



Department of
Mechanical Engineering
The University of Hong Kong



Dynamic Single Cell Biosensing Systems for Precision Medicine (onsite and online)

Seminar organized by the Department of Mechanical Engineering

Date: 18 May, 2023 (Thursday)
Time: 11:00 a.m. (Hong Kong Time)
Venue: Tam Wing Fan Innovation Wing Two
G/F, Run Run Shaw Building, HKU

Speaker: Professor Pak Kin Wong
Professor of Biomedical Engineering,
Mechanical Engineering, and Surgery
The Pennsylvania State University
<https://www.bme.psu.edu/labs/sbl>



Zoom Online Lecture:

Meeting ID: 999 1728 1377
Password: 302040

Abstract:

Recent advances in molecular engineering and advanced imaging techniques have enabled the analysis of complex biological systems with unprecedented throughput and resolution. These novel biosensing approaches, when combined with microfluidic devices and artificial intelligence-guided workflows, offer exciting opportunities for the next generation of precision health. However, current biosensing techniques often require physical isolation or cell lysis, leading to the loss of important phenotypic features, such as drug resistance, invasiveness, and inflammatory responses. To address this unmet need in precision medicine, we are developing dynamic single cell biosensors and ex vivo disease models for rapid antimicrobial susceptibility testing, point-of-care stone metabolic workup, and treatment optimization with patient-derived tumor organoids. In this presentation, I will discuss the application of these technologies for precision management of urological diseases, including the rapid diagnosis of urinary tract infections caused by multidrug-resistant bacteria and the clinical management of muscle invasive bladder cancer.

Biography:

Pak Kin Wong is a Professor of Biomedical Engineering, Mechanical Engineering, and Surgery at the Pennsylvania State University. Prior to Penn State, Dr. Wong was a faculty in the Departments of Aerospace and Mechanical Engineering and Biomedical Engineering at the University of Arizona. He received his Ph.D. from the University of California, Los Angeles. His research focuses on novel biosensing techniques for probing the regulatory mechanisms of collective cancer invasion and developing rapid diagnostic systems for infectious diseases. He has published over 130 peer-reviewed journal articles in the area of biomedical engineering and is an

inventor of six patents. He is an editor of IEEE Transaction on Nanotechnology, Microfluidics and Nanofluidics, Scientific Reports, and SLAS Technology. Among other honors, Dr. Wong received the NIH Director's New Innovator Award in 2010, Arizona Engineering Faculty Fellow in 2011, AAFSAA outstanding Faculty Award in 2013, and JALA 10 – A Top 10 Breakthrough in Innovation in 2015. Dr. Wong is an elected Fellow of the American Institute of Medical and Biological Engineering (AIMBE), the American Society of Mechanical Engineers (ASME), the Royal Society of Chemistry (RSC), and the Society for Laboratory Automation and Screening (SLAS).

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. Nicholas Fang at 3917 2639.