UTSA Earth and Planetary Sciences

Klesse College of Engineering (KCEID)

And

Institute of Water Research, Sustainability and Policy (IWRSP)

Seminar Presentation

By

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On

Friday, January 27, 2023
4:00 P.M.

"Sustainable Materials for Advanced WateR Treatment (SMART)"

Abstract
As we move towards the age of 'Smart and Resilient Cities', our water infrastructure including water and wastewater treatment processes also need transformative change. Emerging contaminants including per- and polyfluorinated alkyl substances (PFAS) are result of our rapid urbanization and modernization of our lifestyle and are now creating concerns for our potable drinking water sources. Also, recently the 'Flint Water Crisis' has exposed the vulnerabilities of our decades-old water distribution systems to unprecedented contamination scenario. Both emerging contaminants and emergency contamination cannot be tackled using conventional wastewater and water treatment technologies, and require innovative solution. My research group focuses on the sustainable design, scalable synthesis, and innovative application of novel and multifunctional nanomaterials and nano-systems for water quality engineering while keeping their potential public health impacts to a minimum. I will present my group's research efforts on the rational and safer-design of novel carbon-metallic nanohybrids (i.e., single nano-entity which is a combination of at least two different nanomaterials) to elucidate their potential application for removing diverse range of pollutants including PFASs, while determining how and to what extent the hybridization of nanomaterials alters their potential environmental and human health risk. Understanding the risk-benefit relationship will allow us to design safer multifunctional nanohybrids for water treatment. I will also discuss my future vision for smart nano-enabled water treatment technologies in the coming decade through the "convergence with sustainability, advanced manufacturing, and data-driven design".