



Department of Biomedical Engineering

香港城市大學
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Hosted by Prof. Xinge YU

MI³: Microfluidic Interface, Instrument and Intelligence

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Time: 4:00 pm - 5:00 pm
Venue: YEUNG-B4302
Yeung Kin Man Academic Building

Abstract

In this talk, an emerging high-precision biotechnology platform, known as Robotic-Microfluidic Interface and Intelligence (RoMI), will be introduced which integrates robotics, microfluidics, AI, as well as advanced sensing to support and automate biological research from micro- to meso-scales. Designed for robotic biologists, bioanalysis automation, and 3D biomanufacturing, RoMI enables high-throughput, high-precision manipulation of droplets ranging from 100 pL to 10 mL with <1% error. Its modular microfluidic chips and printing arrays are scalable, low-cost, and disposable, improving experiment efficiency and reproducibility. By combining micro/nanofabrication with intelligent control systems, RoMI enables real-time biomedical monitoring, adaptive experimentation, and data-driven discovery. This technology platform is intended to expand the boundaries of traditional research, allowing facilitated biosynthetic processes, complex high-throughput screening and dynamic microenvironment regulation.

Biography

Professor Pan is a Fellow of the American Institute for Medical and Biological Engineering (AIMBE) and the Royal Society of Chemistry (RSC). He is currently a Yangtze River Chair Professor of the University of Science and Technology of China and directs the Institute for Innovative Medical Devices (iMED). Before joining USTC, Professor Pan was a tenured Full Professor at UC Davis, where he initiated Global Research Experience in Advanced Technologies (GREAT) Program and directed Center for Nano and Micro-Manufacturing (CNM²). He is currently an Associate Editor of Annals of Biomedical Engineering (TBME) and Journal of Medical Devices (JMD) and serves on the editorial board of Bioengineering and Journal of Chinese Medicine. His research interests span a wide range of bioengineering frontiers, including iontronic sensing, tactile intelligence, medical wearables, microfluidic interfaces and laboratory intelligence. His group has authored over 100 referenced publications on high impact journals and has been granted more than 20 international patents. Notably, Professor Pan is known for his invention of the world-first flexible iontronic sensor (FITS), as the latest generation of tactile sensing technology, which has been successfully translated from a laboratory prototype to a series of enabling industrial and medical products.