ENVIRONMENTAL AND ECOLOGICAL ENGINEERING

EEE Research Seminar

DATE: Wednesday, February 24, 2016
TIME: 3:30 P.M.
LOCATION: Potter 234, Fu Room

David R. Shonnard, Ph.D.
Richard and Bonnie Robbins Chair in Sustainable Use of Materials
Department of Chemical Engineering
Director, Sustainable Futures Institute (SFI)
Michigan Technological University (MTU)

Sustainability Challenges and Opportunities of Biofuels

ABSTRACT
The Earth' primary production of terrestrial biomass is more than sufficient to provide all current anthropogenic energy demands, but this primary production is at the base of ecosystem function and serves many other human and natural needs. This presentation will explore the many sustainability challenges and opportunities with conversion of biomass into liquid transportation biofuels through various chemical and biochemical routes. Biofuel sustainability will be viewed through various perspectives including climate change, food security, water footprint, and socioeconomic impacts. Sustainability assessments of biofuel pathways are intended to highlight high impact stages and help guide decisions toward beneficial outcomes relative to current energy production. The presentation also features two case studies on the use of environmental life cycle assessments of agricultural- and forest-based biofuels.

BIO
David R. Shonnard is Robbins Chair and professor in the Department of Chemical Engineering at Michigan Technological University and director of the Sustainable Futures Institute. He has over 20 years of academic experience in sustainability issues in the chemical industry and green engineering. His research interests are in wood-based biofuel processes and environmental life cycle assessments of advanced biofuels. He is co-author of the textbooks “Green Engineering: Environmentally-Conscious Design of Chemical Processes”, published by Prentice Hall in 2002, and “Sustainable Engineering: Concepts, Design, and Case Studies”, published by Prentice Hall in 2012. Dr. Shonnard has co-authored over 100 peer-reviewed publications, conference proceedings papers, and technical reports and received numerous honors and awards for teaching and research into environmental and sustainability issues of the chemical industry.