



# **BME Seminar Series 05**

**7 July 2023 (Friday), 10:30 a.m.**

**LT-7 Lily Chiang Lecture Theatre, 4/F, YEUNG**

**Dr. Sheng Xu**

**University of California San Diego, USA**

<https://www.cityu.edu.hk/bme/>

*(organized by Dr. Xinge Yu)*

## **Plenty of room under the skin**

### **Abstract**

The use of wearable electronic devices that can acquire vital signs from the human body noninvasively and continuously is a significant trend for healthcare. The combination of materials design and advanced microfabrication techniques enables the integration of various components and devices onto a wearable platform, resulting in functional systems with minimal limitations on the human body. Physiological signals from deep tissues are particularly valuable as they have a stronger and faster correlation with the internal events within the body compared to signals obtained from the surface of the skin. In this presentation, I will demonstrate a soft ultrasonic technology that can noninvasively and continuously acquire dynamic information about deep tissues and central organs. I will also showcase examples of this technology's use in recording blood pressure and flow waveforms in central vessels, monitoring cardiac chamber activities, and measuring core body temperatures. The soft ultrasonic technology presented represents a platform with vast potential for applications in consumer electronics, defense medicine, and clinical practices.

### **Biosketch**

Dr. Sheng Xu holds the position of Associate Professor and Jacobs Faculty Scholar at the University of California San Diego. He earned his B.S. degree in Chemistry from Peking University and his Ph.D. in Materials Science and Engineering from the Georgia Institute of Technology. Subsequently, he engaged in postdoctoral studies at the Materials Research Laboratory at the University of Illinois at Urbana-Champaign. The focus of his research group is the development of new materials and fabrication methods for flexible health monitoring and energy harvesting devices. His research has been presented to the United States Congress as testimony to the significance and impact of funding from the National Institutes of Health. He has received numerous awards and honors, including the NIH Maximizing Investigators' Research Award, NIH Trailblazer Award, Sloan Fellowship, Wellcome Trust Innovator Award, MIT Technology Review 35 Innovators Under 35, IEEE EMBS Technical Achievement Award, ISBE Outstanding Youth Award, ETH Zürich Materials Research Prize for Young Investigators, and MRS Outstanding Early Career Investigator Award.