

**Monday, 25<sup>th</sup> November 2024, 15:30 - 16:45 GMT**

## Agenda:

**15:30 - 16:30 Distinguished Lecturer Talk**

**16:30 - 16:45 Q&A**

**Title:** Conductive Nanocomposites for Soft Electronics and Soft Robotics

**Abstract:** Soft electronics takes a leap beyond Si-based rigid electronics, so does soft robotics beyond robotics consisting of rigid links. Both fields have drawn significant attention, largely attributed to the recent advances in soft electronic materials. Conductive nanocomposites with nano-fillers have emerged as a promising class of soft electronic materials. In this talk, I will discuss silver nanowire (AgNW)-based nanocomposites for soft electronics and soft robotics. I will start with highly conductive and stretchable nanocomposites containing AgNW percolation network, followed with a variety of wearable sensors for monitoring of human physiology and motions (e.g., strain, pressure, temperature, hydration, ECG, and EMG) and their application in personal healthcare and sports. Next, I will present the AgNW-based soft heater and bimorph actuator and their application in soft robotics. I will discuss programmable thermal actuation and mechanical instability to significantly increase the speed of the thermally actuated soft robots. I will conclude my talk with our recent efforts in scalable and sustainable nanomanufacturing of such electronics and robotics.



**Speaker:** Yong Zhu, Andrew Adams Distinguished Professor in the Department of Mechanical and Aerospace Engineering, University of Texas at Austin.

**Bio:** Yong Zhu received his BS degree from the University of Science and Technology of China and MS and PhD degrees from Northwestern University. After completing his postdoctoral training at the University of Texas at Austin, he joined the faculty of North Carolina State University, where he is currently the Andrew Adams Distinguished Professor in the Department of Mechanical and Aerospace Engineering. His group conducts research at the intersection of mechanics of materials and micro/nano-engineering, including nanomaterial-enabled flexible and stretchable electronics. His work has been recognized with several prestigious awards including James R. Rice Medal from the Society of Engineering Science, Bessel Research Award from the Alexander von Humboldt Foundation, ASME Zdeněk P. Bažant Medal, Gustus L. Larson Memorial Award and Sia Nemat-Nasser Early Career Award, and Best Wearable Material/Component Development Award at IDTechEx Wearable USA.



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