.3162	1.40E-04
2804.35188	7.00E-04	2804.3519	1.40E-04
2803.38753	6.90E-04	2803.3875	1.40E-04
2802.42317	6.80E-04	2802.4232	1.40E-04
2801.45881	6.60E-04	2801.4588	1.50E-04
2800.49445	6.40E-04	2800.4945	1.50E-04
2799.53009	6.30E-04	2799.5301	1.50E-04
2798.56574	6.30E-04	2798.5657	1.50E-04
2797.60138	6.30E-04	2797.6014	1.50E-04
2796.63702	6.30E-04	2796.637	1.50E-04
2795.67266	6.30E-04	2795.6727	1.60E-04
2794.70831	6.30E-04	2794.7083	1.60E-04
2793.74395	6.30E-04	2793.744	1.60E-04
2792.77959	6.20E-04	2792.7796	1.60E-04
2791.81523	6.20E-04	2791.8152	1.50E-04
2790.85088	6.20E-04	2790.8509	1.50E-04
2789.88652	6.30E-04	2789.8865	1.40E-04
2788.92216	6.40E-04	2788.9222	1.30E-04
2787.9578	6.50E-04	2787.9578	1.30E-04
2786.99345	6.50E-04	2786.9935	1.20E-04
2786.02909	6.40E-04	2786.0291	1.30E-04
2785.06473	6.40E-04	2785.0647	1.30E-04
2784.10037	6.40E-04	2784.1004	1.30E-04
2783.13602	6.40E-04	2783.136	1.40E-04



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2782.17166	6.40E-04	2782.1717	1.40E-04
2781.2073	6.30E-04	2781.2073	1.40E-04
2780.24294	6.20E-04	2780.2429	1.40E-04
2779.27859	6.20E-04	2779.2786	1.30E-04
2778.31423	6.20E-04	2778.3142	1.30E-04
2777.34987	6.30E-04	2777.3499	1.30E-04
2776.38551	6.40E-04	2776.3855	1.30E-04
2775.42115	6.50E-04	2775.4212	1.30E-04
2774.4568	6.40E-04	2774.4568	1.40E-04
2773.49244	6.40E-04	2773.4924	1.40E-04
2772.52808	6.40E-04	2772.5281	1.40E-04
2771.56372	6.30E-04	2771.5637	1.30E-04
2770.59937	6.30E-04	2770.5994	1.20E-04
2769.63501	6.30E-04	2769.635	1.20E-04
2768.67065	6.30E-04	2768.6707	1.20E-04
2767.70629	6.20E-04	2767.7063	1.20E-04
2766.74194	6.10E-04	2766.7419	1.30E-04
2765.77758	6.00E-04	2765.7776	1.30E-04
2764.81322	6.00E-04	2764.8132	1.20E-04
2763.84886	6.00E-04	2763.8489	1.20E-04
2762.88451	6.10E-04	2762.8845	1.20E-04
2761.92015	6.30E-04	2761.9202	1.10E-04
2760.95579	6.40E-04	2760.9558	1.00E-04
2759.99143	6.50E-04	2759.9914	1.00E-04
2759.02708	6.50E-04	2759.0271	9.00E-05
2758.06272	6.40E-04	2758.0627	1.00E-04
2757.09836	6.20E-04	2757.0984	1.10E-04
2756.134	6.20E-04	2756.134	1.20E-04
2755.16965	6.10E-04	2755.1697	1.20E-04
2754.20529	6.20E-04	2754.2053	1.20E-04
2753.24093	6.20E-04	2753.2409	1.20E-04
2752.27657	6.20E-04	2752.2766	1.10E-04
2751.31222	6.30E-04	2751.3122	1.10E-04
2750.34786	6.20E-04	2750.3479	1.00E-04
2749.3835	6.20E-04	2749.3835	1.00E-04
2748.41914	6.20E-04	2748.4191	1.10E-04
2747.45478	6.20E-04	2747.4548	1.20E-04
2746.49043	6.10E-04	2746.4904	1.20E-04
2745.52607	6.00E-04	2745.5261	1.30E-04
2744.56171	5.90E-04	2744.5617	1.20E-04
2743.59735	5.90E-04	2743.5974	1.10E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2742.633	5.90E-04	2742.633	1.00E-04
2741.66864	5.90E-04	2741.6686	1.00E-04
2740.70428	5.90E-04	2740.7043	1.00E-04
2739.73992	5.90E-04	2739.7399	1.00E-04
2738.77557	6.00E-04	2738.7756	1.10E-04
2737.81121	6.00E-04	2737.8112	1.00E-04
2736.84685	6.00E-04	2736.8469	1.00E-04
2735.88249	6.10E-04	2735.8825	1.00E-04
2734.91814	6.10E-04	2734.9181	1.00E-04
2733.95378	6.20E-04	2733.9538	1.00E-04
2732.98942	6.10E-04	2732.9894	1.10E-04
2732.02506	6.10E-04	2732.0251	1.10E-04
2731.06071	6.00E-04	2731.0607	1.10E-04
2730.09635	5.90E-04	2730.0964	1.10E-04
2729.13199	5.80E-04	2729.132	1.00E-04
2728.16763	5.80E-04	2728.1676	1.00E-04
2727.20328	5.80E-04	2727.2033	1.00E-04
2726.23892	5.80E-04	2726.2389	1.10E-04
2725.27456	5.90E-04	2725.2746	1.10E-04
2724.3102	5.90E-04	2724.3102	1.10E-04
2723.34584	5.80E-04	2723.3458	1.00E-04
2722.38149	5.70E-04	2722.3815	1.00E-04
2721.41713	5.70E-04	2721.4171	1.00E-04
2720.45277	5.60E-04	2720.4528	1.10E-04
2719.48841	5.60E-04	2719.4884	1.20E-04
2718.52406	5.70E-04	2718.5241	1.30E-04
2717.5597	5.70E-04	2717.5597	1.30E-04
2716.59534	5.70E-04	2716.5953	1.20E-04
2715.63098	5.80E-04	2715.631	1.10E-04
2714.66663	5.90E-04	2714.6666	1.10E-04
2713.70227	5.90E-04	2713.7023	1.00E-04
2712.73791	5.90E-04	2712.7379	1.10E-04
2711.77355	5.80E-04	2711.7736	1.20E-04
2710.8092	5.80E-04	2710.8092	1.20E-04
2709.84484	5.80E-04	2709.8448	1.20E-04
2708.88048	5.80E-04	2708.8805	1.10E-04
2707.91612	5.90E-04	2707.9161	1.10E-04
2706.95177	5.90E-04	2706.9518	1.10E-04
2705.98741	5.90E-04	2705.9874	1.10E-04
2705.02305	5.90E-04	2705.0231	1.00E-04
2704.05869	5.80E-04	2704.0587	1.00E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2703.09434	5.70E-04	2703.0943	9.00E-05
2702.12998	5.60E-04	2702.13	9.00E-05
2701.16562	5.60E-04	2701.1656	8.00E-05
2700.20126	5.60E-04	2700.2013	9.00E-05
2699.23691	5.70E-04	2699.2369	9.00E-05
2698.27255	5.80E-04	2698.2726	1.00E-04
2697.30819	5.80E-04	2697.3082	1.00E-04
2696.34383	5.80E-04	2696.3438	1.10E-04
2695.37947	5.80E-04	2695.3795	1.10E-04
2694.41512	5.80E-04	2694.4151	1.20E-04
2693.45076	5.70E-04	2693.4508	1.20E-04
2692.4864	5.60E-04	2692.4864	1.30E-04
2691.52204	5.60E-04	2691.522	1.20E-04
2690.55769	5.60E-04	2690.5577	1.20E-04
2689.59333	5.60E-04	2689.5933	1.10E-04
2688.62897	5.70E-04	2688.629	1.00E-04
2687.66461	5.70E-04	2687.6646	9.00E-05
2686.70026	5.70E-04	2686.7003	8.00E-05
2685.7359	5.70E-04	2685.7359	8.00E-05
2684.77154	5.60E-04	2684.7715	8.00E-05
2683.80718	5.60E-04	2683.8072	8.00E-05
2682.84283	5.50E-04	2682.8428	9.00E-05
2681.87847	5.60E-04	2681.8785	9.00E-05
2680.91411	5.60E-04	2680.9141	8.00E-05
2679.94975	5.60E-04	2679.9498	8.00E-05
2678.9854	5.60E-04	2678.9854	9.00E-05
2678.02104	5.60E-04	2678.021	9.00E-05
2677.05668	5.50E-04	2677.0567	9.00E-05
2676.09232	5.40E-04	2676.0923	1.00E-04
2675.12797	5.40E-04	2675.128	1.00E-04
2674.16361	5.50E-04	2674.1636	1.00E-04
2673.19925	5.50E-04	2673.1993	9.00E-05
2672.23489	5.50E-04	2672.2349	9.00E-05
2671.27053	5.40E-04	2671.2705	9.00E-05
2670.30618	5.40E-04	2670.3062	9.00E-05
2669.34182	5.50E-04	2669.3418	1.00E-04
2668.37746	5.60E-04	2668.3775	1.00E-04
2667.4131	5.70E-04	2667.4131	1.00E-04
2666.44875	5.80E-04	2666.4488	9.00E-05
2665.48439	5.80E-04	2665.4844	9.00E-05
2664.52003	5.70E-04	2664.52	8.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2663.55567	5.60E-04	2663.5557	9.00E-05
2662.59132	5.40E-04	2662.5913	1.00E-04
2661.62696	5.40E-04	2661.627	1.10E-04
2660.6626	5.40E-04	2660.6626	1.10E-04
2659.69824	5.40E-04	2659.6982	1.10E-04
2658.73389	5.50E-04	2658.7339	1.00E-04
2657.76953	5.50E-04	2657.7695	9.00E-05
2656.80517	5.50E-04	2656.8052	8.00E-05
2655.84081	5.50E-04	2655.8408	8.00E-05
2654.87646	5.60E-04	2654.8765	8.00E-05
2653.9121	5.60E-04	2653.9121	8.00E-05
2652.94774	5.70E-04	2652.9477	8.00E-05
2651.98338	5.70E-04	2651.9834	8.00E-05
2651.01903	5.60E-04	2651.019	8.00E-05
2650.05467	5.40E-04	2650.0547	8.00E-05
2649.09031	5.30E-04	2649.0903	8.00E-05
2648.12595	5.20E-04	2648.126	7.00E-05
2647.1616	5.30E-04	2647.1616	6.00E-05
2646.19724	5.30E-04	2646.1972	6.00E-05
2645.23288	5.40E-04	2645.2329	5.00E-05
2644.26852	5.50E-04	2644.2685	5.00E-05
2643.30416	5.50E-04	2643.3042	6.00E-05
2642.33981	5.50E-04	2642.3398	7.00E-05
2641.37545	5.50E-04	2641.3755	8.00E-05
2640.41109	5.50E-04	2640.4111	9.00E-05
2639.44673	5.50E-04	2639.4467	1.00E-04
2638.48238	5.50E-04	2638.4824	1.00E-04
2637.51802	5.50E-04	2637.518	1.00E-04
2636.55366	5.50E-04	2636.5537	9.00E-05
2635.5893	5.50E-04	2635.5893	9.00E-05
2634.62495	5.40E-04	2634.625	9.00E-05
2633.66059	5.40E-04	2633.6606	8.00E-05
2632.69623	5.40E-04	2632.6962	8.00E-05
2631.73187	5.40E-04	2631.7319	8.00E-05
2630.76752	5.40E-04	2630.7675	8.00E-05
2629.80316	5.50E-04	2629.8032	8.00E-05
2628.8388	5.50E-04	2628.8388	8.00E-05
2627.87444	5.50E-04	2627.8744	8.00E-05
2626.91009	5.40E-04	2626.9101	7.00E-05
2625.94573	5.30E-04	2625.9457	7.00E-05
2624.98137	5.20E-04	2624.9814	7.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2624.01701	5.20E-04	2624.017	8.00E-05
2623.05266	5.20E-04	2623.0527	9.00E-05
2622.0883	5.20E-04	2622.0883	1.10E-04
2621.12394	5.30E-04	2621.1239	1.20E-04
2620.15958	5.30E-04	2620.1596	1.10E-04
2619.19522	5.40E-04	2619.1952	1.00E-04
2618.23087	5.40E-04	2618.2309	9.00E-05
2617.26651	5.40E-04	2617.2665	8.00E-05
2616.30215	5.50E-04	2616.3022	8.00E-05
2615.33779	5.50E-04	2615.3378	7.00E-05
2614.37344	5.40E-04	2614.3734	7.00E-05
2613.40908	5.40E-04	2613.4091	7.00E-05
2612.44472	5.40E-04	2612.4447	7.00E-05
2611.48036	5.30E-04	2611.4804	7.00E-05
2610.51601	5.30E-04	2610.516	8.00E-05
2609.55165	5.30E-04	2609.5517	8.00E-05
2608.58729	5.30E-04	2608.5873	9.00E-05
2607.62293	5.30E-04	2607.6229	9.00E-05
2606.65858	5.30E-04	2606.6586	8.00E-05
2605.69422	5.30E-04	2605.6942	7.00E-05
2604.72986	5.40E-04	2604.7299	7.00E-05
2603.7655	5.40E-04	2603.7655	7.00E-05
2602.80115	5.50E-04	2602.8012	7.00E-05
2601.83679	5.50E-04	2601.8368	8.00E-05
2600.87243	5.40E-04	2600.8724	8.00E-05
2599.90807	5.40E-04	2599.9081	8.00E-05
2598.94372	5.30E-04	2598.9437	8.00E-05
2597.97936	5.20E-04	2597.9794	8.00E-05
2597.015	5.20E-04	2597.015	8.00E-05
2596.05064	5.20E-04	2596.0506	7.00E-05
2595.08628	5.20E-04	2595.0863	7.00E-05
2594.12193	5.20E-04	2594.1219	7.00E-05
2593.15757	5.30E-04	2593.1576	7.00E-05
2592.19321	5.30E-04	2592.1932	8.00E-05
2591.22885	5.20E-04	2591.2289	9.00E-05
2590.2645	5.20E-04	2590.2645	1.00E-04
2589.30014	5.20E-04	2589.3001	9.00E-05
2588.33578	5.20E-04	2588.3358	9.00E-05
2587.37142	5.20E-04	2587.3714	8.00E-05
2586.40707	5.20E-04	2586.4071	7.00E-05
2585.44271	5.20E-04	2585.4427	7.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2584.47835	5.20E-04	2584.4784	7.00E-05
2583.51399	5.10E-04	2583.514	7.00E-05
2582.54964	5.10E-04	2582.5496	7.00E-05
2581.58528	5.10E-04	2581.5853	6.00E-05
2580.62092	5.20E-04	2580.6209	5.00E-05
2579.65656	5.20E-04	2579.6566	5.00E-05
2578.69221	5.20E-04	2578.6922	5.00E-05
2577.72785	5.20E-04	2577.7279	5.00E-05
2576.76349	5.10E-04	2576.7635	6.00E-05
2575.79913	5.10E-04	2575.7991	6.00E-05
2574.83478	5.00E-04	2574.8348	6.00E-05
2573.87042	5.00E-04	2573.8704	6.00E-05
2572.90606	4.90E-04	2572.9061	6.00E-05
2571.9417	4.90E-04	2571.9417	6.00E-05
2570.97735	5.00E-04	2570.9774	5.00E-05
2570.01299	4.90E-04	2570.013	5.00E-05
2569.04863	4.90E-04	2569.0486	5.00E-05
2568.08427	4.90E-04	2568.0843	5.00E-05
2567.11991	4.80E-04	2567.1199	6.00E-05
2566.15556	4.80E-04	2566.1556	6.00E-05
2565.1912	4.80E-04	2565.1912	7.00E-05
2564.22684	4.80E-04	2564.2268	7.00E-05
2563.26248	4.90E-04	2563.2625	6.00E-05
2562.29813	4.90E-04	2562.2981	5.00E-05
2561.33377	4.90E-04	2561.3338	4.00E-05
2560.36941	4.90E-04	2560.3694	3.00E-05
2559.40505	4.90E-04	2559.4051	3.00E-05
2558.4407	4.90E-04	2558.4407	3.00E-05
2557.47634	4.80E-04	2557.4763	3.00E-05
2556.51198	4.80E-04	2556.512	4.00E-05
2555.54762	4.80E-04	2555.5476	4.00E-05
2554.58327	4.80E-04	2554.5833	4.00E-05
2553.61891	4.80E-04	2553.6189	4.00E-05
2552.65455	4.80E-04	2552.6546	4.00E-05
2551.69019	4.80E-04	2551.6902	4.00E-05
2550.72584	4.80E-04	2550.7258	3.00E-05
2549.76148	4.80E-04	2549.7615	3.00E-05
2548.79712	4.80E-04	2548.7971	2.00E-05
2547.83276	4.70E-04	2547.8328	3.00E-05
2546.86841	4.70E-04	2546.8684	3.00E-05
2545.90405	4.70E-04	2545.9041	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2544.93969	4.70E-04	2544.9397	4.00E-05
2543.97533	4.70E-04	2543.9753	3.00E-05
2543.01097	4.70E-04	2543.011	3.00E-05
2542.04662	4.70E-04	2542.0466	3.00E-05
2541.08226	4.70E-04	2541.0823	3.00E-05
2540.1179	4.80E-04	2540.1179	3.00E-05
2539.15354	4.80E-04	2539.1535	4.00E-05
2538.18919	4.80E-04	2538.1892	5.00E-05
2537.22483	4.80E-04	2537.2248	5.00E-05
2536.26047	4.80E-04	2536.2605	5.00E-05
2535.29611	4.80E-04	2535.2961	4.00E-05
2534.33176	4.80E-04	2534.3318	3.00E-05
2533.3674	4.80E-04	2533.3674	2.00E-05
2532.40304	4.70E-04	2532.403	2.00E-05
2531.43868	4.70E-04	2531.4387	2.00E-05
2530.47433	4.70E-04	2530.4743	3.00E-05
2529.50997	4.70E-04	2529.51	4.00E-05
2528.54561	4.70E-04	2528.5456	5.00E-05
2527.58125	4.70E-04	2527.5813	5.00E-05
2526.6169	4.70E-04	2526.6169	5.00E-05
2525.65254	4.70E-04	2525.6525	5.00E-05
2524.68818	4.70E-04	2524.6882	4.00E-05
2523.72382	4.70E-04	2523.7238	4.00E-05
2522.75947	4.70E-04	2522.7595	3.00E-05
2521.79511	4.70E-04	2521.7951	2.00E-05
2520.83075	4.60E-04	2520.8308	2.00E-05
2519.86639	4.50E-04	2519.8664	2.00E-05
2518.90204	4.50E-04	2518.902	2.00E-05
2517.93768	4.40E-04	2517.9377	2.00E-05
2516.97332	4.40E-04	2516.9733	3.00E-05
2516.00896	4.40E-04	2516.009	4.00E-05
2515.0446	4.50E-04	2515.0446	4.00E-05
2514.08025	4.50E-04	2514.0803	5.00E-05
2513.11589	4.50E-04	2513.1159	4.00E-05
2512.15153	4.50E-04	2512.1515	4.00E-05
2511.18717	4.50E-04	2511.1872	3.00E-05
2510.22282	4.50E-04	2510.2228	3.00E-05
2509.25846	4.60E-04	2509.2585	3.00E-05
2508.2941	4.60E-04	2508.2941	3.00E-05
2507.32974	4.60E-04	2507.3297	4.00E-05
2506.36539	4.60E-04	2506.3654	4.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2505.40103	4.60E-04	2505.401	5.00E-05
2504.43667	4.60E-04	2504.4367	4.00E-05
2503.47231	4.60E-04	2503.4723	3.00E-05
2502.50796	4.60E-04	2502.508	2.00E-05
2501.5436	4.60E-04	2501.5436	2.00E-05
2500.57924	4.60E-04	2500.5792	2.00E-05
2499.61488	4.50E-04	2499.6149	2.00E-05
2498.65053	4.50E-04	2498.6505	3.00E-05
2497.68617	4.50E-04	2497.6862	3.00E-05
2496.72181	4.50E-04	2496.7218	3.00E-05
2495.75745	4.50E-04	2495.7575	2.00E-05
2494.7931	4.50E-04	2494.7931	2.00E-05
2493.82874	4.50E-04	2493.8287	2.00E-05
2492.86438	4.50E-04	2492.8644	3.00E-05
2491.90002	4.50E-04	2491.9	4.00E-05
2490.93566	4.50E-04	2490.9357	4.00E-05
2489.97131	4.50E-04	2489.9713	4.00E-05
2489.00695	4.60E-04	2489.007	3.00E-05
2488.04259	4.60E-04	2488.0426	2.00E-05
2487.07823	4.60E-04	2487.0782	1.00E-05
2486.11388	4.60E-04	2486.1139	1.00E-05
2485.14952	4.50E-04	2485.1495	1.00E-05
2484.18516	4.40E-04	2484.1852	1.00E-05
2483.2208	4.40E-04	2483.2208	2.00E-05
2482.25645	4.30E-04	2482.2565	3.00E-05
2481.29209	4.40E-04	2481.2921	3.00E-05
2480.32773	4.30E-04	2480.3277	3.00E-05
2479.36337	4.30E-04	2479.3634	4.00E-05
2478.39902	4.20E-04	2478.399	4.00E-05
2477.43466	4.20E-04	2477.4347	5.00E-05
2476.4703	4.20E-04	2476.4703	5.00E-05
2475.50594	4.30E-04	2475.5059	4.00E-05
2474.54159	4.40E-04	2474.5416	4.00E-05
2473.57723	4.50E-04	2473.5772	4.00E-05
2472.61287	4.50E-04	2472.6129	4.00E-05
2471.64851	4.40E-04	2471.6485	4.00E-05
2470.68416	4.50E-04	2470.6842	5.00E-05
2469.7198	4.50E-04	2469.7198	6.00E-05
2468.75544	4.60E-04	2468.7554	6.00E-05
2467.79108	4.70E-04	2467.7911	6.00E-05
2466.82672	4.70E-04	2466.8267	5.00E-05



