



Thu Le, Ph.D.

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January 27, 2025 (4:00 pm - 5:30 pm),

Kupfrian Hall - Room 205

[Zoom Link: Click Here](#)

Meeting ID: 994 3917 6432 Passcode: 058807

Effects of Nanobubbles on Bacterial Communities: Applications in Plant Growth Enhancement and Biofilm Removal

Abstract

Nanobubble (NB) technology has attracted increasing attention due to its unique properties and diverse applications in water treatment, agricultural production, and medicine. NBs, particularly CO₂, H₂, and O₂ types, can enhance plant growth and soil health by interacting with microorganisms in the soil and rhizosphere. Studies show that NBs significantly alter microbial communities, promoting beneficial bacteria that support soil nutrient cycling, metal resistance, and pathogen suppression. Additionally, NBs enhance microbial interactions and reduce niche formation in the soil. In agriculture, NBs have the potential to foster sustainable practices by creating more productive and interconnected microbial ecosystems. NBs also exhibit promise as an environmentally friendly disinfectant, enhancing the effectiveness of sodium hypochlorite against bacterial biofilms and reducing biofilm formation, particularly in high-flow systems. These findings suggest that NBs could improve improve disinfection processes by enhancing conventional disinfectants, reducing biofilm formation on surfaces, and removing biofilms under high-flow condition.

About the Speaker

Thu Le earned her Ph.D. in Environmental Health Sciences from the University of Michigan, School of Public Health and a B.A. with dual majors in Chemistry and Science, Technology and Society from Colby College. Her recently research interests include bacterial biofilm control and removal, drinking water treatment, sustainable technologies, and Life Cycle Assessment. In recent years, she has been involved in projects investigating the effects of nanobubbles in water on the composition and diversity of microbial communities in soil and plant microbiomes, as well as the potential use of nanobubbles to disinfect and remove environmental and clinical biofilms.

