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U.S. Department
of Transportation



Title: Multi-scale Fouling Characterization of Fermented/ Hydrolyzed Sweet Sorghum

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Project Goal

The goal of this project is to quantify the fouling characteristics of fermented/hydrolyzed sweet sorghum on multiple length-scales in a bioethanol recovery process. The research plan calls for testing in a lab-scale flow loop and in the OSU farm-scale Alcohol Separation Unit located at the Bioenergy Laboratory.

The objectives are to:

1. Develop a composite multi-component fouling model to predict the rate of fouling for fermented/hydrolyzed sweet sorghum on multiple length scales (small scale lab to large scale industrial equipment).
2. Document the actual fouling rates measured in the Alcohol Separation Unit as a function of feed composition, pretreatment and operating conditions.
3. Develop recommended practices for operation and cleaning of the Alcohol Separation Unit as related to equipment and instrument fouling.
4. Fully commission the Alcohol Separation Unit and document the capabilities of the world-class separation technology.

Expected Outcomes

Results of the work will be used to develop a fundamental fouling model and to develop optimal maintenance and equipment cleaning practices. The work will be performed in collaboration with Sulzer ChemTech, USA. This work will provide answers to a critical question (how to minimize/handle equipment fouling) regarding the ability of farmers to operate and maintain on-site alcohol separation processes on a commercial scale. Completion of this project combined with cost data from the recently constructed farm-scale Alcohol Separation Unit will allow economists to establish the economic viability of de-centralized ethanol production from sweet sorghum with much greater accuracy.



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Other Sources of

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