



Department of Chemical  
and Biological Engineering  
UNIVERSITY OF WISCONSIN-MADISON

# 2020 Fall CBE Seminar Series

*presents:*



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Ames, IA

## **Investigating the Sustainability of Fossil- and Bio-based Carbon Negative Energy Technologies for Fuels and Chemicals**

Our fossil-based society has led to atmospheric CO<sub>2</sub> concentration levels (410 ppm) greater than those seen over 800,000 years ago. Global greenhouse gas (GHG) emission rates continue to grow even in the face of a global pandemic and recession due, in part, to a glut of inexpensive fossil resources. To reverse these trends and avoid some of the more severe impacts of climate change, society needs solutions that reduce atmospheric carbon levels while providing economic carbon-based products and fuels. In this presentation, we will discuss how carbon-negative energy technologies (NETs) can contribute to carbon sequestration efforts while providing products and fuels from fossil- and bio-based carbon resources.

There is growing interest in developing NETs based on existing bio- and petro-chemical refinery technologies. However, the literature on the economic and environmental performance of NETs remains scarce. In particular, studies on the use of NETs to produce carbon-negative bioproducts remains limited. Preliminary studies indicate that most NETs would require public financial support, but some technologies could be commercially competitive by focusing on low- to negative-valued resources such as agricultural, municipal, and industrial waste streams. Plastic waste shows promise as a resource for NET production of fuels and chemicals due to an impending shortage of plastic waste sites and increasing concern of their environmental and ecological impacts. We hope this talk will foster some discussion on how engineers and scientists can innovate in the space of plastic and fossil-based carbon utilization to help meet our climate change challenge.

**Tuesday, Sept. 22, 2020**

Lecture at 4:00 p.m.

<https://uwmadison.zoom.us/j/91376473708>