

Advanced Characterizations to Accelerate Commercial Catalyst Development for Ethanol Upgrading Technology



Goal:

- Provide valuable catalyst characterization information to accelerate Vertimass commercial catalyst development

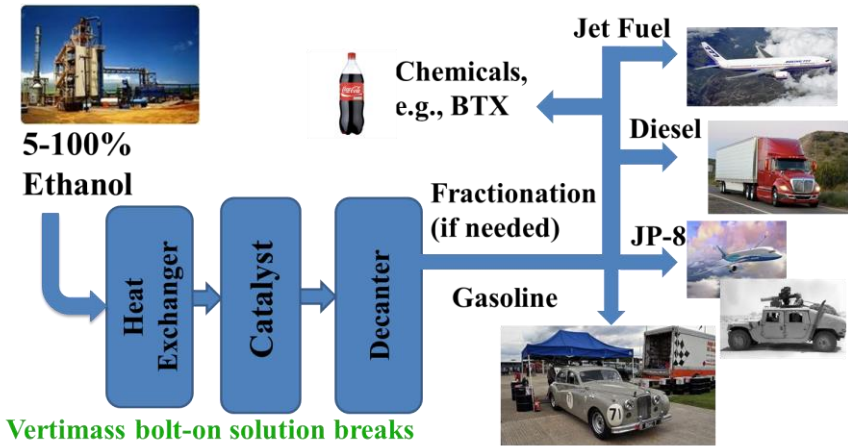
Approach:

- Leveraging unique catalyst characterization capabilities to bridge both catalyst synthesis and testing at pilot scale

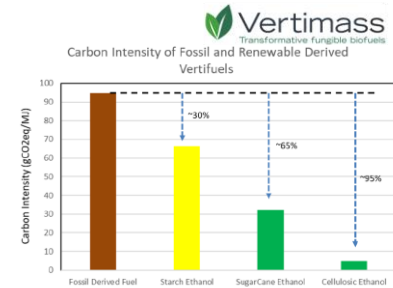
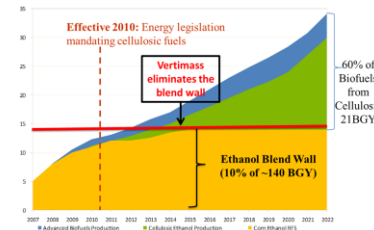
Impact on the Bioenergy Industry:

- Final critical step to drastically open ethanol production to renewable hydrocarbons

Vertimass Bolt-on Solution



Vertimass bolt-on solution breaks through ethanol blend wall and opening up new ethanol markets



ChemCatBio Capabilities Leveraged:

- ORNL: STEM, X-ray 3D & atom probe tomography, *in situ* & *operando* FTIR, Pyridine IR, structural and chemical characterizations
- ANL: X-ray absorption spectroscopy
- NREL: Solid-State NMR spectroscopy