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm <sup>-1</sup> )	Absorbance	Wavenumbers (cm <sup>-1</sup> )	Absorbance
2465.86237	4.80E-04	2465.8624	4.00E-05
2464.89801	4.70E-04	2464.898	3.00E-05
2463.93365	4.70E-04	2463.9337	3.00E-05
2462.96929	4.60E-04	2462.9693	3.00E-05
2462.00494	4.50E-04	2462.0049	3.00E-05
2461.04058	4.40E-04	2461.0406	3.00E-05
2460.07622	4.30E-04	2460.0762	3.00E-05
2459.11186	4.30E-04	2459.1119	3.00E-05
2458.14751	4.30E-04	2458.1475	2.00E-05
2457.18315	4.30E-04	2457.1832	2.00E-05
2456.21879	4.40E-04	2456.2188	2.00E-05
2455.25443	4.50E-04	2455.2544	2.00E-05
2454.29008	4.50E-04	2454.2901	2.00E-05
2453.32572	4.50E-04	2453.3257	3.00E-05
2452.36136	4.50E-04	2452.3614	3.00E-05
2451.397	4.50E-04	2451.397	4.00E-05
2450.43265	4.50E-04	2450.4327	5.00E-05
2449.46829	4.50E-04	2449.4683	5.00E-05
2448.50393	4.50E-04	2448.5039	5.00E-05
2447.53957	4.50E-04	2447.5396	5.00E-05
2446.57522	4.50E-04	2446.5752	4.00E-05
2445.61086	4.50E-04	2445.6109	4.00E-05
2444.6465	4.50E-04	2444.6465	4.00E-05
2443.68214	4.50E-04	2443.6821	5.00E-05
2442.71779	4.50E-04	2442.7178	5.00E-05
2441.75343	4.50E-04	2441.7534	5.00E-05
2440.78907	4.40E-04	2440.7891	5.00E-05
2439.82471	4.40E-04	2439.8247	5.00E-05
2438.86035	4.40E-04	2438.8604	5.00E-05
2437.896	4.40E-04	2437.896	5.00E-05
2436.93164	4.50E-04	2436.9316	5.00E-05
2435.96728	4.50E-04	2435.9673	4.00E-05
2435.00292	4.50E-04	2435.0029	4.00E-05
2434.03857	4.40E-04	2434.0386	3.00E-05
2433.07421	4.40E-04	2433.0742	3.00E-05
2432.10985	4.30E-04	2432.1099	3.00E-05
2431.14549	4.30E-04	2431.1455	2.00E-05
2430.18114	4.30E-04	2430.1811	2.00E-05
2429.21678	4.30E-04	2429.2168	2.00E-05
2428.25242	4.40E-04	2428.2524	2.00E-05
2427.28806	4.40E-04	2427.2881	2.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2426.32371	4.50E-04	2426.3237	2.00E-05
2425.35935	4.50E-04	2425.3594	3.00E-05
2424.39499	4.50E-04	2424.395	4.00E-05
2423.43063	4.60E-04	2423.4306	4.00E-05
2422.46628	4.50E-04	2422.4663	4.00E-05
2421.50192	4.50E-04	2421.5019	4.00E-05
2420.53756	4.50E-04	2420.5376	4.00E-05
2419.5732	4.40E-04	2419.5732	4.00E-05
2418.60885	4.40E-04	2418.6089	5.00E-05
2417.64449	4.40E-04	2417.6445	5.00E-05
2416.68013	4.50E-04	2416.6801	5.00E-05
2415.71577	4.50E-04	2415.7158	4.00E-05
2414.75141	4.50E-04	2414.7514	3.00E-05
2413.78706	4.50E-04	2413.7871	3.00E-05
2412.8227	4.40E-04	2412.8227	4.00E-05
2411.85834	4.40E-04	2411.8583	4.00E-05
2410.89398	4.40E-04	2410.894	4.00E-05
2409.92963	4.40E-04	2409.9296	4.00E-05
2408.96527	4.50E-04	2408.9653	4.00E-05
2408.00091	4.50E-04	2408.0009	3.00E-05
2407.03655	4.50E-04	2407.0366	3.00E-05
2406.0722	4.40E-04	2406.0722	3.00E-05
2405.10784	4.40E-04	2405.1078	3.00E-05
2404.14348	4.40E-04	2404.1435	3.00E-05
2403.17912	4.30E-04	2403.1791	3.00E-05
2402.21477	4.30E-04	2402.2148	4.00E-05
2401.25041	4.30E-04	2401.2504	4.00E-05
2400.28605	4.30E-04	2400.2861	4.00E-05
2399.32169	4.30E-04	2399.3217	4.00E-05
2398.35734	4.20E-04	2398.3573	4.00E-05
2397.39298	4.20E-04	2397.393	5.00E-05
2396.42862	4.20E-04	2396.4286	5.00E-05
2395.46426	4.20E-04	2395.4643	5.00E-05
2394.49991	4.20E-04	2394.4999	5.00E-05
2393.53555	4.20E-04	2393.5356	5.00E-05
2392.57119	4.10E-04	2392.5712	5.00E-05
2391.60683	4.10E-04	2391.6068	4.00E-05
2390.64248	4.10E-04	2390.6425	3.00E-05
2389.67812	4.20E-04	2389.6781	2.00E-05
2388.71376	4.30E-04	2388.7138	2.00E-05
2387.7494	4.50E-04	2387.7494	2.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2386.78504	4.70E-04	2386.785	2.00E-05
2385.82069	4.80E-04	2385.8207	2.00E-05
2384.85633	5.00E-04	2384.8563	2.00E-05
2383.89197	5.20E-04	2383.892	3.00E-05
2382.92761	5.60E-04	2382.9276	4.00E-05
2381.96326	6.10E-04	2381.9633	5.00E-05
2380.9989	6.60E-04	2380.9989	5.00E-05
2380.03454	7.10E-04	2380.0345	6.00E-05
2379.07018	7.70E-04	2379.0702	6.00E-05
2378.10583	8.20E-04	2378.1058	7.00E-05
2377.14147	8.80E-04	2377.1415	8.00E-05
2376.17711	9.50E-04	2376.1771	9.00E-05
2375.21275	0.00103	2375.2128	1.00E-04
2374.2484	0.0011	2374.2484	1.10E-04
2373.28404	0.00118	2373.284	1.20E-04
2372.31968	0.00125	2372.3197	1.40E-04
2371.35532	0.00132	2371.3553	1.70E-04
2370.39097	0.00138	2370.391	1.90E-04
2369.42661	0.00144	2369.4266	1.90E-04
2368.46225	0.00153	2368.4623	1.90E-04
2367.49789	0.00163	2367.4979	1.80E-04
2366.53354	0.00173	2366.5335	1.90E-04
2365.56918	0.00182	2365.5692	2.10E-04
2364.60482	0.00188	2364.6048	2.40E-04
2363.64046	0.00191	2363.6405	2.60E-04
2362.6761	0.00193	2362.6761	2.60E-04
2361.71175	0.00193	2361.7118	2.60E-04
2360.74739	0.00193	2360.7474	2.60E-04
2359.78303	0.0019	2359.783	2.60E-04
2358.81867	0.00186	2358.8187	2.70E-04
2357.85432	0.0018	2357.8543	2.80E-04
2356.88996	0.00173	2356.89	2.90E-04
2355.9256	0.00164	2355.9256	2.90E-04
2354.96124	0.00157	2354.9612	2.80E-04
2353.99689	0.00147	2353.9969	2.60E-04
2353.03253	0.00135	2353.0325	2.30E-04
2352.06817	0.00121	2352.0682	1.80E-04
2351.10381	0.00109	2351.1038	1.50E-04
2350.13946	0.00102	2350.1395	1.30E-04
2349.1751	0.00102	2349.1751	1.30E-04
2348.21074	0.00109	2348.2107	1.20E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2347.24638	0.0012	2347.2464	1.10E-04
2346.28203	0.00131	2346.282	1.10E-04
2345.31767	0.00139	2345.3177	1.10E-04
2344.35331	0.00144	2344.3533	1.20E-04
2343.38895	0.00144	2343.389	1.50E-04
2342.4246	0.00143	2342.4246	1.90E-04
2341.46024	0.00142	2341.4602	2.20E-04
2340.49588	0.00142	2340.4959	2.50E-04
2339.53152	0.00141	2339.5315	2.90E-04
2338.56716	0.00139	2338.5672	3.20E-04
2337.60281	0.00137	2337.6028	3.20E-04
2336.63845	0.00136	2336.6385	3.10E-04
2335.67409	0.00136	2335.6741	3.00E-04
2334.70973	0.00138	2334.7097	2.70E-04
2333.74538	0.00139	2333.7454	2.30E-04
2332.78102	0.00139	2332.781	2.10E-04
2331.81666	0.00138	2331.8167	1.90E-04
2330.8523	0.00135	2330.8523	1.70E-04
2329.88795	0.00131	2329.888	1.50E-04
2328.92359	0.00128	2328.9236	1.40E-04
2327.95923	0.00126	2327.9592	1.40E-04
2326.99487	0.00124	2326.9949	1.20E-04
2326.03052	0.00122	2326.0305	1.10E-04
2325.06616	0.00119	2325.0662	1.00E-04
2324.1018	0.00114	2324.1018	1.00E-04
2323.13744	0.00109	2323.1374	1.00E-04
2322.17309	0.00104	2322.1731	1.30E-04
2321.20873	0.00101	2321.2087	1.40E-04
2320.24437	9.80E-04	2320.2444	1.50E-04
2319.28001	9.50E-04	2319.28	1.50E-04
2318.31566	9.20E-04	2318.3157	1.40E-04
2317.3513	8.80E-04	2317.3513	1.20E-04
2316.38694	8.40E-04	2316.3869	1.00E-04
2315.42258	8.10E-04	2315.4226	9.00E-05
2314.45823	7.90E-04	2314.4582	7.00E-05
2313.49387	7.80E-04	2313.4939	6.00E-05
2312.52951	7.70E-04	2312.5295	5.00E-05
2311.56515	7.60E-04	2311.5652	4.00E-05
2310.60079	7.40E-04	2310.6008	4.00E-05
2309.63644	7.10E-04	2309.6364	3.00E-05
2308.67208	6.90E-04	2308.6721	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2307.70772	6.60E-04	2307.7077	3.00E-05
2306.74336	6.40E-04	2306.7434	3.00E-05
2305.77901	6.30E-04	2305.779	3.00E-05
2304.81465	6.20E-04	2304.8147	3.00E-05
2303.85029	6.10E-04	2303.8503	3.00E-05
2302.88593	6.00E-04	2302.8859	3.00E-05
2301.92158	5.80E-04	2301.9216	3.00E-05
2300.95722	5.60E-04	2300.9572	4.00E-05
2299.99286	5.50E-04	2299.9929	4.00E-05
2299.0285	5.40E-04	2299.0285	4.00E-05
2298.06415	5.30E-04	2298.0642	4.00E-05
2297.09979	5.20E-04	2297.0998	3.00E-05
2296.13543	5.00E-04	2296.1354	3.00E-05
2295.17107	4.80E-04	2295.1711	2.00E-05
2294.20672	4.70E-04	2294.2067	2.00E-05
2293.24236	4.50E-04	2293.2424	2.00E-05
2292.278	4.50E-04	2292.278	2.00E-05
2291.31364	4.40E-04	2291.3136	1.00E-05
2290.34929	4.40E-04	2290.3493	1.00E-05
2289.38493	4.30E-04	2289.3849	1.00E-05
2288.42057	4.30E-04	2288.4206	1.00E-05
2287.45621	4.20E-04	2287.4562	2.00E-05
2286.49185	4.10E-04	2286.4919	3.00E-05
2285.5275	4.00E-04	2285.5275	3.00E-05
2284.56314	3.90E-04	2284.5631	3.00E-05
2283.59878	3.90E-04	2283.5988	2.00E-05
2282.63442	3.80E-04	2282.6344	3.00E-05
2281.67007	3.90E-04	2281.6701	2.00E-05
2280.70571	4.00E-04	2280.7057	2.00E-05
2279.74135	4.00E-04	2279.7414	2.00E-05
2278.77699	4.10E-04	2278.777	2.00E-05
2277.81264	4.10E-04	2277.8126	2.00E-05
2276.84828	4.10E-04	2276.8483	2.00E-05
2275.88392	4.10E-04	2275.8839	2.00E-05
2274.91956	4.10E-04	2274.9196	2.00E-05
2273.95521	4.10E-04	2273.9552	2.00E-05
2272.99085	4.10E-04	2272.9909	3.00E-05
2272.02649	4.10E-04	2272.0265	3.00E-05
2271.06213	4.10E-04	2271.0621	3.00E-05
2270.09778	4.00E-04	2270.0978	3.00E-05
2269.13342	4.00E-04	2269.1334	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2268.16906	4.00E-04	2268.1691	3.00E-05
2267.2047	4.00E-04	2267.2047	2.00E-05
2266.24035	3.90E-04	2266.2404	2.00E-05
2265.27599	3.90E-04	2265.276	2.00E-05
2264.31163	3.90E-04	2264.3116	2.00E-05
2263.34727	3.90E-04	2263.3473	2.00E-05
2262.38292	3.90E-04	2262.3829	2.00E-05
2261.41856	3.90E-04	2261.4186	3.00E-05
2260.4542	3.90E-04	2260.4542	4.00E-05
2259.48984	3.90E-04	2259.4898	4.00E-05
2258.52548	4.00E-04	2258.5255	4.00E-05
2257.56113	4.00E-04	2257.5611	3.00E-05
2256.59677	4.10E-04	2256.5968	3.00E-05
2255.63241	4.10E-04	2255.6324	2.00E-05
2254.66805	4.10E-04	2254.6681	2.00E-05
2253.7037	4.00E-04	2253.7037	2.00E-05
2252.73934	4.00E-04	2252.7393	2.00E-05
2251.77498	3.90E-04	2251.775	2.00E-05
2250.81062	3.90E-04	2250.8106	2.00E-05
2249.84627	4.00E-04	2249.8463	2.00E-05
2248.88191	4.00E-04	2248.8819	1.00E-05
2247.91755	4.10E-04	2247.9176	1.00E-05
2246.95319	4.10E-04	2246.9532	1.00E-05
2245.98884	4.00E-04	2245.9888	2.00E-05
2245.02448	3.80E-04	2245.0245	2.00E-05
2244.06012	3.80E-04	2244.0601	3.00E-05
2243.09576	3.70E-04	2243.0958	3.00E-05
2242.13141	3.80E-04	2242.1314	3.00E-05
2241.16705	3.80E-04	2241.1671	4.00E-05
2240.20269	3.80E-04	2240.2027	4.00E-05
2239.23833	3.80E-04	2239.2383	3.00E-05
2238.27398	3.80E-04	2238.274	3.00E-05
2237.30962	3.80E-04	2237.3096	2.00E-05
2236.34526	3.70E-04	2236.3453	1.00E-05
2235.3809	3.70E-04	2235.3809	1.00E-05
2234.41654	3.70E-04	2234.4165	1.00E-05
2233.45219	3.70E-04	2233.4522	2.00E-05
2232.48783	3.70E-04	2232.4878	3.00E-05
2231.52347	3.70E-04	2231.5235	3.00E-05
2230.55911	3.70E-04	2230.5591	4.00E-05
2229.59476	3.80E-04	2229.5948	4.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2228.6304	3.80E-04	2228.6304	3.00E-05
2227.66604	3.80E-04	2227.666	3.00E-05
2226.70168	3.70E-04	2226.7017	2.00E-05
2225.73733	3.70E-04	2225.7373	2.00E-05
2224.77297	3.60E-04	2224.773	2.00E-05
2223.80861	3.60E-04	2223.8086	2.00E-05
2222.84425	3.60E-04	2222.8443	3.00E-05
2221.8799	3.60E-04	2221.8799	3.00E-05
2220.91554	3.60E-04	2220.9155	3.00E-05
2219.95118	3.60E-04	2219.9512	3.00E-05
2218.98682	3.70E-04	2218.9868	2.00E-05
2218.02247	3.70E-04	2218.0225	2.00E-05
2217.05811	3.70E-04	2217.0581	2.00E-05
2216.09375	3.70E-04	2216.0938	1.00E-05
2215.12939	3.70E-04	2215.1294	1.00E-05
2214.16504	3.60E-04	2214.165	1.00E-05
2213.20068	3.50E-04	2213.2007	2.00E-05
2212.23632	3.50E-04	2212.2363	3.00E-05
2211.27196	3.60E-04	2211.272	3.00E-05
2210.30761	3.70E-04	2210.3076	4.00E-05
2209.34325	3.70E-04	2209.3433	3.00E-05
2208.37889	3.60E-04	2208.3789	3.00E-05
2207.41453	3.50E-04	2207.4145	2.00E-05
2206.45017	3.40E-04	2206.4502	1.00E-05
2205.48582	3.50E-04	2205.4858	2.00E-05
2204.52146	3.50E-04	2204.5215	2.00E-05
2203.5571	3.60E-04	2203.5571	2.00E-05
2202.59274	3.70E-04	2202.5927	3.00E-05
2201.62839	3.70E-04	2201.6284	3.00E-05
2200.66403	3.60E-04	2200.664	2.00E-05
2199.69967	3.60E-04	2199.6997	2.00E-05
2198.73531	3.60E-04	2198.7353	2.00E-05
2197.77096	3.70E-04	2197.771	2.00E-05
2196.8066	3.70E-04	2196.8066	2.00E-05
2195.84224	3.70E-04	2195.8422	3.00E-05
2194.87788	3.70E-04	2194.8779	3.00E-05
2193.91353	3.70E-04	2193.9135	3.00E-05
2192.94917	3.60E-04	2192.9492	2.00E-05
2191.98481	3.50E-04	2191.9848	2.00E-05
2191.02045	3.40E-04	2191.0205	3.00E-05
2190.0561	3.40E-04	2190.0561	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2189.09174	3.40E-04	2189.0917	4.00E-05
2188.12738	3.40E-04	2188.1274	4.00E-05
2187.16302	3.50E-04	2187.163	5.00E-05
2186.19867	3.50E-04	2186.1987	4.00E-05
2185.23431	3.50E-04	2185.2343	4.00E-05
2184.26995	3.50E-04	2184.27	4.00E-05
2183.30559	3.50E-04	2183.3056	3.00E-05
2182.34123	3.50E-04	2182.3412	3.00E-05
2181.37688	3.50E-04	2181.3769	2.00E-05
2180.41252	3.60E-04	2180.4125	3.00E-05
2179.44816	3.70E-04	2179.4482	3.00E-05
2178.4838	3.60E-04	2178.4838	4.00E-05
2177.51945	3.60E-04	2177.5195	4.00E-05
2176.55509	3.50E-04	2176.5551	4.00E-05
2175.59073	3.50E-04	2175.5907	3.00E-05
2174.62637	3.50E-04	2174.6264	3.00E-05
2173.66202	3.60E-04	2173.662	2.00E-05
2172.69766	3.60E-04	2172.6977	2.00E-05
2171.7333	3.60E-04	2171.7333	2.00E-05
2170.76894	3.60E-04	2170.7689	3.00E-05
2169.80459	3.60E-04	2169.8046	3.00E-05
2168.84023	3.60E-04	2168.8402	3.00E-05
2167.87587	3.60E-04	2167.8759	4.00E-05
2166.91151	3.60E-04	2166.9115	4.00E-05
2165.94716	3.60E-04	2165.9472	4.00E-05
2164.9828	3.60E-04	2164.9828	5.00E-05
2164.01844	3.60E-04	2164.0184	5.00E-05
2163.05408	3.60E-04	2163.0541	4.00E-05
2162.08973	3.60E-04	2162.0897	4.00E-05
2161.12537	3.60E-04	2161.1254	3.00E-05
2160.16101	3.70E-04	2160.161	3.00E-05
2159.19665	3.70E-04	2159.1967	3.00E-05
2158.23229	3.80E-04	2158.2323	2.00E-05
2157.26794	3.70E-04	2157.2679	2.00E-05
2156.30358	3.70E-04	2156.3036	2.00E-05
2155.33922	3.60E-04	2155.3392	2.00E-05
2154.37486	3.50E-04	2154.3749	2.00E-05
2153.41051	3.40E-04	2153.4105	2.00E-05
2152.44615	3.40E-04	2152.4462	3.00E-05
2151.48179	3.40E-04	2151.4818	4.00E-05
2150.51743	3.50E-04	2150.5174	5.00E-05



