BROOKHAVEN NATIONAL LABORATORY

Biology's Scanning Transmission Electron Microscope (STEM)

To continue to provide our unique capabilities for quantitative STEM imaging, mass analysis and cluster mapping, we are charging a fee of $400/grid ($900 for proprietary projects) starting Oct. 1,2007. A minimum of 3 grids per experiment will be required to increase the chances of obtaining suitable concentrations on the grid. Payments will be handled as regular purchase orders (see below).

Services Provided

Specimen solutions can be submitted frozen or on wet ice, either by package delivery or in person. Each solution should be accompanied by:

1) a description of the objects of interest (images, gels, references, etc.)
2) approximate concentration
3) buffer description
4) estimate of purity and possible contaminants and
5) estimate of heavy atom labeling, if attempted. *(Note: users are expected to do their own labeling.)*

BNL STEM staff will provide hydrophilic thin carbon substrates on holey carbon coated titanium grids, mounted in our holders. STEM staff will prepare dilution series and inject sample into a drop of buffer on the film, rinse, add TMV internal control, wash and fast-freeze. This will be done on the day of arrival (for specimens on wet ice) if so arranged, and grids will be stored under liquid nitrogen until freeze dried. Alternatively, grids may be washed with methylamine vanadate and air dried for negative staining.

STEM staff will transfer frozen grids to our UHV freeze-dry apparatus, freeze dry overnight and transfer under vacuum to STEM. Grids for negative staining will be processed in parallel with frozen-hydrated grids.

STEM staff will collect low-dose dark field STEM images (grid at -160C) suitable for mass measurement or heavy atom cluster mapping. Grids judged too crowded, too sparse or with bad background not suitable for reliable analysis will be imaged in at least four widely separated areas, providing a minimum of 12 typical images. Grids judged suitable for data collection will also be imaged in at least four widely separated areas, providing a minimum of 36 typical images. Magnification and dose will be chosen for optimum analysis.

STEM staff will provide:

- Digital STEM images on its FTP site, along with software for viewing & mass analysis.
- Preliminary analysis of particle mass distribution, TMV quality & calibration and description of any problems encountered in imaging or analysis.
- Customized models for mass analysis, if requested.
- Materials & Methods sections suitable for publication.
- Advice on analysis and suggestions for further experiments either by e-mail or telephone.

Guarantee

STEM staff will repeat at no charge any grids which fail to give useful data due to:

1) loss of grid in handling,
2) poor coverage of thin carbon
3) failure of freeze dry as indicated by TMV internal controls.

This guarantee is not for an experiment which fails because of a faulty sample. To repeat it, the user will have to pay for a second or third batch of the sample if it appears promising and further studies are authorized.

Expectations of Our Users

Users would be expected to publish results, inform STEM staff and include an appropriate acknowledgement. If requested, we will provide a Materials & Methods section and review manuscripts.

Collaborations

We continue to be very interested in new applications of STEM and are happy to consider scientific collaborations in the context of our own scientific priorities. This might include new heavy atom reagents or new data acquisition/analysis protocols. However, any specimens so generated would need to be paid for as above.

Contacts

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Purchasing the Services of the BNL STEM Facility

Purchasing the services of the BNL STEM Facility is done through a User Account. A User Account will be established at the value of your purchase order, check, etc. (see below). As services are provided, the User Account will be charged accordingly. Once the User Account is depleted, services will stop until additional funds are added to your User Account.

To establish a User Account, **one** of the following options is required:

- An official Purchase Order authorizing charges up to the minimum amount of U.S. $_____. You will be billed monthly for actual costs only.
- An official letter signed by someone authorized to commit funds at the authorized dollar amount. Include complete "bill to" name and address.
- A check for the total amount made out to - Brookhaven National Laboratory.
    - The return of any unused balance must be requested in writing.
- Wire transfer for the total amount sent to:

    J.P. Morgan Chase Manhattan Bank
    270 Park Avenue
    New York, NY 10017
    ABA021 000 021 for Brookhaven National Laboratory Account No. 615-775-942

In all cases, the following information is required:

- The purpose of the account (scope of work)
- The name of the principal investigator and the full names of any other authorized users
- The dollar amount
- The expiration date of the order
- The complete "bill to" address

Mail Orders to:
Georgia L. Irving
Accounts Receivable Specialist
Brookhaven National Laboratory
Budget Office - Building 460
P.O. Box 5000
Upton, NY 11973-5000