MECHANICAL ENGINEERING SEMINAR ANNOUNCMENT

"Integrating Nature-Based Solutions for Water-Energy Nexus"

Presented by: Yun Zhang, Ph.D.

Date: Monday, March 4, 2024
Time: 11 A.M. – 12 P.M.
Location: BROWN 241

Abstract

The catastrophic wildfires and retreating sea ice underscored the stark reality of rising global temperature. To counter escalating climate change, integrated nature-based solutions leveraging the strength and adaptability of our ecosystems, offer a promising approach to mitigating climate change impacts and enhancing environmental resilience. Given the hierarchical framework and earth abundance, fibrillated cellulose materials have the potential to significantly contribute to large-scale carbon drawdown, accelerating our progress towards carbon neutrality. This talk will discuss how we can analyze, interact, and harness cellulose materials to address water and energy-related challenges. Specifically, this talk will delve into the development of a colored passive cooling solution to promote sustainable energy regulation and unravel the fundamentals of synergistic water sorption for all-weather ambient water harvesting. Additionally, I will share some perspectives on general biomass material innovation for future energy and water sectors.

Biography:

Dr. Yun Zhang is a postdoctoral research associate at Purdue University. Her research concerns ambient water harvesting, energy-efficient building envelopes, and sustainable agriculture. She received her Ph.D. in Mechanical Engineering from Rensselaer Polytechnic Institute, where her research focused on near-field multiscale probing microscopy for local thermal properties in thermoelectric, phase change, and two-dimensional materials. She has published over 20 journal articles and three of her first authored works were highlighted by Nature and Advanced in Engineering. Beyond her research, she actively engages in educating teenage girls in Senegal, Africa on constructing ambient water harvesting systems to relieve their burden of securing fresh water.