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2149.55308	3.60E-04	2149.5531	4.00E-05
2148.58872	3.70E-04	2148.5887	4.00E-05
2147.62436	3.70E-04	2147.6244	3.00E-05
2146.66	3.70E-04	2146.66	3.00E-05
2145.69565	3.60E-04	2145.6957	3.00E-05
2144.73129	3.50E-04	2144.7313	3.00E-05
2143.76693	3.40E-04	2143.7669	4.00E-05
2142.80257	3.30E-04	2142.8026	5.00E-05
2141.83822	3.20E-04	2141.8382	4.00E-05
2140.87386	3.20E-04	2140.8739	4.00E-05
2139.9095	3.30E-04	2139.9095	4.00E-05
2138.94514	3.40E-04	2138.9451	3.00E-05
2137.98079	3.50E-04	2137.9808	3.00E-05
2137.01643	3.60E-04	2137.0164	2.00E-05
2136.05207	3.70E-04	2136.0521	2.00E-05
2135.08771	3.60E-04	2135.0877	2.00E-05
2134.12336	3.60E-04	2134.1234	3.00E-05
2133.159	3.50E-04	2133.159	3.00E-05
2132.19464	3.50E-04	2132.1946	5.00E-05
2131.23028	3.50E-04	2131.2303	5.00E-05
2130.26592	3.60E-04	2130.2659	5.00E-05
2129.30157	3.70E-04	2129.3016	4.00E-05
2128.33721	3.70E-04	2128.3372	3.00E-05
2127.37285	3.70E-04	2127.3729	3.00E-05
2126.40849	3.60E-04	2126.4085	3.00E-05
2125.44414	3.60E-04	2125.4441	3.00E-05
2124.47978	3.60E-04	2124.4798	4.00E-05
2123.51542	3.60E-04	2123.5154	4.00E-05
2122.55106	3.70E-04	2122.5511	4.00E-05
2121.58671	3.60E-04	2121.5867	3.00E-05
2120.62235	3.60E-04	2120.6224	2.00E-05
2119.65799	3.60E-04	2119.658	2.00E-05
2118.69363	3.60E-04	2118.6936	3.00E-05
2117.72928	3.60E-04	2117.7293	4.00E-05
2116.76492	3.60E-04	2116.7649	4.00E-05
2115.80056	3.60E-04	2115.8006	5.00E-05
2114.8362	3.60E-04	2114.8362	4.00E-05
2113.87185	3.50E-04	2113.8719	4.00E-05
2112.90749	3.50E-04	2112.9075	4.00E-05
2111.94313	3.50E-04	2111.9431	5.00E-05
2110.97877	3.50E-04	2110.9788	5.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2110.01442	3.50E-04	2110.0144	6.00E-05
2109.05006	3.50E-04	2109.0501	5.00E-05
2108.0857	3.40E-04	2108.0857	5.00E-05
2107.12134	3.30E-04	2107.1213	4.00E-05
2106.15698	3.30E-04	2106.157	3.00E-05
2105.19263	3.30E-04	2105.1926	3.00E-05
2104.22827	3.30E-04	2104.2283	2.00E-05
2103.26391	3.40E-04	2103.2639	2.00E-05
2102.29955	3.40E-04	2102.2996	2.00E-05
2101.3352	3.40E-04	2101.3352	3.00E-05
2100.37084	3.50E-04	2100.3708	3.00E-05
2099.40648	3.50E-04	2099.4065	3.00E-05
2098.44212	3.50E-04	2098.4421	4.00E-05
2097.47777	3.50E-04	2097.4778	4.00E-05
2096.51341	3.50E-04	2096.5134	4.00E-05
2095.54905	3.40E-04	2095.5491	4.00E-05
2094.58469	3.40E-04	2094.5847	4.00E-05
2093.62034	3.40E-04	2093.6203	3.00E-05
2092.65598	3.50E-04	2092.656	3.00E-05
2091.69162	3.50E-04	2091.6916	3.00E-05
2090.72726	3.60E-04	2090.7273	4.00E-05
2089.76291	3.60E-04	2089.7629	5.00E-05
2088.79855	3.60E-04	2088.7986	5.00E-05
2087.83419	3.60E-04	2087.8342	5.00E-05
2086.86983	3.50E-04	2086.8698	5.00E-05
2085.90548	3.50E-04	2085.9055	5.00E-05
2084.94112	3.50E-04	2084.9411	5.00E-05
2083.97676	3.40E-04	2083.9768	5.00E-05
2083.0124	3.40E-04	2083.0124	5.00E-05
2082.04805	3.40E-04	2082.0481	5.00E-05
2081.08369	3.40E-04	2081.0837	4.00E-05
2080.11933	3.40E-04	2080.1193	3.00E-05
2079.15497	3.40E-04	2079.155	3.00E-05
2078.19061	3.40E-04	2078.1906	2.00E-05
2077.22626	3.30E-04	2077.2263	2.00E-05
2076.2619	3.30E-04	2076.2619	2.00E-05
2075.29754	3.30E-04	2075.2975	3.00E-05
2074.33318	3.30E-04	2074.3332	3.00E-05
2073.36883	3.30E-04	2073.3688	4.00E-05
2072.40447	3.20E-04	2072.4045	4.00E-05
2071.44011	3.20E-04	2071.4401	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2070.47575	3.20E-04	2070.4758	3.00E-05
2069.5114	3.20E-04	2069.5114	3.00E-05
2068.54704	3.30E-04	2068.547	4.00E-05
2067.58268	3.40E-04	2067.5827	4.00E-05
2066.61832	3.50E-04	2066.6183	4.00E-05
2065.65397	3.50E-04	2065.654	3.00E-05
2064.68961	3.50E-04	2064.6896	3.00E-05
2063.72525	3.50E-04	2063.7253	2.00E-05
2062.76089	3.40E-04	2062.7609	2.00E-05
2061.79654	3.30E-04	2061.7965	2.00E-05
2060.83218	3.20E-04	2060.8322	2.00E-05
2059.86782	3.10E-04	2059.8678	2.00E-05
2058.90346	3.10E-04	2058.9035	3.00E-05
2057.93911	3.20E-04	2057.9391	4.00E-05
2056.97475	3.20E-04	2056.9748	4.00E-05
2056.01039	3.20E-04	2056.0104	5.00E-05
2055.04603	3.30E-04	2055.046	5.00E-05
2054.08167	3.30E-04	2054.0817	5.00E-05
2053.11732	3.30E-04	2053.1173	5.00E-05
2052.15296	3.40E-04	2052.153	5.00E-05
2051.1886	3.50E-04	2051.1886	5.00E-05
2050.22424	3.50E-04	2050.2242	5.00E-05
2049.25989	3.50E-04	2049.2599	5.00E-05
2048.29553	3.40E-04	2048.2955	5.00E-05
2047.33117	3.40E-04	2047.3312	4.00E-05
2046.36681	3.30E-04	2046.3668	4.00E-05
2045.40246	3.30E-04	2045.4025	3.00E-05
2044.4381	3.30E-04	2044.4381	3.00E-05
2043.47374	3.40E-04	2043.4737	3.00E-05
2042.50938	3.40E-04	2042.5094	4.00E-05
2041.54503	3.40E-04	2041.545	4.00E-05
2040.58067	3.50E-04	2040.5807	4.00E-05
2039.61631	3.40E-04	2039.6163	5.00E-05
2038.65195	3.30E-04	2038.652	5.00E-05
2037.6876	3.20E-04	2037.6876	5.00E-05
2036.72324	3.20E-04	2036.7232	5.00E-05
2035.75888	3.20E-04	2035.7589	5.00E-05
2034.79452	3.20E-04	2034.7945	5.00E-05
2033.83017	3.20E-04	2033.8302	5.00E-05
2032.86581	3.20E-04	2032.8658	4.00E-05
2031.90145	3.20E-04	2031.9015	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
2030.93709	3.20E-04	2030.9371	3.00E-05
2029.97273	3.20E-04	2029.9727	2.00E-05
2029.00838	3.30E-04	2029.0084	2.00E-05
2028.04402	3.30E-04	2028.044	3.00E-05
2027.07966	3.40E-04	2027.0797	3.00E-05
2026.1153	3.40E-04	2026.1153	3.00E-05
2025.15095	3.40E-04	2025.151	3.00E-05
2024.18659	3.30E-04	2024.1866	4.00E-05
2023.22223	3.30E-04	2023.2222	5.00E-05
2022.25787	3.30E-04	2022.2579	5.00E-05
2021.29352	3.20E-04	2021.2935	6.00E-05
2020.32916	3.30E-04	2020.3292	6.00E-05
2019.3648	3.30E-04	2019.3648	6.00E-05
2018.40044	3.30E-04	2018.4004	5.00E-05
2017.43609	3.30E-04	2017.4361	4.00E-05
2016.47173	3.30E-04	2016.4717	4.00E-05
2015.50737	3.20E-04	2015.5074	3.00E-05
2014.54301	3.10E-04	2014.543	3.00E-05
2013.57866	3.00E-04	2013.5787	2.00E-05
2012.6143	3.00E-04	2012.6143	1.00E-05
2011.64994	2.90E-04	2011.6499	1.00E-05
2010.68558	3.00E-04	2010.6856	0
2009.72123	3.00E-04	2009.7212	0
2008.75687	3.00E-04	2008.7569	0
2007.79251	2.90E-04	2007.7925	0
2006.82815	2.80E-04	2006.8282	1.00E-05
2005.8638	2.70E-04	2005.8638	2.00E-05
2004.89944	2.70E-04	2004.8994	2.00E-05
2003.93508	2.70E-04	2003.9351	2.00E-05
2002.97072	2.80E-04	2002.9707	2.00E-05
2002.00636	2.90E-04	2002.0064	2.00E-05
2001.04201	3.00E-04	2001.042	2.00E-05
2000.07765	3.00E-04	2000.0777	3.00E-05
1999.11329	3.00E-04	1999.1133	3.00E-05
1998.14893	2.90E-04	1998.1489	2.00E-05
1997.18458	2.70E-04	1997.1846	2.00E-05
1996.22022	2.70E-04	1996.2202	2.00E-05
1995.25586	2.80E-04	1995.2559	2.00E-05
1994.2915	2.90E-04	1994.2915	3.00E-05
1993.32715	3.10E-04	1993.3272	3.00E-05
1992.36279	3.20E-04	1992.3628	4.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1991.39843	3.20E-04	1991.3984	3.00E-05
1990.43407	3.20E-04	1990.4341	2.00E-05
1989.46972	3.00E-04	1989.4697	1.00E-05
1988.50536	3.00E-04	1988.5054	1.00E-05
1987.541	2.90E-04	1987.541	1.00E-05
1986.57664	2.90E-04	1986.5766	1.00E-05
1985.61229	2.90E-04	1985.6123	1.00E-05
1984.64793	2.80E-04	1984.6479	2.00E-05
1983.68357	2.80E-04	1983.6836	2.00E-05
1982.71921	2.80E-04	1982.7192	1.00E-05
1981.75486	2.80E-04	1981.7549	1.00E-05
1980.7905	2.80E-04	1980.7905	0
1979.82614	2.80E-04	1979.8261	0
1978.86178	2.80E-04	1978.8618	1.00E-05
1977.89742	2.90E-04	1977.8974	1.00E-05
1976.93307	2.90E-04	1976.9331	1.00E-05
1975.96871	2.90E-04	1975.9687	2.00E-05
1975.00435	3.00E-04	1975.0044	2.00E-05
1974.03999	3.00E-04	1974.04	3.00E-05
1973.07564	3.00E-04	1973.0756	3.00E-05
1972.11128	3.00E-04	1972.1113	2.00E-05
1971.14692	3.00E-04	1971.1469	2.00E-05
1970.18256	3.10E-04	1970.1826	2.00E-05
1969.21821	3.30E-04	1969.2182	2.00E-05
1968.25385	3.40E-04	1968.2539	2.00E-05
1967.28949	3.40E-04	1967.2895	2.00E-05
1966.32513	3.30E-04	1966.3251	2.00E-05
1965.36078	3.20E-04	1965.3608	2.00E-05
1964.39642	3.00E-04	1964.3964	2.00E-05
1963.43206	2.90E-04	1963.4321	2.00E-05
1962.4677	2.90E-04	1962.4677	3.00E-05
1961.50335	2.90E-04	1961.5034	3.00E-05
1960.53899	2.90E-04	1960.539	3.00E-05
1959.57463	2.80E-04	1959.5746	3.00E-05
1958.61027	2.90E-04	1958.6103	2.00E-05
1957.64592	2.90E-04	1957.6459	2.00E-05
1956.68156	3.00E-04	1956.6816	2.00E-05
1955.7172	3.10E-04	1955.7172	2.00E-05
1954.75284	3.10E-04	1954.7528	2.00E-05
1953.78849	3.10E-04	1953.7885	2.00E-05
1952.82413	3.00E-04	1952.8241	2.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1951.85977	3.00E-04	1951.8598	2.00E-05
1950.89541	2.90E-04	1950.8954	2.00E-05
1949.93105	2.90E-04	1949.9311	1.00E-05
1948.9667	3.00E-04	1948.9667	1.00E-05
1948.00234	3.00E-04	1948.0023	2.00E-05
1947.03798	3.10E-04	1947.038	2.00E-05
1946.07362	3.20E-04	1946.0736	3.00E-05
1945.10927	3.50E-04	1945.1093	5.00E-05
1944.14491	3.70E-04	1944.1449	5.00E-05
1943.18055	3.90E-04	1943.1806	6.00E-05
1942.21619	3.80E-04	1942.2162	5.00E-05
1941.25184	3.70E-04	1941.2518	4.00E-05
1940.28748	3.40E-04	1940.2875	4.00E-05
1939.32312	3.10E-04	1939.3231	3.00E-05
1938.35876	3.10E-04	1938.3588	3.00E-05
1937.39441	3.20E-04	1937.3944	3.00E-05
1936.43005	3.20E-04	1936.4301	3.00E-05
1935.46569	3.20E-04	1935.4657	3.00E-05
1934.50133	3.20E-04	1934.5013	2.00E-05
1933.53698	3.20E-04	1933.537	2.00E-05
1932.57262	3.20E-04	1932.5726	2.00E-05
1931.60826	3.20E-04	1931.6083	3.00E-05
1930.6439	3.20E-04	1930.6439	3.00E-05
1929.67955	3.20E-04	1929.6796	3.00E-05
1928.71519	3.20E-04	1928.7152	3.00E-05
1927.75083	3.20E-04	1927.7508	3.00E-05
1926.78647	3.20E-04	1926.7865	4.00E-05
1925.82211	3.40E-04	1925.8221	4.00E-05
1924.85776	3.60E-04	1924.8578	5.00E-05
1923.8934	3.70E-04	1923.8934	6.00E-05
1922.92904	3.80E-04	1922.929	6.00E-05
1921.96468	3.90E-04	1921.9647	6.00E-05
1921.00033	3.90E-04	1921.0003	5.00E-05
1920.03597	3.90E-04	1920.036	5.00E-05
1919.07161	3.90E-04	1919.0716	5.00E-05
1918.10725	3.80E-04	1918.1073	5.00E-05
1917.1429	3.70E-04	1917.1429	5.00E-05
1916.17854	3.50E-04	1916.1785	5.00E-05
1915.21418	3.20E-04	1915.2142	5.00E-05
1914.24982	3.10E-04	1914.2498	5.00E-05
1913.28547	3.20E-04	1913.2855	5.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1912.32111	3.30E-04	1912.3211	6.00E-05
1911.35675	3.50E-04	1911.3568	7.00E-05
1910.39239	3.60E-04	1910.3924	7.00E-05
1909.42804	3.70E-04	1909.428	7.00E-05
1908.46368	3.70E-04	1908.4637	7.00E-05
1907.49932	3.50E-04	1907.4993	6.00E-05
1906.53496	3.40E-04	1906.535	6.00E-05
1905.57061	3.30E-04	1905.5706	6.00E-05
1904.60625	3.20E-04	1904.6063	6.00E-05
1903.64189	3.30E-04	1903.6419	6.00E-05
1902.67753	3.30E-04	1902.6775	6.00E-05
1901.71317	3.40E-04	1901.7132	6.00E-05
1900.74882	3.40E-04	1900.7488	6.00E-05
1899.78446	3.40E-04	1899.7845	6.00E-05
1898.8201	3.50E-04	1898.8201	6.00E-05
1897.85574	3.50E-04	1897.8557	6.00E-05
1896.89139	3.60E-04	1896.8914	6.00E-05
1895.92703	3.60E-04	1895.927	5.00E-05
1894.96267	3.50E-04	1894.9627	4.00E-05
1893.99831	3.40E-04	1893.9983	4.00E-05
1893.03396	3.40E-04	1893.034	4.00E-05
1892.0696	3.40E-04	1892.0696	5.00E-05
1891.10524	3.50E-04	1891.1052	6.00E-05
1890.14088	3.70E-04	1890.1409	7.00E-05
1889.17653	3.70E-04	1889.1765	6.00E-05
1888.21217	3.60E-04	1888.2122	5.00E-05
1887.24781	3.40E-04	1887.2478	4.00E-05
1886.28345	3.20E-04	1886.2835	3.00E-05
1885.3191	3.20E-04	1885.3191	3.00E-05
1884.35474	3.20E-04	1884.3547	3.00E-05
1883.39038	3.20E-04	1883.3904	3.00E-05
1882.42602	3.10E-04	1882.426	3.00E-05
1881.46167	3.10E-04	1881.4617	3.00E-05
1880.49731	3.10E-04	1880.4973	3.00E-05
1879.53295	3.00E-04	1879.533	2.00E-05
1878.56859	3.00E-04	1878.5686	2.00E-05
1877.60424	3.00E-04	1877.6042	2.00E-05
1876.63988	3.00E-04	1876.6399	2.00E-05
1875.67552	3.00E-04	1875.6755	2.00E-05
1874.71116	3.00E-04	1874.7112	2.00E-05
1873.7468	3.10E-04	1873.7468	1.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1872.78245	3.30E-04	1872.7825	2.00E-05
1871.81809	3.70E-04	1871.8181	3.00E-05
1870.85373	4.20E-04	1870.8537	5.00E-05
1869.88937	4.60E-04	1869.8894	7.00E-05
1868.92502	4.70E-04	1868.925	8.00E-05
1867.96066	4.50E-04	1867.9607	8.00E-05
1866.9963	4.10E-04	1866.9963	7.00E-05
1866.03194	3.50E-04	1866.0319	5.00E-05
1865.06759	3.00E-04	1865.0676	4.00E-05
1864.10323	2.90E-04	1864.1032	3.00E-05
1863.13887	2.80E-04	1863.1389	2.00E-05
1862.17451	2.80E-04	1862.1745	2.00E-05
1861.21016	2.90E-04	1861.2102	1.00E-05
1860.2458	3.00E-04	1860.2458	2.00E-05
1859.28144	3.00E-04	1859.2814	2.00E-05
1858.31708	3.00E-04	1858.3171	3.00E-05
1857.35273	3.00E-04	1857.3527	3.00E-05
1856.38837	3.00E-04	1856.3884	3.00E-05
1855.42401	3.00E-04	1855.424	2.00E-05
1854.45965	3.00E-04	1854.4597	1.00E-05
1853.4953	2.90E-04	1853.4953	1.00E-05
1852.53094	2.90E-04	1852.5309	0
1851.56658	3.00E-04	1851.5666	0
1850.60222	3.10E-04	1850.6022	1.00E-05
1849.63786	3.10E-04	1849.6379	1.00E-05
1848.67351	3.20E-04	1848.6735	2.00E-05
1847.70915	3.60E-04	1847.7092	3.00E-05
1846.74479	4.10E-04	1846.7448	4.00E-05
1845.78043	4.40E-04	1845.7804	5.00E-05
1844.81608	4.60E-04	1844.8161	5.00E-05
1843.85172	4.50E-04	1843.8517	5.00E-05
1842.88736	4.10E-04	1842.8874	4.00E-05
1841.923	3.50E-04	1841.923	3.00E-05
1840.95865	3.00E-04	1840.9587	3.00E-05
1839.99429	2.90E-04	1839.9943	2.00E-05
1839.02993	3.10E-04	1839.0299	2.00E-05
1838.06557	3.20E-04	1838.0656	2.00E-05
1837.10122	3.20E-04	1837.1012	2.00E-05
1836.13686	3.20E-04	1836.1369	1.00E-05
1835.1725	3.10E-04	1835.1725	0
1834.20814	3.10E-04	1834.2081	-1.00E-05



