Department of Mechanical Engineering
THE UNIVERSITY OF HONG KONG

SEMINAR

Self-Powered Devices Based on Triboelectrification

Date: 2 December, 2025 (Tuesday)
Time: 10:30 a.m.
Venue: Room 7-34, Haking Wong Building
HKU

Speaker: Professor Zong-Hong Lin
Fellow of the Royal Society of Chemistry (FRSC)
Professor and Vice Chair, Department of Biomedical Engineering
CEO, Center for Industry-Academia Collaboration
National Taiwan University
Taiwan

Lab website: https://linzhatnthu.wixsite.com/suerte

Research areas: Micro- and nano-materials/generators for bioelectrical stimulation applications, Self-powered (bio)chemical sensors, Biomedical diagnostic devices, Wearable healthcare electronics and remote intelligent monitoring platform

Abstract:
Designing devices with self-powered sensing function has become a popular research field since its emergence in recent decades. Triboelectrification occurs when two materials come into contact with each other, causing charge transfer that leads to oppositely charged surfaces; the amount of charge transfer varies depending on material composition. By combining triboelectrification with electrostatic induction, relevant devices can be designed. If used for energy collection purposes, scientists generally refer to them as Triboelectric Nanogenerators (TENGs); but if used for self-powered sensing purposes, scientists call them Triboelectric Nanosensors (TENSs). In our previous research on TENSs, we demonstrated the concept of selective detection of some targets by specific materials or their surface-modified probes. When the targets are adsorbing or binding to the surface, different electrical output signals will be generated compared to before, and these changes can be used for qualitative and quantitative analysis of the targets. In the past few years, we have further developed solid-liquid TENSs for measuring targets such as metal ions, small molecules, proteins and microorganisms. Compared with our previously developed solid-solid TENSs, we have not only improved several shortcomings but also established sensing mechanism and working principle which are very important research achievements in this field. We also look forward to expanding the applications of the solid-liquid TENSs in the near future.

Biography:
Dr. Zong-Hong Lin received his PhD from the National Taiwan University (NTU) in 2009 and continued with his postdoctoral research at the NTU and the Georgia Tech during the years of 2010-2014. Subsequently, Dr. Lin joined the Institute of Biomedical Engineering, National Tsing Hua University (NTHU) as Assistant Professor in 2014 and was successfully promoted to Associate Professor and Full Professor in 2017 and 2021, respectively. In 2023, he moved to the

Department of Biomedical Engineering at NTU. He has published more than 190 SCI papers (sum of the times cited: 19500, h-index: 70), as well as received recognition for his research contribution, such as Wu Ho-Su Medical Award of the Taiwan Bio-Development Foundation (2025), Young Scholar Innovation Award of the Foundation of the Advancement of Outstanding Scholarship (2025), Outstanding Research Scholar of the Lee Chao-Jen Foundation (2024), CHEN-YUNG Chair Professor (2023) of NTU, Top 1% Outstanding Scholarly Publication Award of NTU (2025), Academic Excellence Award－College of Engineering of NTU (2023), Fellow of the Royal Society of Chemistry (2022), Outstanding Research Award of the Taiwan National Science and Technology Council (NSTC) (2023), Future Tech Award of the Taiwan NSTC (2021, 2022, 2023 and 2024), Ta-You Wu Memorial Award of the Taiwan NSTC (2021), Young Scholar Fellowship of the Taiwan NSTC (2020), IEEE-NANOMED New Innovator Award (2019) and Young Investigator Award of the NTHU (2018).

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. D.M. Shin at 3917 8061