

Department Receives MSU Quality Funds to Establish a Center for Biobased Renewable Energy

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The Department, in collaboration with Departments of Chemical Engineering and Material Science and Forestry has received funding to establish a Center for Biobased Renewable Energy from the MSU Quality Fund program. The primary focus of the multidisciplinary cross-college Center will be to conduct research to convert biomass into renewable energy. The proposal also call for the development of courses in technical, economic, and environmental aspects of energy from agricultural and forestry biomass. Cluster of four new faculty with expertise in biomass conversion processes will be hired and housed in Farrall Hall.

A major challenge is to have adequate and sustainable energy resources at reasonable prices for both transportation and heating. It is anticipated that both conservation measures and fuels from biomass will be used more extensively. Bio-based fuels are typically alcohols and chemically modified oils from plants and will be used to extend petroleum resources. Alcohols have potential as hydrogen donors in fuel cells. Clearly, economic considerations along with new technologies will be critical as we transition (hopefully in orderly fashion) from a petroleum based energy economy to the renewable energy economy of the future. Utilization of hydrogen as a transportation fuel would require major investment in both infrastructure and technology.

As a part of the educational objective of the proposal new courses and an integrated curriculum option for several Engineering and Agriculture and Natural Resources majors at undergraduate and graduate levels will be developed; undergraduate students will be involved as interns in research laboratories; a study abroad course and collaborative opportunities for students and faculty will be developed; and assistance will be given to community colleges in developing programs to train students in the emerging field of bioenergy such as ethanol plants. The research objectives include establish a bioenergy research laboratory; conducting biomass production research including the development of genetically modified energy crops; thermal, chemical, and biological processes to convert agricultural and forestry biomass and waste materials; reforming processes to convert biofuels and biogas into high purity, fuel grade hydrogen; organize a seminar series to invite world renowned experts in renewable energy. The outreach activities will include development of a website to provide information and coordination; publishing materials/newsletters to promote energy conservation and bioenergy utilization; extension activities to provide service/outreach to both agriculture and other industry in Michigan; and to serve as a resource for citizens and businesses interested in the production and utilization of bioenergy working cooperatively with the MSU Product Center.