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1833.24379	3.40E-04	1833.2438	0
1832.27943	4.00E-04	1832.2794	0
1831.31507	4.50E-04	1831.3151	1.00E-05
1830.35071	4.60E-04	1830.3507	1.00E-05
1829.38636	4.50E-04	1829.3864	2.00E-05
1828.422	4.40E-04	1828.422	3.00E-05
1827.45764	4.10E-04	1827.4576	3.00E-05
1826.49328	3.70E-04	1826.4933	3.00E-05
1825.52893	3.60E-04	1825.5289	2.00E-05
1824.56457	3.60E-04	1824.5646	2.00E-05
1823.60021	3.40E-04	1823.6002	2.00E-05
1822.63585	3.00E-04	1822.6359	1.00E-05
1821.67149	2.80E-04	1821.6715	0
1820.70714	2.80E-04	1820.7071	0
1819.74278	2.90E-04	1819.7428	1.00E-05
1818.77842	2.90E-04	1818.7784	1.00E-05
1817.81406	3.00E-04	1817.8141	1.00E-05
1816.84971	3.00E-04	1816.8497	1.00E-05
1815.88535	3.00E-04	1815.8854	1.00E-05
1814.92099	3.00E-04	1814.921	0
1813.95663	3.20E-04	1813.9566	-1.00E-05
1812.99228	3.50E-04	1812.9923	-1.00E-05
1812.02792	3.70E-04	1812.0279	-2.00E-05
1811.06356	3.70E-04	1811.0636	-1.00E-05
1810.0992	3.60E-04	1810.0992	-1.00E-05
1809.13485	3.40E-04	1809.1349	-1.00E-05
1808.17049	3.10E-04	1808.1705	-1.00E-05
1807.20613	2.90E-04	1807.2061	-2.00E-05
1806.24177	2.90E-04	1806.2418	-2.00E-05
1805.27742	3.10E-04	1805.2774	-3.00E-05
1804.31306	3.30E-04	1804.3131	-3.00E-05
1803.3487	3.60E-04	1803.3487	-2.00E-05
1802.38434	4.00E-04	1802.3843	-1.00E-05
1801.41999	4.20E-04	1801.42	0
1800.45563	4.20E-04	1800.4556	0
1799.49127	4.00E-04	1799.4913	0
1798.52691	3.80E-04	1798.5269	0
1797.56255	3.70E-04	1797.5626	-1.00E-05
1796.5982	3.60E-04	1796.5982	-2.00E-05
1795.63384	4.10E-04	1795.6338	-2.00E-05
1794.66948	4.70E-04	1794.6695	-1.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1793.70512	5.20E-04	1793.7051	1.00E-05
1792.74077	5.40E-04	1792.7408	2.00E-05
1791.77641	5.20E-04	1791.7764	2.00E-05
1790.81205	4.70E-04	1790.8121	2.00E-05
1789.84769	4.10E-04	1789.8477	0
1788.88334	3.60E-04	1788.8833	-1.00E-05
1787.91898	3.50E-04	1787.919	-3.00E-05
1786.95462	3.70E-04	1786.9546	-3.00E-05
1785.99026	3.90E-04	1785.9903	-3.00E-05
1785.02591	4.00E-04	1785.0259	-4.00E-05
1784.06155	4.00E-04	1784.0616	-4.00E-05
1783.09719	4.00E-04	1783.0972	-3.00E-05
1782.13283	4.10E-04	1782.1328	-2.00E-05
1781.16848	4.10E-04	1781.1685	-1.00E-05
1780.20412	4.10E-04	1780.2041	0
1779.23976	4.10E-04	1779.2398	0
1778.2754	3.90E-04	1778.2754	0
1777.31105	3.80E-04	1777.3111	0
1776.34669	4.00E-04	1776.3467	0
1775.38233	4.70E-04	1775.3823	2.00E-05
1774.41797	5.50E-04	1774.418	4.00E-05
1773.45362	6.10E-04	1773.4536	5.00E-05
1772.48926	6.30E-04	1772.4893	6.00E-05
1771.5249	6.20E-04	1771.5249	5.00E-05
1770.56054	6.00E-04	1770.5605	3.00E-05
1769.59618	5.40E-04	1769.5962	1.00E-05
1768.63183	4.80E-04	1768.6318	-1.00E-05
1767.66747	4.50E-04	1767.6675	-2.00E-05
1766.70311	4.20E-04	1766.7031	-3.00E-05
1765.73875	4.10E-04	1765.7388	-3.00E-05
1764.7744	4.20E-04	1764.7744	-3.00E-05
1763.81004	4.60E-04	1763.81	-3.00E-05
1762.84568	5.00E-04	1762.8457	-3.00E-05
1761.88132	5.10E-04	1761.8813	-3.00E-05
1760.91697	5.00E-04	1760.917	-3.00E-05
1759.95261	4.90E-04	1759.9526	-3.00E-05
1758.98825	4.80E-04	1758.9883	-3.00E-05
1758.02389	4.70E-04	1758.0239	-3.00E-05
1757.05954	4.80E-04	1757.0595	-3.00E-05
1756.09518	4.70E-04	1756.0952	-3.00E-05
1755.13082	4.60E-04	1755.1308	-2.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1754.16646	4.80E-04	1754.1665	-1.00E-05
1753.20211	5.30E-04	1753.2021	1.00E-05
1752.23775	6.00E-04	1752.2378	4.00E-05
1751.27339	6.70E-04	1751.2734	7.00E-05
1750.30903	7.20E-04	1750.309	9.00E-05
1749.34468	7.20E-04	1749.3447	1.00E-04
1748.38032	6.90E-04	1748.3803	1.00E-04
1747.41596	6.50E-04	1747.416	9.00E-05
1746.4516	6.30E-04	1746.4516	9.00E-05
1745.48724	6.20E-04	1745.4872	8.00E-05
1744.52289	6.00E-04	1744.5229	9.00E-05
1743.55853	6.10E-04	1743.5585	1.00E-04
1742.59417	6.50E-04	1742.5942	1.10E-04
1741.62981	6.90E-04	1741.6298	1.20E-04
1740.66546	6.90E-04	1740.6655	1.20E-04
1739.7011	6.80E-04	1739.7011	1.20E-04
1738.73674	6.70E-04	1738.7367	1.20E-04
1737.77238	7.00E-04	1737.7724	1.20E-04
1736.80803	7.80E-04	1736.808	1.40E-04
1735.84367	8.80E-04	1735.8437	1.60E-04
1734.87931	9.60E-04	1734.8793	1.90E-04
1733.91495	9.90E-04	1733.915	2.10E-04
1732.9506	9.60E-04	1732.9506	2.10E-04
1731.98624	8.90E-04	1731.9862	2.00E-04
1731.02188	7.90E-04	1731.0219	1.80E-04
1730.05752	7.40E-04	1730.0575	1.60E-04
1729.09317	7.40E-04	1729.0932	1.50E-04
1728.12881	7.40E-04	1728.1288	1.50E-04
1727.16445	7.30E-04	1727.1645	1.60E-04
1726.20009	7.40E-04	1726.2001	1.80E-04
1725.23574	7.60E-04	1725.2357	1.90E-04
1724.27138	7.70E-04	1724.2714	2.00E-04
1723.30702	7.70E-04	1723.307	2.10E-04
1722.34266	7.80E-04	1722.3427	2.10E-04
1721.3783	8.50E-04	1721.3783	2.20E-04
1720.41395	9.70E-04	1720.414	2.40E-04
1719.44959	0.00109	1719.4496	2.80E-04
1718.48523	0.00119	1718.4852	3.20E-04
1717.52087	0.00126	1717.5209	3.60E-04
1716.55652	0.00125	1716.5565	3.70E-04
1715.59216	0.00117	1715.5922	3.70E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1714.6278	0.00107	1714.6278	3.50E-04
1713.66344	1.00E-03	1713.6634	3.30E-04
1712.69909	9.60E-04	1712.6991	3.20E-04
1711.73473	9.30E-04	1711.7347	3.20E-04
1710.77037	9.20E-04	1710.7704	3.30E-04
1709.80601	9.60E-04	1709.806	3.40E-04
1708.84166	0.00102	1708.8417	3.60E-04
1707.8773	0.00108	1707.8773	3.80E-04
1706.91294	0.00115	1706.9129	4.10E-04
1705.94858	0.00118	1705.9486	4.50E-04
1704.98423	0.0012	1704.9842	4.80E-04
1704.01987	0.00125	1704.0199	5.20E-04
1703.05551	0.00138	1703.0555	5.50E-04
1702.09115	0.00152	1702.0912	6.00E-04
1701.1268	0.00162	1701.1268	6.60E-04
1700.16244	0.00168	1700.1624	7.40E-04
1699.19808	0.00175	1699.1981	8.10E-04
1698.23372	0.00178	1698.2337	8.70E-04
1697.26937	0.00176	1697.2694	9.50E-04
1696.30501	0.00178	1696.305	0.00102
1695.34065	0.00183	1695.3407	0.00109
1694.37629	0.00185	1694.3763	0.00117
1693.41193	0.00184	1693.4119	0.00127
1692.44758	0.00188	1692.4476	0.00138
1691.48322	0.00201	1691.4832	0.00151
1690.51886	0.00217	1690.5189	0.00165
1689.5545	0.00231	1689.5545	0.00181
1688.59015	0.00246	1688.5902	0.00196
1687.62579	0.00268	1687.6258	0.00212
1686.66143	0.00295	1686.6614	0.00231
1685.69707	0.00322	1685.6971	0.00252
1684.73272	0.00343	1684.7327	0.00273
1683.76836	0.00357	1683.7684	0.00291
1682.804	0.00363	1682.804	0.00307
1681.83964	0.00363	1681.8396	0.00319
1680.87529	0.0036	1680.8753	0.00329
1679.91093	0.00364	1679.9109	0.00338
1678.94657	0.00377	1678.9466	0.00349
1677.98221	0.00393	1677.9822	0.00362
1677.01786	0.00408	1677.0179	0.00375
1676.0535	0.00421	1676.0535	0.00389

