



Graduate Seminar

Adeyemi Adeleye, Ph.D.

Assistant Professor at Columbia University

November 3, 2025, 4:00 pm - 5:20 pm CKB G-08

[Zoom Link: Click Here](#)

Meeting ID: 936 2541 0342 Passcode: 206829

Per- and polyfluoroalkyl substances in household wastewater and advanced treatment technologies

Abstract

Per- and polyfluoroalkyl substances (PFAS) are an important class of emerging contaminants due to their environmental persistence and toxicity to humans and the ecosystem. PFAS are released into the natural environment through wastewater, and eliminating PFAS from wastewater requires a clear understanding of their sources. While the PFAS contributions of several industries are well-characterized, the composition and concentration of PFAS discharged by households into municipal wastewater are largely unknown. This seminar presents an integrated investigation addressing critical knowledge gaps in both PFAS source characterization and remediation. In the first part, I will share findings from a 7-day PFAS characterization in three residential sub-sewersheds upstream of a wastewater treatment plant (WWTP). This study establishes the baseline PFAS concentrations that will remain in WWTP influent if all industrial contributions are eliminated. Building on these findings, we collected 7 distinct wastewater types from 40 households to identify specific household activities that discharge PFAS. The findings may inform engineering and/or policy solutions to household PFAS discharge. The seminar will also touch on our effort to improve our understanding of how non-thermal plasma degrades PFAS in aqueous media with different chemistries. Collectively, these studies provide actionable insights into PFAS generation within homes and demonstrate promising pathways for their removal, informing both pollution prevention strategies and end-of-pipe treatment design for protecting water resources. Collectively, these studies provide actionable insights into PFAS generation within homes and demonstrate promising pathways for their removal, informing both pollution prevention strategies and end-of-pipe treatment design for protecting water resources.

About the Speaker

Adeyemi Adeleye is an assistant professor at the Department of Earth and Environmental Engineering, Columbia University. His research cuts across environmental and analytical chemistry, environmental engineering, and environmental nanotechnology. He earned his Ph.D. from the University of California, Santa Barbara in 2015. In 2016, Adeleye was awarded a National Research Council Research Associateship by the National Academies of Sciences, Engineering, and Medicine, which he spent as a postdoctoral researcher at the US Environmental Protection Agency's research laboratory in Rhode Island. He is a member of C&EN's Talented 12 Class of 2022. He won the 2022 Sustainable Nanotechnology Organization (SNO) Emerging Investigator Award and the 2024 Agilent Early Career Professor Award.



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