

Fall Seminar Series

Fate and Transport of Problematic Particles in Natural and Engineered Systems

Prof. Sharon Walker
Dean of the College of Engineering
Civil, Architectural and Environmental Engineering
Drexel University

September 28, 2022

3-4PM | Hill Seminar Room (LeBow 240)



Dr. Walker will discuss two types of problematic particles that exist in various natural and engineered environments that she has been studying in the past, pathogenic bacteria and engineered nanoparticles. She has investigated their fate in such natural systems as groundwater and surface water, as well as engineered systems including water and wastewater treatment systems including membranes and filtration. More recently she has looked at the fate of these particles as they apply to food safety. Although the systems she has studied are diverse, there are fundamental similarities that allow for investigation of these particles in a systematic manner with the goal of determining optimal removal strategies. This talk will explore some of the techniques utilized to characterize the particles, surfaces, and their interactions in diverse environmental settings as well as the theories and engineering processes used to understand their fundamental interactions.

Sharon L. Walker, PhD, is Dean of Drexel's College of Engineering and Distinguished Professor in the Department of Civil, Architectural and Environmental Engineering. She also holds courtesy faculty appointments as professor of Chemical and Biological Engineering, as well as Distinguished Professor in the Department of Biodiversity, Earth and Environmental Science in the College of Arts and Sciences. A Yale University-trained water quality systems expert focusing on the fate and transport of bacteria and nanoparticles in water, Walker is Fellow of the Association of Environmental Engineering and Science Professors (AEESP), the American Association for the Advancement of Science (AAAS), and the American Institute for Medical and Biological Engineering (AIMBE).

Dr. Walker's scholarship has focused on working with bacterial pathogens and engineered nanomaterials, investigating the fundamental physical, chemical and biological processes that control their fate in natural surface and groundwater environments, as well as analyzing engineered systems including water and wastewater processes. More recently, Walker has applied these skills towards agricultural and food safety issues, including pathogen interactions with leafy greens and food handling equipment, as well as pathogen-insect vector systems. She is a two-time winner of the Fulbright Fellowship, for which she visited at Ben Gurion University of the Negev in Israel from 2009-10 (though declined in 2018 to assume the deanship at Drexel); received an NSF Career Award in 2010; and held an ELATE fellowship from 2014-15. Walker has produced more than 250 conference papers and publications, and in 2018 won the AEESP inaugural Mary Ann Liebert Award for Publication Excellence in Environmental Engineering Science. She is an active member of the American Chemical Society, the American Institute of Chemical Engineers, the Association of Women in Science, the Society of Women Engineers, and the Chi Epsilon, Tau Beta Pi and Golden Key honor societies. Walker's previous service includes election to the roles of vice chair (2015) and chair (2017) of the prestigious Environmental Nanotechnology Gordon Research Conference, as well as an official with AEESP and with the American Chemical Society's Colloid and Surface Science Division.