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1675.08914	0.00431	1675.0891	0.00401
1674.12478	0.00439	1674.1248	0.00414
1673.16043	0.00446	1673.1604	0.00425
1672.19607	0.00455	1672.1961	0.00436
1671.23171	0.00466	1671.2317	0.00446
1670.26735	0.00476	1670.2674	0.00454
1669.30299	0.00479	1669.303	0.0046
1668.33864	0.00476	1668.3386	0.00465
1667.37428	0.00471	1667.3743	0.00467
1666.40992	0.00469	1666.4099	0.00468
1665.44556	0.00472	1665.4456	0.0047
1664.48121	0.00479	1664.4812	0.00472
1663.51685	0.00485	1663.5169	0.00474
1662.55249	0.00486	1662.5525	0.00476
1661.58813	0.00483	1661.5881	0.00476
1660.62378	0.00476	1660.6238	0.00476
1659.65942	0.00468	1659.6594	0.00474
1658.69506	0.00463	1658.6951	0.00471
1657.7307	0.00464	1657.7307	0.00469
1656.76635	0.00476	1656.7664	0.0047
1655.80199	0.00497	1655.802	0.00472
1654.83763	0.00511	1654.8376	0.0047
1653.87327	0.00514	1653.8733	0.00465
1652.90892	0.00503	1652.9089	0.00456
1651.94456	0.00483	1651.9446	0.00446
1650.9802	0.0046	1650.9802	0.00435
1650.01584	0.00444	1650.0158	0.00426
1649.05149	0.00443	1649.0515	0.00421
1648.08713	0.00448	1648.0871	0.00414
1647.12277	0.00444	1647.1228	0.00404
1646.15841	0.0043	1646.1584	0.00393
1645.19406	0.00411	1645.1941	0.0038
1644.2297	0.0039	1644.2297	0.00367
1643.26534	0.00373	1643.2653	0.00355
1642.30098	0.00363	1642.301	0.00346
1641.33662	0.00358	1641.3366	0.00339
1640.37227	0.00355	1640.3723	0.00332
1639.40791	0.00356	1639.4079	0.00328
1638.44355	0.00363	1638.4436	0.00324
1637.47919	0.00369	1637.4792	0.00318
1636.51484	0.00369	1636.5148	0.00312

