ChemE

Seeding innovation and creativity in the design of transformational technologies

Dr. Katharine Greco
Fellow at ARPA-E
Department of Energy

Friday, April 21, 2023
11 am - 12 pm
Room 66-110

Abstract

Our current food system depends on agriculture supply chains that require large amounts of land and energy. Although highly optimized, these pathways are inherently limited in both land and energy efficiency. This talk will elucidate novel technologies to produce food and food molecules directly from CO2 without the use of conventional agricultural resources. Three main routes—microbial, cell-free enzymatic, and abiotic catalysis—will be presented, and innovations needed for technical and economic viability of each technology will be discussed.

The talk will also discuss the Advanced Research Projects Agency – Energy (ARPA-E) and the Fellows position. ARPA-E advances high-potential, high-impact energy technologies that are too early for private-sector investment. ARPA-E Fellows are early-career PhD scientists and engineers that are tasked with seeding innovation and creativity in the design of transformational technologies. They identify these breakthrough energy solutions by conducting technical and economic analyses and by engaging with world-class government officials, entrepreneurs, academics, and industrial researchers.

Bio

Dr. Katharine Greco is currently a Fellow at the Advanced Research Projects Agency – Energy (ARPA-E) in the U.S. Department of Energy. At ARPA-E Dr. Greco works to map the technology whitespace for novel food production methods that are not dependent on conventional agricultural resources.

Dr. Greco earned her Ph.D. in chemical engineering from the Massachusetts Institute of Technology, where she worked with Professor Fikile Brushett. Her research focused on carbon electrode characterization and the synthesis of novel electrode materials for redox flow batteries. Dr. Greco earned a B.S. in chemical engineering from the University of Massachusetts Amherst, where she worked on several research projects, including lignocellulosic biomass pyrolysis, chemical vapor deposition for photovoltaics manufacturing, and molecular dynamics simulations of high temperature proton conducting materials for hydrogen fuel cells.