

“Promise and Challenges of Cultivating Algae in Open Pond Systems”

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3:00 pm
Wu and Chen Auditorium
Levine Hall



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Abstract

Algal systems have the potential to produce drop-in type fuels, since they produce lipids that can readily be converted to biodiesel and biojet fuel. The advantages of using algae instead of a terrestrial crop is that it can be grown year-round in some parts of the world, and reactors can recover quickly from crashes due to weather, which leads to higher productivity per acre. Conversely, there are many challenges such as variations in productivity with season, contamination, and effective process control. This presentation will discuss a crop rotation strategy for year-round production of microalgae in the Southwest U.S. Three years of data obtained in 3 locations inform the analysis. All experiments were done in 400 to 1000 L open pond systems. Methods for monitoring and controlling the algal cultivation system will be shown, including data obtained from a recently patented on-line biomass sensor. Results of growing algae using impaired water, recycled water, and flue gas will be discussed. Contamination control strategies will be highlighted. Finally, model simulations for predicting year-round productivity will be examined.

Bio

Kimberly Ogden is a Professor of Chemical and Environmental Engineering at the University of Arizona and the Interim Vice President for Research. She received her B.S. degree from the University of Pennsylvania (1986) and her M.S. and Ph.D. degrees from the University of Colorado. Prior to joining the UA in the fall of 1992, she was a postdoctoral fellow at Los Alamos National Laboratory. She is currently the President-elect for the American Institute of Chemical Engineers. Kim’s research focus includes bioreactor design for production of alternative fuels from algae, and wastewater remediation. She is the PI for the Regional Algal Feedstock Testbed (www.raft.arizona.edu) program funded by the Department of Energy. The goal of this 4-year project is to obtain long-term outdoor algal cultivation data that will be available to the public for use in modeling and other research efforts, and to demonstrate the feasibility of year-round cultivation. She is also the PI for the Sustainable Bioeconomy for Arid Regions (SBAR) Center, funded by the USDA-NIFA. The goal of this project is to investigate the co-production of rubber, polysaccharide, fuel and high value products from guayule and guar.