

**The Center for BioEnergy Sustainability (CBES)
At Oak Ridge National Laboratory (ORNL)**

is pleased to announce that we are holding our next Forum on *Wednesday February 20th, 2013* in the Ocoee Room (Room 189) in Building 1505 at 3:30pm

The forum will be followed by a casual gathering at Virginia Dale's home where light refreshments will be enjoyed as the discussions continue.

**This month's forum topic is:
"Enzyme Catalysis for Biomass Based Diesel Fuels"**

Guest Speaker:

Rachel Burton

Senior Associate at MARC-IV Consulting

Abstract:

In commercial biodiesel production, the ability to process a wide range of feedstock grades provides favorable economics to the producer. Currently most biodiesel production utilizes homogenous chemical based catalysts such as sodium hydroxide or sulfuric acid. Often lower cost feedstocks contain high levels of free fatty acids (FFA) and because of this are difficult to process into biodiesel using chemical catalysts. In fact, the traditional chemical means of processing high FFA feedstocks, acid-catalyzed esterification, requires the use of sulfuric acid and high proportions of methanol to fatty acid. In addition, the equipment for recovery and purification of the side streams from such processes requires a high capital investment and a high energy input. It is now proven that the immobilized or liquid phase enzymes such as *Candida Antarctica Lipase B (CALB)* and *Thermomyces Lanuginosus*, can be utilized for the production of biodiesel. The use of these enzymes in the processing of fatty acid esters can reduce waste alcohol streams, reduce energy input, increase production yield, and enhance the co-product quality of glycerol. This talk will evaluate the commercial experiences of an enzymatic biodiesel production facility.

Bio:

Ms. Rachel Burton recently joined MARC-IV consulting as a senior associate. Previously she served as a Founder and Research Director at Piedmont Biofuels in Pittsboro, North Carolina. At Piedmont, she led a two year project funded by the US Department of Energy evaluating the use of enzymes for biodiesel production. This year she will be working collaboratively with the University of Tennessee on biorefinery co-product utilization research. Burton graduated from the University of North Carolina at Chapel Hill and holds degrees in Agriculture and Automotive-Diesel Technology. Rachel is an active member at ASTM, AOCS, and (SAE) Society of Automotive Engineers. Burton has participated in biofuels research through several universities, nationally and internationally, in addition to other private industry stakeholders. Her collaborative work has been published in variety of fats, oils, and fuel chemistry journals and industry publications.