

DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
SEMINAR SERIES
FALL 2019

DATE: WEDNESDAY, DECEMBER 18, 2019

LOCATION: TIERNAN HALL LECTURE 1

TIME: 1:00-2:20PM

GUEST SPEAKER

Mengyan Li, Assistant Professor
Department of Chemistry and Environmental Science
New Jersey Institute of Technology

TOPIC

Biotechnology-Enabled Bioremediation to Tackle the Commingled Solvent-Stabilizer Contamination

ABSTRACT

1,4-Dioxane (dioxane) contamination has emerged as a compelling global water concern given its carcinogenic potential and prevalent occurrence in aquatic environments, posing imminent risks to human and natural biota. Bioremediation, primarily relying on bacterial degradation, exists as an environment-benign and cost-efficient option to manage the large and dilute plumes formed by dioxane. In this talk, our recent findings will be presented to uncover the molecular foundations (e.g., genes, enzymes, and pathways) that govern dioxane biodegradation in bacterial isolates and enriched consortia. Using a heterologous expression system, catalytic kinetics and substrate ranges of key dioxane degrading enzymes were assessed and compared. Notably, some of these novel enzymes demonstrated superior capabilities of degrading chlorinated aliphatic hydrocarbons (e.g., 1,1-DCE, *cis*-1,2-DCE, and VC) that commonly co-occur with dioxane at impacted sites. These discoveries enable the development of site-specific bioremediation strategies optimized to clean up the commingled pollution of dioxane and chlorinated contaminants.

BIO

Dr. Mengyan “Ian” Li is an Assistant Professor in the Department of Chemistry and Environmental Science at New Jersey Institute of Technology, specializing in environmental microbiology and biotechnology. Dr. Li received his MS and PhD degrees in Environmental Engineering at Rice University. His research focuses on untangling novel microbial processes that decompose and transform emerging contaminants (e.g., 1,4-dioxane, PFAS, and antibiotics) and developing effective treatment technologies suited for municipal, industrial, and agricultural settings. To tackle frontier challenges in the water-energy-food nexus, his group synergizes modern biotechnological tools (e.g., omics, single cell analysis, and microarray) with advanced mass spectrometry. Their recent work has been featured on the cover of *Environmental Science and Technology Letters* and reported by multiple public media, such as Chemical & Engineering News (C&EN) and Wateronline.com. Dr. Li is a recipient of the NSF CAREER Award, ISPTS Young Scientist Award, and NJIT CSLA Research Rising Star Award in 2019.

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