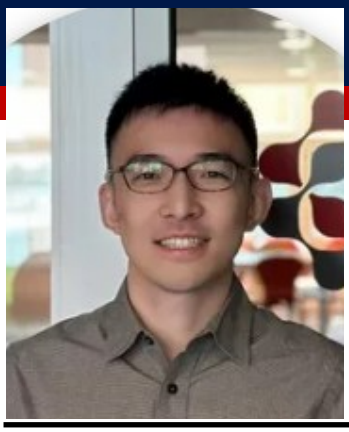
Polymer Webinar

11:15 am, November 14, 2025

Online - Teams - **LINK**

Host: Yi Zhang

CELEBRATING OUR 60TH ANNIVERSARY 1965 - 2025



Prof. Kewang Nan

Professor - School of Pharmacy

Zhejiang University of China

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

Abstract: 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.

Bio: Prof. Kewang Nan is a ZJU100 Young Professor in the School of Pharmacy 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 is the first/corresponding author of more than 30 journal articles including Nature Materials (2018), Nature Biomedical Engineering (2022), multiple Nature Communications (2024, 2024, 2025), Science Advances (2018, 2025), and multiple

Website: http://www.kewangnan.com/col.jsp?id=101

UCONN UNIVERSITY OF CONNECTICUT

IMS INSTITUTE OF MATERIALS SCIENCE