



Civil and
Environmental
Engineering

Future Leaders in CEE Seminar Series

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Life and Activity of Ammonia Oxidizing Organisms in Engineered Environments

Ammonia oxidation is a critical biological process across both wastewater treatment facilities and drinking water treatment processes where influent nitrogen, often supplied as ammonia or urea, is metabolized into nitrite. Ammonia oxidation is typically carried out by traditional ammonia oxidizing bacteria and archaea, complete ammonia oxidizing bacteria, and anaerobic ammonia oxidizing bacteria. These organisms vary significantly in their lifestyles from temperature requirements, oxygen sensitivity, nitrogen source preferences and concentrations, as well cooperative and competitive intercommunity dynamics. This presentation will cover research focusing on 1) how ammonia oxidizing bacteria in wastewater treatment plants modulate activity throughout seasons, 2) the respiration kinetics and biomass incorporation of ammonia and urea across several isolate ammonia oxidizing organisms, and 3) how these organisms impact each other when in mixed water and wastewater communities. The ultimate goal is to understand how ammonia oxidizing organisms interplay and thrive so that engineers can design better systems which leverage their fullest potential in purifying drinking water and wastewater.

About the presenter:

Dr. Juliet Johnston (she/they) is an ASEE eFellows Postdoctoral Researcher at the Georgia Institute of Technology studying the activity of nitrifying bacteria in engineered environments with Dr. Ameet Pinto. Previously, she was a postdoctoral researcher at Lawrence Livermore National Laboratory studying spatial arrangements of carbon cycling organisms in wetlands with Dr. Xavier Mayali and Dr. Mari Winkler. During this time, they were a part-time lecturer at the University of California, Berkeley, teaching graduate courses on Environmental Biological Processes. In 2020, Dr. Johnston completed her PhD at the University of Minnesota in Environmental Engineering studying how the activated sludge microbiome fluctuates throughout the seasons with Dr. Sebastian Behrens. Dr. Johnston has a passion for science outreach and previously founded Queer Science to connect LGBTQ+ high school students with LGBTQ+ scientists. She enjoys bingeing tv, crafts, hiking, and is always ready to show you pictures of her 11-year-old husky-mix dog, Harper.



Juliet Johnston, PhD
Georgia Institute of Technology

Monday
April 24, 2023
12-1 PM ET
Room 48-316

**In-person
registration**



Zoom Link

Passcode: 054878