FY22 Scale-Up of Integrated Biorefineries and Greenhouse Gas Reduction in First Generation Ethanol Production (Scale-Up+)
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002638

Title: Scale-up Demonstration of Hybrid Catalytic Biorefining of Biomass to Sustainable Aviation and Marine Fuels

PI and Technical Point of Contact: Dr. Charles M. Cai, Associate Research Professor, Center for Environmental Research and Technology (CE-CERT), Bourns College of Engineering, University of California Riverside (UCR); Riverside, CA. Email: ccai@engr.ucr.edu, Tel: 510-364-8933

Industry and Cost-Share Partners:
- Suncor Energy
- MG Fuels LLC

Business Point of Contact:
Ms. Ursula Prins, Sponsored Programs Administration, University of California Riverside (UCR), Riverside, CA, Email: ursula.prins@ucr.edu. Tel: 951-827-4968

Topic Area: 1a. Pre-Pilot Scale-Up of Integrated Biorefinery Technologies

Approximate Funding Requested: $2,000,000 (Federal Funds) + $500,000 (Cost-share)

Project Duration: 3 years

Abstract: This project aims to address the research objectives for Topic Area 1a of the DOE EERE Bioenergy Technologies Office (BETO) Scale-up+ funding opportunity. We propose to build and demonstrate a scaled-up CELF pretreatment and lignin fractionation operation within the hybrid catalytic biorefining (HCB) architecture capable of processing at least 0.5 dry ton equivalents of hardwood biomass per day (0.5 TPD) to produce high-quality lignin intermediates suitable for the production of renewable jet fuels and marine fuels. A primary objective of this project is to also demonstrate the reliable and continuous on-stream operation of 100 h while collecting critical operational data over 500 h cumulative to inform larger future scale-up demonstration projects. The pre-pilot our team will build will also feature a custom-made solvent recovery system to simultaneously recover and re-use the solvent and fractionate the CELF lignin into low and high MW cuts. The project will be underpinned by technoeconomic and lifecycle analysis simulations that will aid in optimizing process configurations for reducing carbon intensity and operating costs.