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1635.55048	0.00361	1635.5505	0.00304
1634.58612	0.00347	1634.5861	0.00295
1633.62176	0.0033	1633.6218	0.00285
1632.65741	0.00313	1632.6574	0.00278
1631.69305	0.00304	1631.6931	0.00274
1630.72869	0.00306	1630.7287	0.00272
1629.76433	0.0031	1629.7643	0.00272
1628.79998	0.00312	1628.8	0.00273
1627.83562	0.00314	1627.8356	0.00275
1626.87126	0.00319	1626.8713	0.00279
1625.9069	0.00327	1625.9069	0.00284
1624.94255	0.00335	1624.9426	0.00291
1623.97819	0.00344	1623.9782	0.003
1623.01383	0.00353	1623.0138	0.0031
1622.04947	0.0036	1622.0495	0.00321
1621.08512	0.00368	1621.0851	0.00335
1620.12076	0.00383	1620.1208	0.00351
1619.1564	0.00408	1619.1564	0.0037
1618.19204	0.00435	1618.192	0.00392
1617.22768	0.00459	1617.2277	0.00416
1616.26333	0.00479	1616.2633	0.00438
1615.29897	0.00493	1615.299	0.00458
1614.33461	0.00503	1614.3346	0.00477
1613.37025	0.00511	1613.3703	0.00493
1612.4059	0.00524	1612.4059	0.00506
1611.44154	0.00537	1611.4415	0.00518
1610.47718	0.00545	1610.4772	0.00525
1609.51282	0.00548	1609.5128	0.00527
1608.54847	0.00546	1608.5485	0.00523
1607.58411	0.00538	1607.5841	0.00514
1606.61975	0.00525	1606.6198	0.00501
1605.65539	0.0051	1605.6554	0.00485
1604.69104	0.00494	1604.691	0.00467
1603.72668	0.00477	1603.7267	0.00448
1602.76232	0.0046	1602.7623	0.00428
1601.79796	0.00444	1601.798	0.00408
1600.83361	0.00428	1600.8336	0.0039
1599.86925	0.00414	1599.8693	0.00374
1598.90489	0.00403	1598.9049	0.00362
1597.94053	0.00396	1597.9405	0.00354
1596.97618	0.00394	1596.9762	0.00351

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1596.01182	0.00398	1596.0118	0.00353
1595.04746	0.00405	1595.0475	0.00361
1594.0831	0.00417	1594.0831	0.00375
1593.11874	0.00432	1593.1187	0.00395
1592.15439	0.00451	1592.1544	0.00418
1591.19003	0.00472	1591.19	0.00444
1590.22567	0.00493	1590.2257	0.0047
1589.26131	0.00513	1589.2613	0.00492
1588.29696	0.00527	1588.297	0.00509
1587.3326	0.00535	1587.3326	0.00517
1586.36824	0.00533	1586.3682	0.00516
1585.40388	0.00524	1585.4039	0.00505
1584.43953	0.00507	1584.4395	0.00484
1583.47517	0.00485	1583.4752	0.00458
1582.51081	0.0046	1582.5108	0.00429
1581.54645	0.00435	1581.5465	0.00399
1580.5821	0.00413	1580.5821	0.00372
1579.61774	0.00398	1579.6177	0.00349
1578.65338	0.00387	1578.6534	0.00327
1577.68902	0.00374	1577.689	0.00304
1576.72467	0.00357	1576.7247	0.00282
1575.76031	0.00338	1575.7603	0.00261
1574.79595	0.00316	1574.796	0.00242
1573.83159	0.00298	1573.8316	0.00228
1572.86724	0.00291	1572.8672	0.00221
1571.90288	0.00297	1571.9029	0.00221
1570.93852	0.00305	1570.9385	0.00223
1569.97416	0.0031	1569.9742	0.00227
1569.00981	0.00313	1569.0098	0.00231
1568.04545	0.00315	1568.0455	0.00237
1567.08109	0.00317	1567.0811	0.00244
1566.11673	0.0032	1566.1167	0.00253
1565.15237	0.00328	1565.1524	0.00264
1564.18802	0.00339	1564.188	0.00277
1563.22366	0.00354	1563.2237	0.0029
1562.2593	0.00381	1562.2593	0.00305
1561.29494	0.00418	1561.2949	0.00323
1560.33059	0.00454	1560.3306	0.00344
1559.36623	0.0048	1559.3662	0.00364
1558.40187	0.00492	1558.4019	0.00383
1557.43751	0.00494	1557.4375	0.00399

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1556.47316	0.0049	1556.4732	0.00413
1555.5088	0.00485	1555.5088	0.00425
1554.54444	0.00489	1554.5444	0.00437
1553.58008	0.00503	1553.5801	0.00452
1552.61573	0.00518	1552.6157	0.00468
1551.65137	0.00531	1551.6514	0.00485
1550.68701	0.00543	1550.687	0.00501
1549.72265	0.00555	1549.7227	0.00517
1548.7583	0.00569	1548.7583	0.00532
1547.79394	0.00583	1547.7939	0.00547
1546.82958	0.00597	1546.8296	0.00561
1545.86522	0.00614	1545.8652	0.00575
1544.90087	0.00633	1544.9009	0.00587
1543.93651	0.00652	1543.9365	0.00597
1542.97215	0.00669	1542.9722	0.00606
1542.00779	0.00684	1542.0078	0.00612
1541.04343	0.00689	1541.0434	0.00612
1540.07908	0.00682	1540.0791	0.00607
1539.11472	0.00665	1539.1147	0.00598
1538.15036	0.00643	1538.1504	0.00587
1537.186	0.00623	1537.186	0.00574
1536.22165	0.0061	1536.2217	0.00561
1535.25729	0.00604	1535.2573	0.00548
1534.29293	0.00597	1534.2929	0.00533
1533.32857	0.00584	1533.3286	0.00514
1532.36422	0.00565	1532.3642	0.00494
1531.39986	0.00544	1531.3999	0.00473
1530.4355	0.00524	1530.4355	0.00453
1529.47114	0.00509	1529.4711	0.00435
1528.50679	0.00499	1528.5068	0.00418
1527.54243	0.00487	1527.5424	0.004
1526.57807	0.00473	1526.5781	0.00382
1525.61371	0.00459	1525.6137	0.00364
1524.64936	0.0045	1524.6494	0.00348
1523.685	0.00445	1523.685	0.00332
1522.72064	0.00438	1522.7206	0.00316
1521.75628	0.00427	1521.7563	0.003
1520.79193	0.00415	1520.7919	0.00285
1519.82757	0.00402	1519.8276	0.00271
1518.86321	0.00388	1518.8632	0.0026
1517.89885	0.00377	1517.8989	0.00252



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1516.9345	0.00369	1516.9345	0.00248
1515.97014	0.00365	1515.9701	0.00245
1515.00578	0.00361	1515.0058	0.00243
1514.04142	0.00359	1514.0414	0.00245
1513.07706	0.00364	1513.0771	0.00253
1512.11271	0.00379	1512.1127	0.00269
1511.14835	0.00404	1511.1484	0.00291
1510.18399	0.00442	1510.184	0.00322
1509.21963	0.00492	1509.2196	0.00365
1508.25528	0.00546	1508.2553	0.00415
1507.29092	0.00592	1507.2909	0.00465
1506.32656	0.00623	1506.3266	0.0051
1505.3622	0.00635	1505.3622	0.00543
1504.39785	0.00629	1504.3979	0.00558
1503.43349	0.0061	1503.4335	0.00555
1502.46913	0.0059	1502.4691	0.00538
1501.50477	0.00575	1501.5048	0.00516
1500.54042	0.00563	1500.5404	0.00494
1499.57606	0.00553	1499.5761	0.00475
1498.6117	0.00551	1498.6117	0.00467
1497.64734	0.00556	1497.6473	0.00473
1496.68299	0.00571	1496.683	0.00495
1495.71863	0.00598	1495.7186	0.00534
1494.75427	0.00642	1494.7543	0.00592
1493.78991	0.00707	1493.7899	0.00667
1492.82556	0.00795	1492.8256	0.00764
1491.8612	0.00898	1491.8612	0.00877
1490.89684	0.01002	1490.8968	0.00992
1489.93248	0.01087	1489.9325	0.01089
1488.96812	0.01133	1488.9681	0.01146
1488.00377	0.01132	1488.0038	0.01153
1487.03941	0.01087	1487.0394	0.01107
1486.07505	0.01011	1486.0751	0.01021
1485.11069	0.00921	1485.1107	0.00918
1484.14634	0.0083	1484.1463	0.00814
1483.18198	0.00748	1483.182	0.00719
1482.21762	0.00677	1482.2176	0.00637
1481.25326	0.00617	1481.2533	0.00567
1480.28891	0.00568	1480.2889	0.0051
1479.32455	0.0053	1479.3246	0.00462
1478.36019	0.00498	1478.3602	0.00422

