

“A Case for Carbon Dioxide Removal from Air”

Wednesday
February 12, 2020
3:00 pm
Wu and Chen Auditorium
Levine Hall



Jennifer Wilcox
James H. Manning Chaired Professor
Chemical Engineering
Worcester Polytechnic Institute

Abstract

As a global society, we have been burning fossil fuels to meet our energy and transportation needs since the start of the industrial revolution. This has resulted in atmospheric CO₂ concentrations much greater than at any other time during the last 650,000 years. That concentration reached a record 415 parts per million in May 2019. The replacement of fossil fuels with renewables, advances in energy efficiency, and carbon capture and storage are among the key strategies required to prevent warming beyond 2°C within this century. But they will not be enough. We need to ramp up our efforts in reducing CO₂ emissions, and then we need to do even more. The Earth's natural systems, such as forests and oceans, are capable of removing roughly half of global CO₂ emissions each year, while the rest steadily accumulates in the atmosphere. Until now, our best approach to avoiding the worst impacts of climate change was simply to avoid such emissions in the first place. But because of our failure to act quickly and at a large enough scale, we are now faced with the need to go beyond that strategy—to actually start removing CO₂ directly from the air. Trees and oceans already do this, but these systems are overwhelmed. Manufactured or synthetic removal systems are designed to pull CO₂ from the atmosphere, and at a much faster rate than natural systems. This talk will review both the promise and pitfalls of this approach.

Bio

Jennifer Wilcox is the James H. Manning Chaired Professor of Chemical Engineering at Worcester Polytechnic Institute. She has a master's degree in physical chemistry and a doctorate in chemical engineering from the University of Arizona. Having grown up in rural Maine, she has a profound respect and appreciation of nature, which permeates her work. Wilcox's research takes aim at the nexus of energy and the environment, developing both mitigation and adaptation strategies to minimize negative climate impacts associated with society's dependence on fossil fuels. She has served on a number of committees, including the National Academy of Sciences and the American Physical Society to assess carbon capture methods and impacts on climate. She is the author of the first textbook on carbon capture, published in 2012. She also gave a TED talk on the Main Stage in April 2018 on Direct Air Capture.

Spring 2020 CBE Seminar Series

