

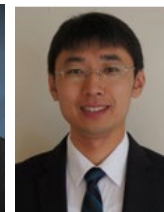
Hydrocarbon Projects – Advanced Biofuels

CBI has selected three hydrocarbon projects to achieve one-step selective conversion of n-butanol to jet range aromatic hydrocarbons and selective dehydration of n-butanol to produce 1-butene for fully synthetic jet fuel.

1. Catalytic upgrading of n-butanol to fully synthetic jet fuel
 - *Zhenglong Li, Brian Davison, and Shiba Adhikari (ORNL)*
 - Design of metal modified zeolite for jet-range aromatics formation
 - Design of 2D pillared zeolite with high Si/Al ratio and reduced diffusion length to reduce isomerization of 1-butene
2. Develop an integrated catalytic funneling strategy to selectively depolymerize and upgrade lignin into a hydrocarbon mixture in the jet fuel range prepared for ASTM Tier 1 testing
 - *Yuriy Roman (MIT), and Gregg Beckham (NREL)*
 - Development of a catalytic toolkit for lignin deoxygenation
 - Process integration for continuous lignin to hydrocarbons in trickle bed reactors
 - Separations and blending for production, characterization and testing jet fuel blend
3. Mechanisms controlling hydrocarbon distribution from novel catalytic upgrading of alcohols
 - *Charles Wyman (UCR), Seemala Bhogeswararao (UCSB), and Charles Cai (UCR)*
 - Reduce aromatic content of fuel
 - Increase molecular weight distribution of fuel
 - Understand mechanisms controlling zeolite catalyst product hydrocarbon distribution, how process parameters alter MW distribution, and how insights can be used to favor long chained hydrocarbons with low aromatic content compatible with jet fuel



Brian Davison



Zhenglong Li



Shiba Adhikari



Yuriy Roman



Gregg Beckham



Charles Wyman



Seemala Bhogeswararao



Charles Cai