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1477.39583	0.00472	1477.3958	0.00389
1476.43148	0.00452	1476.4315	0.00362
1475.46712	0.00437	1475.4671	0.00339
1474.50276	0.00422	1474.5028	0.00317
1473.5384	0.00406	1473.5384	0.00297
1472.57405	0.00389	1472.5741	0.00279
1471.60969	0.00372	1471.6097	0.00263
1470.64533	0.00353	1470.6453	0.00248
1469.68097	0.00337	1469.681	0.00239
1468.71662	0.00329	1468.7166	0.00235
1467.75226	0.00331	1467.7523	0.00236
1466.7879	0.00337	1466.7879	0.00239
1465.82354	0.00342	1465.8235	0.00241
1464.85918	0.00344	1464.8592	0.00244
1463.89483	0.00342	1463.8948	0.00245
1462.93047	0.00339	1462.9305	0.00247
1461.96611	0.00339	1461.9661	0.00252
1461.00175	0.00348	1461.0018	0.0026
1460.0374	0.00367	1460.0374	0.00271
1459.07304	0.00387	1459.073	0.00281
1458.10868	0.00403	1458.1087	0.00289
1457.14432	0.0041	1457.1443	0.00296
1456.17997	0.00411	1456.18	0.00302
1455.21561	0.00407	1455.2156	0.00308
1454.25125	0.00404	1454.2513	0.00315
1453.28689	0.00404	1453.2869	0.00323
1452.32254	0.0041	1452.3225	0.00332
1451.35818	0.00418	1451.3582	0.00339
1450.39382	0.00425	1450.3938	0.00345
1449.42946	0.0043	1449.4295	0.0035
1448.46511	0.00432	1448.4651	0.00354
1447.50075	0.00432	1447.5008	0.00357
1446.53639	0.0043	1446.5364	0.00359
1445.57203	0.00426	1445.572	0.00358
1444.60768	0.00422	1444.6077	0.00356
1443.64332	0.00419	1443.6433	0.00352
1442.67896	0.00415	1442.679	0.00348
1441.7146	0.00409	1441.7146	0.00344
1440.75025	0.00406	1440.7503	0.00342
1439.78589	0.00408	1439.7859	0.00341
1438.82153	0.00411	1438.8215	0.00337

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1437.85717	0.00411	1437.8572	0.00332
1436.89281	0.00404	1436.8928	0.00323
1435.92846	0.00393	1435.9285	0.00314
1434.9641	0.00377	1434.9641	0.00304
1433.99974	0.00361	1433.9997	0.00296
1433.03538	0.00351	1433.0354	0.00293
1432.07103	0.00348	1432.071	0.00292
1431.10667	0.00346	1431.1067	0.00291
1430.14231	0.00343	1430.1423	0.00288
1429.17795	0.00338	1429.178	0.00285
1428.2136	0.00335	1428.2136	0.00282
1427.24924	0.00333	1427.2492	0.00281
1426.28488	0.00336	1426.2849	0.00281
1425.32052	0.0034	1425.3205	0.00285
1424.35617	0.00344	1424.3562	0.00289
1423.39181	0.0035	1423.3918	0.00295
1422.42745	0.00359	1422.4275	0.00302
1421.46309	0.0037	1421.4631	0.00311
1420.49874	0.00381	1420.4987	0.00321
1419.53438	0.00392	1419.5344	0.00329
1418.57002	0.00399	1418.57	0.00334
1417.60566	0.00401	1417.6057	0.00337
1416.64131	0.00396	1416.6413	0.00338
1415.67695	0.00385	1415.677	0.00336
1414.71259	0.00372	1414.7126	0.00334
1413.74823	0.00359	1413.7482	0.0033
1412.78387	0.00349	1412.7839	0.00324
1411.81952	0.00342	1411.8195	0.00315
1410.85516	0.00336	1410.8552	0.00302
1409.8908	0.00332	1409.8908	0.00286
1408.92644	0.00327	1408.9264	0.0027
1407.96209	0.00319	1407.9621	0.00255
1406.99773	0.00309	1406.9977	0.0024
1406.03337	0.00297	1406.0334	0.00228
1405.06901	0.00283	1405.069	0.00216
1404.10466	0.00268	1404.1047	0.00204
1403.1403	0.00253	1403.1403	0.00192
1402.17594	0.00241	1402.1759	0.0018
1401.21158	0.00233	1401.2116	0.00168
1400.24723	0.00227	1400.2472	0.00157
1399.28287	0.00222	1399.2829	0.00147

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1398.31851	0.0022	1398.3185	0.00139
1397.35415	0.00218	1397.3542	0.00132
1396.3898	0.00217	1396.3898	0.00126
1395.42544	0.00216	1395.4254	0.0012
1394.46108	0.00216	1394.4611	0.00114
1393.49672	0.00216	1393.4967	0.00109
1392.53237	0.00214	1392.5324	0.00106
1391.56801	0.00215	1391.568	0.00105
1390.60365	0.0022	1390.6037	0.00107
1389.63929	0.00227	1389.6393	0.00111
1388.67494	0.00234	1388.6749	0.00114
1387.71058	0.00237	1387.7106	0.00116
1386.74622	0.00238	1386.7462	0.00116
1385.78186	0.00237	1385.7819	0.00115
1384.8175	0.00233	1384.8175	0.00111
1383.85315	0.0023	1383.8532	0.00107
1382.88879	0.00228	1382.8888	0.00103
1381.92443	0.00226	1381.9244	9.90E-04
1380.96007	0.00224	1380.9601	9.60E-04
1379.99572	0.00223	1379.9957	9.30E-04
1379.03136	0.00221	1379.0314	9.10E-04
1378.067	0.0022	1378.067	9.00E-04
1377.10264	0.00221	1377.1026	9.10E-04
1376.13829	0.00222	1376.1383	9.10E-04
1375.17393	0.00221	1375.1739	9.00E-04
1374.20957	0.00217	1374.2096	8.80E-04
1373.24521	0.00211	1373.2452	8.60E-04
1372.28086	0.00206	1372.2809	8.50E-04
1371.3165	0.00202	1371.3165	8.40E-04
1370.35214	0.00202	1370.3521	8.50E-04
1369.38778	0.00205	1369.3878	8.80E-04
1368.42343	0.0021	1368.4234	9.10E-04
1367.45907	0.00215	1367.4591	9.60E-04
1366.49471	0.00222	1366.4947	0.00101
1365.53035	0.00231	1365.5304	0.00106
1364.566	0.00239	1364.566	0.00109
1363.60164	0.00244	1363.6016	0.00109
1362.63728	0.00244	1362.6373	0.00105
1361.67292	0.00239	1361.6729	9.80E-04
1360.70856	0.0023	1360.7086	9.10E-04
1359.74421	0.00222	1359.7442	8.40E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1358.77985	0.00217	1358.7799	8.00E-04
1357.81549	0.00216	1357.8155	7.90E-04
1356.85113	0.00218	1356.8511	8.00E-04
1355.88678	0.00221	1355.8868	8.20E-04
1354.92242	0.00224	1354.9224	8.50E-04
1353.95806	0.00227	1353.9581	8.80E-04
1352.9937	0.00231	1352.9937	9.20E-04
1352.02935	0.00236	1352.0294	9.60E-04
1351.06499	0.00241	1351.065	1.00E-03
1350.10063	0.00247	1350.1006	0.00105
1349.13627	0.00254	1349.1363	0.00111
1348.17192	0.0026	1348.1719	0.00117
1347.20756	0.00266	1347.2076	0.00124
1346.2432	0.00273	1346.2432	0.00131
1345.27884	0.0028	1345.2788	0.00139
1344.31449	0.00288	1344.3145	0.00148
1343.35013	0.00297	1343.3501	0.00158
1342.38577	0.00309	1342.3858	0.00169
1341.42141	0.00323	1341.4214	0.00181
1340.45706	0.00336	1340.4571	0.00193
1339.4927	0.00349	1339.4927	0.00205
1338.52834	0.0036	1338.5283	0.00218
1337.56398	0.00372	1337.564	0.00232
1336.59963	0.00383	1336.5996	0.00248
1335.63527	0.00397	1335.6353	0.00267
1334.67091	0.00415	1334.6709	0.00288
1333.70655	0.00435	1333.7066	0.00312
1332.74219	0.00458	1332.7422	0.00338
1331.77784	0.00483	1331.7778	0.00365
1330.81348	0.00508	1330.8135	0.00392
1329.84912	0.00532	1329.8491	0.00418
1328.88476	0.00553	1328.8848	0.00442
1327.92041	0.00569	1327.9204	0.00462
1326.95605	0.00581	1326.9561	0.00479
1325.99169	0.00589	1325.9917	0.0049
1325.02733	0.00592	1325.0273	0.00497
1324.06298	0.00592	1324.063	0.00497
1323.09862	0.00589	1323.0986	0.00493
1322.13426	0.00583	1322.1343	0.00485
1321.1699	0.00575	1321.1699	0.00473
1320.20555	0.00564	1320.2056	0.0046

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1319.24119	0.00554	1319.2412	0.00447
1318.27683	0.00543	1318.2768	0.00435
1317.31247	0.00534	1317.3125	0.00425
1316.34812	0.00526	1316.3481	0.00418
1315.38376	0.00522	1315.3838	0.00412
1314.4194	0.00521	1314.4194	0.0041
1313.45504	0.00523	1313.455	0.00412
1312.49069	0.00527	1312.4907	0.00416
1311.52633	0.00535	1311.5263	0.00423
1310.56197	0.00543	1310.562	0.00432
1309.59761	0.0055	1309.5976	0.00441
1308.63325	0.00555	1308.6333	0.00448
1307.6689	0.00558	1307.6689	0.00452
1306.70454	0.0056	1306.7045	0.00453
1305.74018	0.0056	1305.7402	0.00452
1304.77582	0.00559	1304.7758	0.0045
1303.81147	0.00559	1303.8115	0.00449
1302.84711	0.00561	1302.8471	0.00449
1301.88275	0.00565	1301.8828	0.00453
1300.91839	0.00571	1300.9184	0.00461
1299.95404	0.0058	1299.954	0.00473
1298.98968	0.00592	1298.9897	0.00487
1298.02532	0.00607	1298.0253	0.00504
1297.06096	0.0062	1297.061	0.00519
1296.09661	0.0063	1296.0966	0.0053
1295.13225	0.00634	1295.1323	0.00534
1294.16789	0.00631	1294.1679	0.00529
1293.20353	0.00621	1293.2035	0.00516
1292.23918	0.00604	1292.2392	0.00496
1291.27482	0.00584	1291.2748	0.00474
1290.31046	0.00565	1290.3105	0.00452
1289.3461	0.00548	1289.3461	0.00432
1288.38175	0.00534	1288.3818	0.00414
1287.41739	0.00522	1287.4174	0.00398
1286.45303	0.00511	1286.453	0.00384
1285.48867	0.00502	1285.4887	0.00371
1284.52431	0.00492	1284.5243	0.00359
1283.55996	0.00482	1283.56	0.00348
1282.5956	0.00473	1282.5956	0.00337
1281.63124	0.00465	1281.6312	0.00326
1280.66688	0.00458	1280.6669	0.00316

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1279.70253	0.00452	1279.7025	0.00308
1278.73817	0.00445	1278.7382	0.00301
1277.77381	0.0044	1277.7738	0.00295
1276.80945	0.00436	1276.8095	0.00292
1275.8451	0.00433	1275.8451	0.0029
1274.88074	0.00433	1274.8807	0.00291
1273.91638	0.00436	1273.9164	0.00294
1272.95202	0.00442	1272.952	0.00299
1271.98767	0.0045	1271.9877	0.00306
1271.02331	0.00461	1271.0233	0.00315
1270.05895	0.00472	1270.059	0.00326
1269.09459	0.00485	1269.0946	0.00339
1268.13024	0.00499	1268.1302	0.00356
1267.16588	0.00514	1267.1659	0.00376
1266.20152	0.00534	1266.2015	0.004
1265.23716	0.00557	1265.2372	0.00427
1264.27281	0.00586	1264.2728	0.00459
1263.30845	0.00621	1263.3085	0.00497
1262.34409	0.00662	1262.3441	0.00541
1261.37973	0.00707	1261.3797	0.00592
1260.41538	0.00757	1260.4154	0.00648
1259.45102	0.00811	1259.451	0.0071
1258.48666	0.00869	1258.4867	0.00777
1257.5223	0.0093	1257.5223	0.00848
1256.55794	0.00993	1256.5579	0.00922
1255.59359	0.01058	1255.5936	0.00997
1254.62923	0.01121	1254.6292	0.01071
1253.66487	0.01183	1253.6649	0.01143
1252.70051	0.01242	1252.7005	0.01211
1251.73616	0.01297	1251.7362	0.01275
1250.7718	0.01349	1250.7718	0.01336
1249.80744	0.01395	1249.8074	0.01391
1248.84308	0.01435	1248.8431	0.01439
1247.87873	0.01467	1247.8787	0.01478
1246.91437	0.01492	1246.9144	0.01508
1245.95001	0.01508	1245.95	0.01527
1244.98565	0.01515	1244.9857	0.01535
1244.0213	0.01514	1244.0213	0.01533
1243.05694	0.01504	1243.0569	0.01521
1242.09258	0.01486	1242.0926	0.01499
1241.12822	0.01459	1241.1282	0.01465

