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Topic of the Speech:
Printed Flexible Electronics for Advanced MedTech

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Dr. Hui Huang is a Senior Scientist in Microfluidics and MedTech Devices Group at Singapore Institute of Manufacturing Technology (SIMTech), Agency for Science, Technology and Research (A*STAR), and a joint Assistant Professor in Electronics at Singapore Institute of Technology. Dr Huang obtained his PhD degree in Microelectronics from Xi'an Jiaotong University, China. Prior to joining SIMTech, Dr Huang was a Lee Kuan Yew Postdoctoral Fellow in the School of Electrical and Electronic Engineering at Nanyang Technological University, Singapore. He was the recipient of Singapore Millennium Foundation Scholar in 2008.

He has extensive R&D experience in nanomaterials, functional coatings and flexible devices with particular emphasis with particular emphasis in printed electronics, energy efficient, energy conversion and storage. He developed silver nanowire-based conductive inks for various printed electronics and flexible devices such as transparent conductive films, stretchable electronics, soft robotics, strain sensors, and flexible lightings.

ABSTRACT SUBMISSION
INVITED SPEAKER ONLY

Printed Flexible Electronics for Advanced MedTech

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ABSTRACT (NO MORE THAN 500 WORDS:)

Printed flexible electronics has emerged as a versatile platform for developing next-generation MedTech devices due to the cost-effective and large-area fabrication, flexibility, and compatibility with various substrates. By employing printing techniques such as inkjet and screen printing, printed flexible electronics such as stretchable electrodes, wearable sensors, and antennas can be directly integrated onto flexible and biocompatible materials. Printed flexible electronics and sensors pave the way for advanced MedTech and healthtech with multimodal wearable health monitoring sensing platform that seamlessly conform to the body, enabling continuous and unobtrusive health monitoring.

Conductive ink is a crucial precursor to fabricate the printed electronics. Various conductive inks including silver nanowires (AgNWs) and carbon-based conductive inks are formulated for the printed flexible electronics. Screen printing and roll-to-roll printing are used to fabricate the printed flexible electrodes and sensor devices. AgNWs were used as a conductive electrode due to their entangled network. To improve its foldability, buckling techniques are introduced to give rise to wrinkled AgNW films that demonstrated better performance under repeated folding and unfolding. Printed pressure and strain sensors are fabricated and some applications for advanced medtech and healthtech applications are introduced. Soft robotics with origami mechanisms and integrated sensors are demonstrated.