



U.S. Department of
Agriculture
National Institute of
Food & Agriculture



Project Title: **Hydrocarbon Fuels, Chemicals and Intermediates
from a Novel Biomass Pyrolysis Technology**

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Project Goal

The overall goal of this project is to demonstrate proof-of-concept of a novel natural Gas and Biomass To Liquids (GBTL) technology that will synergistically use biomass (e.g. switchgrass and eastern red cedar) and methane to produce liquid hydrocarbons.

Objectives are to investigate:

- (1) catalytic strategies and reaction mechanisms to increase yield, and
- (2) effects of biomass composition and pretreatment.

Expected Project Outcomes

- Research is underway to target production of especially aromatic hydrocarbons, such as benzene, toluene, ethyl benzene and xylene that are compatible with existing petroleum infrastructure.
- Outcome will forge foundation of the rest of the project by developing a fundamental understanding of various catalytic reactions that occur when biomass and methane react.
- Results will also allow: 1) to identify the catalysts and reaction pathways that effectively result in high yield and selectivity of hydrocarbons, and 2) to show whether biomass composition and pretreatments have significant effects.
- This project will directly contribute to the creation of compatible hydrocarbons from biomass in the production of renewable fuels and chemicals while supplementing the demands for petroleum fuels and chemicals.



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