



Department of
Mechanical Engineering
The University of Hong Kong



SEMINAR

Implantable Optoelectronic Devices for Advanced Neural Interfaces

Date: 17 May, 2024 (Friday)
Time: 4:30 p.m.
Venue: Room 7-34/35, Haking Wong Building
HKU



Speaker: Professor Xing Sheng
Department of Electronic Engineering
The IDG/McGovern Institute for Brain Research
Tsinghua University
China

Abstract:

Bio-integrated high performance inorganic optoelectronic devices will provide new insights on interactions between light and bio-systems. Here we present unconventional strategies to design and fabricate microscale, thin-film optoelectronics devices including micro-LEDs and photodetectors that can be formed via epitaxial liftoff and transfer printing techniques. These microscale devices can be heterogeneously integrated on flexible and stretchable substrates and interact with biological systems for biomedical applications. In particular, we produce multifunctional neural probes that can be directly implanted into the deep brain of freely moving animals, modulating and detecting neural activities in vivo. These photonic implants interrogate the nervous systems, providing insights for fundamental neuroscience studies and promises for medical applications.

Biography:

Xing Sheng is currently working as an endowed associate professor in the Department of Electronic Engineering at Tsinghua University, China. He received his bachelor and PhD degrees from Tsinghua University and Massachusetts Institute of Technology, respectively. He worked as a postdoctoral researcher at University of Illinois Urbana-Champaign. His current interests are primarily in the exploration of implantable micro- and nano-scale optoelectronic devices for neural signal sensing and modulation. He has published more than 100 papers in peer-reviewed journals like Nature Photonics, Nature Biomedical Engineering, Nature Communications, Science Advances, PNAS, etc. He is a senior member of IEEE, a life member of SPIE, and a fellow of Optica.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. L.Z. Xu at 3917 2628.