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1240.16387	0.01423	1240.1639	0.01421
1239.19951	0.01379	1239.1995	0.01367
1238.23515	0.01327	1238.2352	0.01307
1237.27079	0.0127	1237.2708	0.01241
1236.30644	0.0121	1236.3064	0.01171
1235.34208	0.01147	1235.3421	0.011
1234.37772	0.01084	1234.3777	0.01028
1233.41336	0.01023	1233.4134	0.00955
1232.449	0.00963	1232.449	0.00884
1231.48465	0.00905	1231.4847	0.00815
1230.52029	0.00849	1230.5203	0.0075
1229.55593	0.00796	1229.5559	0.00689
1228.59157	0.00747	1228.5916	0.00631
1227.62722	0.00701	1227.6272	0.00577
1226.66286	0.00658	1226.6629	0.00527
1225.6985	0.00618	1225.6985	0.0048
1224.73414	0.00582	1224.7341	0.00437
1223.76979	0.00549	1223.7698	0.00399
1222.80543	0.00519	1222.8054	0.00364
1221.84107	0.00492	1221.8411	0.00332
1220.87671	0.00467	1220.8767	0.00303
1219.91236	0.00444	1219.9124	0.00277
1218.948	0.00423	1218.948	0.00254
1217.98364	0.00405	1217.9836	0.00234
1217.01928	0.00391	1217.0193	0.00217
1216.05493	0.00381	1216.0549	0.00203
1215.09057	0.00372	1215.0906	0.00191
1214.12621	0.00366	1214.1262	0.00183
1213.16185	0.0036	1213.1619	0.00177
1212.1975	0.00357	1212.1975	0.00174
1211.23314	0.00355	1211.2331	0.00174
1210.26878	0.00355	1210.2688	0.00176
1209.30442	0.00357	1209.3044	0.00179
1208.34007	0.0036	1208.3401	0.00182
1207.37571	0.00362	1207.3757	0.00186
1206.41135	0.00363	1206.4114	0.00189
1205.44699	0.00361	1205.447	0.00191
1204.48263	0.00358	1204.4826	0.00189
1203.51828	0.00353	1203.5183	0.00184
1202.55392	0.00347	1202.5539	0.00175
1201.58956	0.0034	1201.5896	0.00164



Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1200.6252	0.00333	1200.6252	0.00153
1199.66085	0.00325	1199.6609	0.00142
1198.69649	0.00318	1198.6965	0.00133
1197.73213	0.00311	1197.7321	0.00125
1196.76777	0.00304	1196.7678	0.0012
1195.80342	0.00299	1195.8034	0.00116
1194.83906	0.00294	1194.8391	0.00115
1193.8747	0.00291	1193.8747	0.00114
1192.91034	0.00289	1192.9103	0.00113
1191.94599	0.00289	1191.946	0.00113
1190.98163	0.00289	1190.9816	0.00112
1190.01727	0.0029	1190.0173	0.00112
1189.05291	0.00291	1189.0529	0.00112
1188.08856	0.00292	1188.0886	0.00115
1187.1242	0.00293	1187.1242	0.00118
1186.15984	0.00294	1186.1598	0.00122
1185.19548	0.00298	1185.1955	0.00127
1184.23113	0.00305	1184.2311	0.00134
1183.26677	0.00315	1183.2668	0.00143
1182.30241	0.00328	1182.3024	0.00156
1181.33805	0.00345	1181.3381	0.00174
1180.37369	0.00365	1180.3737	0.00198
1179.40934	0.00391	1179.4093	0.00229
1178.44498	0.00422	1178.445	0.00268
1177.48062	0.00459	1177.4806	0.00313
1176.51626	0.00503	1176.5163	0.00366
1175.55191	0.00551	1175.5519	0.00424
1174.58755	0.00598	1174.5876	0.00485
1173.62319	0.00643	1173.6232	0.00546
1172.65883	0.00684	1172.6588	0.00604
1171.69448	0.00719	1171.6945	0.00652
1170.73012	0.00745	1170.7301	0.00684
1169.76576	0.00758	1169.7658	0.00696
1168.8014	0.00754	1168.8014	0.00688
1167.83705	0.00733	1167.8371	0.0066
1166.87269	0.00696	1166.8727	0.00618
1165.90833	0.0065	1165.9083	0.00568
1164.94397	0.00604	1164.944	0.00519
1163.97962	0.00564	1163.9796	0.00474
1163.01526	0.00533	1163.0153	0.00435
1162.0509	0.00512	1162.0509	0.00409

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1161.08654	0.00505	1161.0865	0.00401
1160.12219	0.00517	1160.1222	0.00418
1159.15783	0.00552	1159.1578	0.00466
1158.19347	0.00615	1158.1935	0.00548
1157.22911	0.00706	1157.2291	0.00662
1156.26475	0.00814	1156.2648	0.00796
1155.3004	0.00926	1155.3004	0.00931
1154.33604	0.01024	1154.336	0.0105
1153.37168	0.01094	1153.3717	0.01139
1152.40732	0.01127	1152.4073	0.0119
1151.44297	0.01121	1151.443	0.01199
1150.47861	0.01081	1150.4786	0.0117
1149.51425	0.01011	1149.5143	0.01111
1148.54989	0.00918	1148.5499	0.0103
1147.58554	0.00808	1147.5855	0.00938
1146.62118	0.0069	1146.6212	0.00842
1145.65682	0.00572	1145.6568	0.00748
1144.69246	0.00458	1144.6925	0.00664
1143.72811	0.00346	1143.7281	0.0059
1142.76375	0.00241	1142.7638	0.00529
1141.79939	0.00149	1141.7994	0.00479
1140.83503	7.70E-04	1140.835	0.00439
1139.87068	2.80E-04	1139.8707	0.0041
1138.90632	2.00E-05	1138.9063	0.0039
1137.94196	-5.00E-05	1137.942	0.00377
1136.9776	1.00E-05	1136.9776	0.00368
1136.01325	1.10E-04	1136.0133	0.00361
1135.04889	2.60E-04	1135.0489	0.00356
1134.08453	4.40E-04	1134.0845	0.00352
1133.12017	6.50E-04	1133.1202	0.0035
1132.15582	8.80E-04	1132.1558	0.00351
1131.19146	0.00111	1131.1915	0.00355
1130.2271	0.00131	1130.2271	0.0036
1129.26274	0.00149	1129.2627	0.00363
1128.29838	0.00168	1128.2984	0.00365
1127.33403	0.00189	1127.334	0.00367
1126.36967	0.00211	1126.3697	0.00368
1125.40531	0.00233	1125.4053	0.00369
1124.44095	0.00258	1124.441	0.00371
1123.4766	0.00284	1123.4766	0.00376
1122.51224	0.00307	1122.5122	0.00384

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1121.54788	0.00328	1121.5479	0.00396
1120.58352	0.00346	1120.5835	0.00409
1119.61917	0.00367	1119.6192	0.00423
1118.65481	0.00391	1118.6548	0.00439
1117.69045	0.0042	1117.6905	0.00456
1116.72609	0.00454	1116.7261	0.00478
1115.76174	0.00493	1115.7617	0.00511
1114.79738	0.00536	1114.7974	0.00557
1113.83302	0.00585	1113.833	0.00614
1112.86866	0.00641	1112.8687	0.00679
1111.90431	0.00706	1111.9043	0.00751
1110.93995	0.00776	1110.94	0.00825
1109.97559	0.00847	1109.9756	0.00898
1109.01123	0.0091	1109.0112	0.00964
1108.04688	0.00954	1108.0469	0.01017
1107.08252	0.00975	1107.0825	0.01046
1106.11816	0.0097	1106.1182	0.01048
1105.1538	0.00941	1105.1538	0.01023
1104.18944	0.00895	1104.1894	0.00974
1103.22509	0.0084	1103.2251	0.00908
1102.26073	0.00784	1102.2607	0.00835
1101.29637	0.00727	1101.2964	0.00762
1100.33201	0.00673	1100.332	0.00693
1099.36766	0.00621	1099.3677	0.00631
1098.4033	0.00573	1098.4033	0.00574
1097.43894	0.0053	1097.4389	0.00525
1096.47458	0.00493	1096.4746	0.00483
1095.51023	0.00463	1095.5102	0.00447
1094.54587	0.0044	1094.5459	0.00417
1093.58151	0.00422	1093.5815	0.00391
1092.61715	0.00407	1092.6172	0.00371
1091.6528	0.00392	1091.6528	0.00355
1090.68844	0.00376	1090.6884	0.0034
1089.72408	0.00361	1089.7241	0.0033
1088.75972	0.00348	1088.7597	0.00323
1087.79537	0.00342	1087.7954	0.00321
1086.83101	0.00343	1086.831	0.00322
1085.86665	0.00351	1085.8667	0.00328
1084.90229	0.00361	1084.9023	0.00337
1083.93794	0.00371	1083.9379	0.00349
1082.97358	0.00378	1082.9736	0.0036

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1082.00922	0.0038	1082.0092	0.00368
1081.04486	0.00378	1081.0449	0.00369
1080.08051	0.0037	1080.0805	0.00361
1079.11615	0.00357	1079.1162	0.00345
1078.15179	0.00339	1078.1518	0.00325
1077.18743	0.00322	1077.1874	0.00306
1076.22307	0.00307	1076.2231	0.0029
1075.25872	0.00294	1075.2587	0.00278
1074.29436	0.00281	1074.2944	0.00266
1073.33	0.00267	1073.33	0.00251
1072.36564	0.00251	1072.3656	0.00231
1071.40129	0.00232	1071.4013	0.00207
1070.43693	0.00212	1070.4369	0.00183
1069.47257	0.00194	1069.4726	0.0016
1068.50821	0.00177	1068.5082	0.00139
1067.54386	0.00161	1067.5439	0.00121
1066.5795	0.00147	1066.5795	0.00106
1065.61514	0.00136	1065.6151	9.30E-04
1064.65078	0.00128	1064.6508	8.30E-04
1063.68643	0.00122	1063.6864	7.40E-04
1062.72207	0.00116	1062.7221	6.70E-04
1061.75771	0.00109	1061.7577	6.10E-04
1060.79335	0.00102	1060.7934	5.50E-04
1059.829	9.50E-04	1059.829	5.00E-04
1058.86464	8.80E-04	1058.8646	4.40E-04
1057.90028	8.40E-04	1057.9003	3.90E-04
1056.93592	8.00E-04	1056.9359	3.50E-04
1055.97157	7.70E-04	1055.9716	3.10E-04
1055.00721	7.20E-04	1055.0072	2.60E-04
1054.04285	6.70E-04	1054.0429	2.20E-04
1053.07849	6.30E-04	1053.0785	1.90E-04
1052.11413	5.90E-04	1052.1141	1.70E-04
1051.14978	5.60E-04	1051.1498	1.40E-04
1050.18542	5.30E-04	1050.1854	1.20E-04
1049.22106	5.10E-04	1049.2211	9.00E-05
1048.2567	4.70E-04	1048.2567	7.00E-05
1047.29235	4.30E-04	1047.2924	5.00E-05
1046.32799	3.90E-04	1046.328	3.00E-05
1045.36363	3.40E-04	1045.3636	2.00E-05
1044.39927	3.10E-04	1044.3993	2.00E-05
1043.43492	2.90E-04	1043.4349	3.00E-05

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1042.47056	2.90E-04	1042.4706	3.00E-05
1041.5062	3.00E-04	1041.5062	2.00E-05
1040.54184	3.00E-04	1040.5418	2.00E-05
1039.57749	3.00E-04	1039.5775	4.00E-05
1038.61313	2.80E-04	1038.6131	4.00E-05
1037.64877	2.50E-04	1037.6488	4.00E-05
1036.68441	2.20E-04	1036.6844	4.00E-05
1035.72006	1.90E-04	1035.7201	4.00E-05
1034.7557	1.80E-04	1034.7557	4.00E-05
1033.79134	1.80E-04	1033.7913	4.00E-05
1032.82698	1.90E-04	1032.827	2.00E-05
1031.86263	1.70E-04	1031.8626	1.00E-05
1030.89827	1.40E-04	1030.8983	-1.00E-05
1029.93391	1.00E-04	1029.9339	-4.00E-05
1028.96955	5.00E-05	1028.9696	-8.00E-05
1028.0052	2.00E-05	1028.0052	-1.40E-04
1027.04084	0	1027.0408	-2.10E-04
1026.07648	-1.00E-05	1026.0765	-2.60E-04
1025.11212	-1.00E-05	1025.1121	-2.90E-04
1024.14776	1.00E-05	1024.1478	-3.00E-04
1023.18341	6.00E-05	1023.1834	-2.80E-04
1022.21905	1.60E-04	1022.2191	-2.00E-04
1021.25469	2.90E-04	1021.2547	-4.00E-05
1020.29033	4.70E-04	1020.2903	1.80E-04
1019.32598	7.10E-04	1019.326	4.70E-04
1018.36162	0.00101	1018.3616	8.30E-04
1017.39726	0.00137	1017.3973	0.00123
1016.4329	0.00172	1016.4329	0.00159
1015.46855	0.00203	1015.4686	0.00187
1014.50419	0.00219	1014.5042	0.00203
1013.53983	0.00217	1013.5398	0.00202
1012.57547	0.002	1012.5755	0.00185
1011.61112	0.00172	1011.6111	0.00158
1010.64676	0.0014	1010.6468	0.00125
1009.6824	0.0011	1009.6824	9.10E-04
1008.71804	8.30E-04	1008.718	6.00E-04
1007.75369	6.00E-04	1007.7537	3.30E-04
1006.78933	4.40E-04	1006.7893	1.00E-04
1005.82497	3.30E-04	1005.825	-9.00E-05
1004.86061	2.40E-04	1004.8606	-2.20E-04
1003.89626	1.80E-04	1003.8963	-2.90E-04

Cleaned with 2 mM EDTA (pH 11)		Cleaned with 2 mM EDTA (pH 11), followed by NaOH (pH 11)	
Wavenumbers (cm-1)	Absorbance	Wavenumbers (cm-1)	Absorbance
1002.9319	1.20E-04	1002.9319	-3.00E-04
1001.96754	1.20E-04	1001.9675	-3.00E-04
1001.00318	1.20E-04	1001.0032	-3.00E-04
1000.03882	1.20E-04	1000.0388	-3.00E-04
999.07447	1.20E-04	999.07447	-3.00E-04