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FEATURED MEMBERS

1. Career Path

I received my BS degree in 2006 and MS degree in 2008, both in Environmental Science & Engineering from Tsinghua. My research interests during this period were primarily on environmental microbiology. For example, I cultivated photosynthetic bacteria to produce hydrogen, used allelochemicals to control algae bloom, and monitored microbial concentrations in wastewater treatment and recycle processes to study the health risk of water reuse. From 2008 to 2014, I was at Stanford, where I earned my PhD degree in Civil & Environmental Engineering and my second MS degree in Materials Science & Engineering. Supported by fellowships over the six years, I enjoyed the freedom of working on research topics I am really interested in. I got intensive exposure to materials science and nanotechnology, and my research interests switched to applying functional materials for environmental applications. My PhD dissertation was about electrode development and system design of microbial electrochemical systems. Prior to joining Georgia Tech as an assistant professor in 2017, I was a postdoc at Caltech developing a lab-on-a-chip microfluidic platform for rapid microbial detection under resource-limited settings.

2. Research

Currently, the research activities in my group center on an emerging water disinfection technology based on locally enhanced electric field treatment (LEEFT). Developed in the 2010s, LEEFT is a physical treatment process that aims to utilize a strong electric field to disrupt cell membranes and thus inactivate pathogens. The electrodes installed in a LEEFT device are typically modified with one-dimensional nanostructures so that the electric field is not uniform but enhanced locally near the tips of the nanostructures. We are interested in all aspects of research on the LEEFT technology. Currently, we mainly focus on mechanism study, electrode development, and system design.

3. Teaching

I have been teaching two courses, undergraduate Energy & Resource Recovery and graduate Environmental Nanotechnology.

4. Professional Activities

I am a member of the American Chemical Society (ACS), Association of Environmental Engineering and Science Professors (AEESP), International Water Association (IWA), Sustainable Nanotechnology Organization (SNO), and Association of Chinese-American Professors in Environmental Engineering & Science (CAPEES).

5. University, Area and Community

Georgia Tech is a public research university located in Atlanta, the headquarter city for Coca-Cola, Delta, Home Depot, CNN, UPS, etc. Atlanta played an important role in both the Civil War and the Civil Rights Movement. It was known globally by hosting the 1996 Olympic Games. Attractions in the Atlanta area include World of Coca-Cola, Centennial Olympic Park, Georgia Aquarium, College Football Hall of Fame, Martin Luther King Jr. National Historic Site, and Stone Mountain Park.

6. More About Me

My wife and I are classmates in both undergraduate and graduate schools. Luckily, she did not choose academia as her career, and she has been working for an environmental engineering consulting firm for seven years. I really appreciate her sacrifice and support, so I try my best to spend time with her and our two lovely kids.



Dr. Xie's research group at Georgia Tech.

