

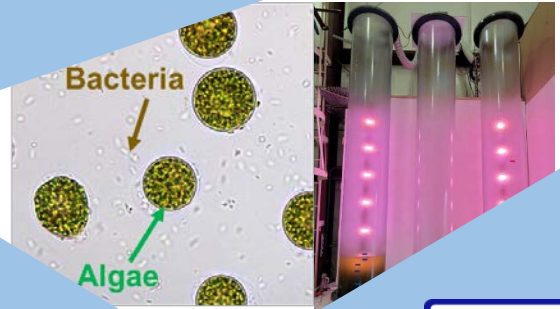
School of Civil and Environmental Engineering

Engineering microalgae at the nexus of climate, food, energy and water systems



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Dr. Yantao Li is an Associate Professor at Institute of Marine and Environmental Technology, the University System of Maryland. His research aims to understand the biology and engineering principles of carbon assimilation and lipid biosynthesis in microalgae, and to address greenhouse gas emission and climate change issues through convergence engineering approaches. He is on the editorial board of several international journals in the field of microbiology/environmental science, a contributing author of the US Department of Energy National Algae Biofuel Technology Roadmap, and serves on the advisory board of several biotechnology companies. He is currently visiting CEE of Nanyang Technological University on a Fulbright fellowship (2022-2023).



Date: 30 Nov 2022 15:00-16:00
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Online *Zoom link will be sent to registered emails*
+
Offline *Venue: LT5, North Spine*

Abstract

Microalgae-based technologies have been proposed to reduce carbon dioxide emission and wastewater runoff while producing biofuels and bioproducts. We have developed multiple engineering approaches to promote microalgae innovations at the nexus of Climate-Food-Energy-Water systems. Biological and environmental engineering strategies have been explored to enhance algae lipid and biomass production for feed and energy applications. Algal strain development through genetic engineering and microbiome/bacterial community optimization have been employed to improve productivity. Interestingly, a microalgae-driven carbonate precipitation process is found to increase carbon capture efficiency in algae polyculture while producing calcium carbonate, mimicking “Whiting” events in nature. The physiological relevance and biotechnological applications of this phenomenon will be discussed in the context of microbially induced calcium carbonate precipitation (MICP) and biocementation.