



U.S. Department of  
Agriculture-NIFA



## Project Title: Enhanced Biofuels Production with Genetically Optimized Feedstocks by Multistage Pyrolysis

**DR. LAURA BARTLEY**

### Project Goal

The main goal of the project is to determine how chemically and physically altering sorghum and switchgrass biomass impact production of biofuels using two-stage thermal processing.

The specific goals for this project are (1) to determine the effects of mechanical (wet milling), chemical (pretreatment), and enzymatic fractionation of biomass on thermochemical products; and (2) to determine how biomass structure on different scales influences thermal products.

#### Objectives for each specific goal:

- 1A. Selective solution-based biomass pretreatments toward testing the roles of different biomass components in thermochemical multi-stage processing.
- 1B. Thermal processing of biochemical biofuel production sorghum residues.
- 2A. Macro- and microscopic characterization to understand morphological effects.
- 2B. Cellular destruction for elimination of mass transport limitations in biopolymer thermal segregation

### Expected Project Outcomes

The expected outcomes from this project will be the data and understanding of the relationships between plant structure and composition and the yield, quality and refinability of bio-oil produced from a large number of switchgrass and sorghum varieties. This understanding will directly contribute to the development of optimal feedstock-conversion

**Other Sources of Funding:** The University of Oklahoma and Texas A&M University will meet the matching requirements.



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