

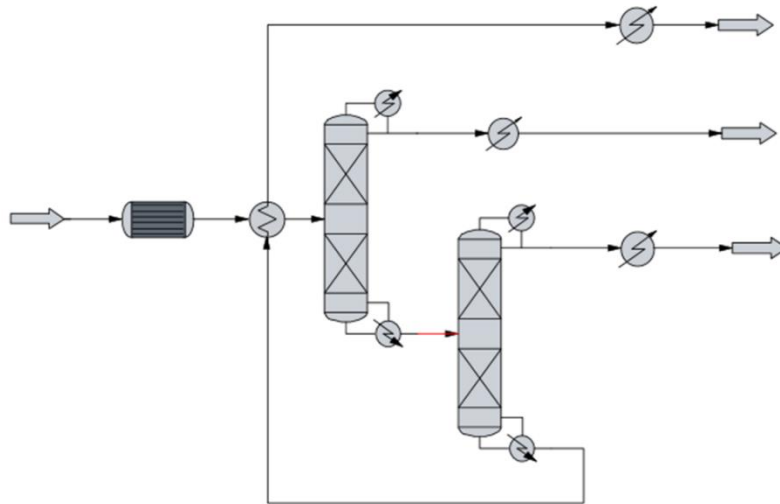
2024 UC Chemical Engineering  
**Senior Design Exposition**  
now part of the  
**CEAS EXPO**

April 9, 2024

Program Judging: 12:15 pm - 2:15 pm

Public Presentations: 1:15 pm - 4:30 pm

Duke Energy Convention Center



**CHE Program Activities Sponsored by:**

Department of Chemical and Environmental Engineering  
American Institute of Chemical Engineers  
Ohio Valley Section

For More Information, Contact [Stephen.Thiel@uc.edu](mailto:Stephen.Thiel@uc.edu)

# 2024 PROJECTS

## Carbon Capture and Utilization

**Project 5046-2401: Direct Air Capture of Carbon Dioxide** (with Prof. Lee).

**Project 5046-2402: Energy Recovery from LM Engine Testing Using Flow Batteries** (with GE Aerospace).

**Project 5046-2403: CO<sub>2</sub> Capture from Jet Engine Testing** (with GE Aerospace).

**Project 5046-2404: Electrochemical Conversion of Carbon Dioxide to Ethylene** (with Prof. Wu).

## Energy

**Project 5046-2405: Manufacturing of Liquid Nitrogen, Liquid Oxygen, and Argon Using Renewable Energy.**

**Project 5046-2406: Sustainable Production of Aviation Fuel** (with Marathon Petroleum/Virent).

**Project 5046-2407: Nuclear Fuel Reprocessing to Produce Mixed Actinides.**

**Project 5046-2408: Production of Thorium and Rare Earths from Monazite.**

## Greener Manufacturing

**Project 5046-2409: Green Synthesis of Urea.**

**Project 5046-2410: Greener Synthesis of Dimethyl Carbonate.**

**Project 5046-2411: Production of Alpha Olefins from Fatty Acids from Sewer Trap Grease.**

**Project 5046-2412: Conversion of Lignocellulosic Biomass into Ethanol and Mixed Alcohols** (student-proposed).

**Project 5046-2413: Bioproduction of Hydrogen.**

## Mining the Waste/Recycle Stream

**Project 5046-2414: Recycling Solar Panels.**

**Project 5046-2415: Pyrolysis of Waste Plastic** (student-proposed).

**Project 5046-2416: Biochar/Bio-Oil from Pyrolysis of Almond Husks and Shells.**

**Project 5046-2417: Upcycling Spent Coffee Grounds.**

## Miscellaneous

**Project 5046-2418: 3-D Printing of Concrete Forms Using Wood-Based Materials** (with Prof. Beaucage).

**Project 5046-2419: Production of MSG** (student-proposed).

**Project 5046-2420: Water Treatment for Burere, Tanzania** (student-proposed / Engineers Without Borders).

**Project 5046-2421: Food Grade Vanillin Production Plant Design** (student-proposed).

**Project 5046-2422: Landfill Leachate Treatment Using Activated Charcoal and Deionization** (student-proposed).

**Project 5046-2423: 1200 ton per Day Nitric Acid Production Facility** (student-proposed).