Tailored Bioblendstocks with Low Environmental Impact to Optimize MCCI Engines

Goals
Develop and demonstrate a microalgae bioblendstock with greater than 60% greenhouse gas reduction potential relative to petroleum diesel, that can reduce sooting propensity, increase cetane number and improve engine thermal efficiency.

Approach
- Cultivation of algal polycultures
- Optimization of hydrothermal liquefaction to biocrude and upgrading of biocrude
- Numerical and experimental combustion studies to identify targets for processing of algae to achieve
- LCA and TEA analyses

Potential Impact on Co-Optima Goals
Development of low GHG algal fuels optimized for MCCI combustion processes can improve energy security and sustainability of the transportation sector.

Team Members
PI: A.L. Boehman
Co-PIs: B. Cardinale, L. Thompson
University of Michigan, Ann Arbor
Co-PIs: D. Haworth, P. Savage
Penn State University, University Park