NUS National University of Singapore | iHealthtech Institute for Health Innovation & Technology

iHealthtech Seminar

7JUL, MON, 2:00 PM –3:00 PM

NUS, College of Design and Engineering, Building E7, Level 3, Seminar Room 4

Dr Nan Kewang

Assistant Professor, College of Pharmaceutical Sciences,
Second Affiliated Hospital of Zhejiang University School of Medicine,
Zhejiang University, Hangzhou, China

Chip-on-a-drug: Enhancing intelligence and modality of drug delivery with bio-electronics

Hosted by: Dr Wu Changsheng, iHealthtech Principal Investigator

Chip-on-a-drug is an emerging approach that integrates micro-engineered devices—such as microfluidics, micro-actuators, and bio-sensors—into traditional drug delivery systems. This integration endows conventional therapies with enhanced features including environmental responsiveness, programmable control, and protection of sensitive payloads. In this talk, I will present ongoing research from my lab where we are pioneering the convergence of chip technologies with pharmaceutical science. Our work focuses on improving the precision, adaptability, and intelligence of drug delivery systems, particularly in the context of biologics and "living drugs" such as engineered cells and microbes. Through representative examples, I will showcase how chip-on-a-drug platforms can dynamically respond to physiological cues and deliver therapeutic agents in a controlled and targeted manner. This work contributes to the advancement of next-generation therapeutics that are smarter, safer, and more effective.

Speaker biography:

Dr Kewang Nan is a ZJU100 Young Professor in the College of Pharmaceutical Sciences at Zhejiang University, and an adjunct professor at the Second Affiliated Hospital of Zhejiang University School of Medicine. His main research efforts lie on the development of bio-electronics for closed-loop therapies and drug delivery. He completed his Ph.D. and postdoctoral training at University of Illinois at Urbana-Champaign and MIT, with Prof. John A Rogers and Prof. Robert S Langer, respectively. He has published more than 50 journal articles including Nature Communications (2024), Nature Biomedical Engineering (2022), Nature Reviews Materials (2022), and Nature Materials (2018), and held more than 10 patents. He serves as young editorial board member for Med-X, and was co-organizing chairs for international conferences such as the IEEE-NSENS and the BMES Annual Meeting. He also serves as an independent reviewer for Nature Communications, Science Advances, Matter, Advanced Materials etc.

iHealthtech website: Link

Email: ask.iht@nus.edu.sg

Register here

【Link to the registration form】