IEEE (HK) Section AP/MTT

State Key Laboratory of Terahertz and Millimeter Waves, 香港城市大學 City University of Hong Kong

Department of Electrical Engineering, 香港城市大學 City University of Hong Kong

The Hong Kong Polytechnic University 香港理工大學

Seminar On

IEEE AP-S Young Professional Ambassador Talk Series:
Engineering Future for Flexible Electronics in Net-Zero Energy Harvesting, Smart Healthcare, and Soft Robotics

Dr. Chaoyun Song
Senior Lecturer, Department of Engineering
King's College London, United Kingdom

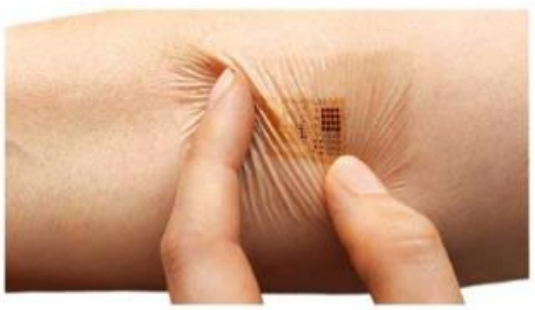
Date	**:**	**12 December 2023 (Tuesday)**
Time	**:**	**2:30 pm – 3:30 pm**
Venue	**:**	**Room 15-202, 15/F, State Key Laboratory of Terahertz and Millimeter Waves, Lau Ming Wai Academic Building, City University of Hong Kong**

Abstract

Flexible and stretchable electronics have ushered in a new era of possibilities in energy harvesting, smart healthcare, and soft robotics. These bio-compatible and skin-attachable devices offer transformative applications in areas such as human-to-machine intelligence, Internet of Human Bodies (IoB), virtual reality (VR), augmented reality (AR), and metaverse. To fully realize their potential, advancements in radio frequency (RF) technologies are essential to accommodate antennas, circuits, batteries, and sensors on highly flexible and unconventional substrates. This interdisciplinary field requires expertise in material science, antenna/RF engineering, mechanical engineering, power electronics, and computer science.

This presentation will delve into state-of-the-art technologies for designing antenna and RF circuit layouts on novel flexible and stretchable materials. We will explore the "magic" behind enhancing antenna performance, including frequency stability, efficiency, gain, and radiation pattern, even in the face of dynamic structural variations. Additionally, we will discuss how these innovations, combined with rectenna and wireless energy technologies, can eliminate the need for non-flexible components like batteries, leading us towards a self-sustainable future aligned with the Net Zero Target 2050.

Join us as we showcase the remarkable engineering possibilities that flexible electronics offer in the realms of energy harvesting, smart healthcare, and soft robotics. This talk aims to inspire and attract individuals from academia, industry, and the general public, fostering interest and engagement in this captivating field. Together, we can shape a future where flexible electronics revolutionize connectivity and sustainability across humans, machines, robots, and systems.



Biography

Chaoyun SONG (*IEEE Senior Member*) is currently a Senior Lecturer in the Department of Engineering at King's College London, UK. His research interests include wireless energy harvesting and power transfer, rectifying antennas (rectennas), flexible and stretchable electronics, metamaterials and meta-surfaces, and low-power sensors. Chaoyun received his BEng, MSc, and PhD degrees in electrical engineering and electronics from the University of Liverpool, UK, in 2012, 2013, and 2017, respectively. Prior to joining King's in 2023, he was an Assistant Professor for 3 years in the School of Engineering and Physical Sciences at Heriot-Watt University, Edinburgh, Scotland. He has published over 120 papers (including more than 45 IEEE transactions) in peer-reviewed journals and conference proceedings. Chaoyun holds 4 US/EU patents on rectenna technology, and some of them have been utilized by UK start-up companies.

Dr. Song has been the recipient of several international awards, including the IEEE AP-S Young Professional Ambassador 2023, IEEE AP-S Raj Mittra Travel Grant 2023, the EW BrightSparks Award for Top 30 UK electronic engineers under the age of 30 in 2018, and the winner of the IET Present Around the World Competition in 2016. He also received the EuCAP 2023 Best Antenna Paper Award out of over 1200 presented papers, and the BAE Systems Chairman's Award in 2017 for his innovation in next-generation global navigation satellite system antennas. In 2018, he was highly commended in three categories - "Energy and Power", "Emerging Technologies", and "Young Innovators" - at the prestigious IET Innovation Awards.

***** ALL ARE WELCOME *****

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