FALL 2023

SEMINAR FOR NEUROTRAUMA AND DISEASES

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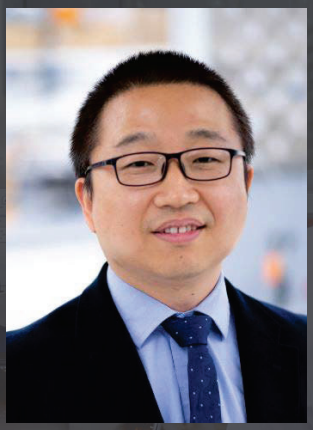
PRESENTS

TELLURENE WEARABLE SENSORS

FEATURED SPEAKER



WENZHUO WU, PHD

Ravi and Eleanor Talwar Rising Star Associate Professor, School of Industrial Engineering, Purdue University

Dr. Wenzhuo Wu is the Ravi and Eleanor Talwar Rising Star Associate Professor in the School of Industrial Engineering at Purdue University. He received his Ph.D. from Georgia Institute of Technology in Materials Science and Engineering. Dr. Wu's research interests include designing, manufacturing, and integrating nanomaterials for applications in wearable sensors, clean energy, and electronics. He is the recipient of numerous awards for excellence in research. This includes the Oak Ridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Award, American Society of Civil Engineers (ASCE) Sustainable Development Award, Society of Manufacturing Engineers Barbara M. Fossum Outstanding Young Manufacturing Engineer Award, Advanced Materials Interfaces Hall of Fame, ARO Young Investigator Award, NSF Early CAREER Award, Microsystems & Nanoengineering (MINE) Young Scientist Award, Purdue College of Engineering Faculty Excellence Award for Early Career Research, an elected Fellow of Royal Society of Chemistry (FRSC), an elected Fellow of Royal Society of Arts (FRSA), and a Purdue University Faculty Scholar.

Date: September 20, 2023 **Time:** 4:00 p.m. - 5:00 p.m. EST

Location: NLSN 1195

ABSTRACT

The development of wearable sensors for continually monitoring biomarkers is a promising alternative to the costly tools currently utilized in healthcare. Two-dimensional (2D) materials exhibit high sensitivity to physiology-relevant signals. However, few studies report 2D materials-based wearable sensors, primarily due to the intrinsic limitations of related materials that render them poor performance for sensing. Ongoing efforts in 2D materials also face difficulty scaling up due to restrictions on the synthesis conditions and stability. I will discuss our recent progress in developing tellurene-based wearable sensors with multiple modalities (e.g., chemical, mechanical, optical, etc.) for continuously monitoring physiological and mental states. We show that wearable sensors based on tellurene, an emerging 2D semiconductor with intriguing properties, hold substantial promise for addressing the challenges of implementing 2D materials wearable sensors with high sensitivity and specificity. We aim to leverage our platform to fill the gaps in developing clinically applicable 2D materials-based wearable sensors.

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