David Hodge

College of Engineering
Department of Chemical Engineering and Materials Science
Department of Bios-systems and Agricultural Engineering

Dr. David Hodge is an Assistant Professor in the Department of Chemical Engineering and Material Science and the Department of Biosystems and Agricultural Engineering. His research interests include Hodge's research interests include production of fuels and chemicals through catalytic conversion of biomass-derived aromatics and sugars; alkaline pulping technologies for the generation of high-yield, high-purity sugar streams with potential for lignin seperations; water use and heat integration in bio-refining processes; sucrose extraction in sorghum or sugar cane processing with cellulosic biofuels technologies; and cell wall recalcitrance to chemical and enzymatic conversion for developing plants with cell walls "designed for deconstruction."

Global Research Interests:

David's ongoing research at Michigan State University addresses the challenges associated with the conversion and fractionation of plant cell wall biopolymers as well as food crops to renewable energy and fuels. Additionally, a theme of David's is to research how improved characterization of the chemical, structural, and physical changes to the plant cell wall and the spectrum of compounds solubized from the cell wall can better inform technologies for plant cell wall deconstruction and conversion to renewable fuels and chemicals.

David's global research interests include; catalytic conversion of biomass-derived aromatics and sugars; alkaline pulping of high-yield, high-purity sugar streams; water use and heat integration in bio-refining processes; sucrose extraction in sorghum or sugar cane processing with cellulosic biofuels technologies; and cell wall recalcitrance to chemical and enzymatic conversion.

Potential Research Topic Proposals:

1. Production of fuels and chemicals though catalytic conversion of biomass-derived aromatics and sugars
2. Application of alkaline pulping technologies for the generation of high-yield, high-purity sugar streams from woody biomass with the potential for novel lignin separations.
3. Water use an heat integration in bio-refining processes
4. Integration of sucrose extraction in sorghum or sugar cane processing with cellulosic biofuels technology
5. Fundamental understanding cell wall recalcitrance to chemical and enzymatic conversion integrated with breeding and genetic engineering for developing plants with cell walls "designed for deconstruction."

Regions/Countries selected where research collaborations on biofuels have the most alignment: Scandinavia (Denmark, Sweden), South America (Brazil, Chile, Columbia), and China