



Organoid 3D Bioprinting



Professor XIONG Zhuo
Department of Mechanical Engineering
Tsinghua University

Date : 11 August 2026 (Tuesday)
Time : 10:30 am
Venue : Room 1122, William M W Mong Engineering Building, CUHK

Abstract

Based on more than two decades of research conducted by Professor Xiong Zhuo's team at Tsinghua University Bio-Manufacturing Center, this report reviews research advances in scientific and engineering challenges covering 3D bioprinting equipment, biomimetic bioinks, and functionalization of engineered tissues and organs. It also presents the research outcomes and application potential of organoid 3D bioprinting for in vitro reconstruction of complex tissues and organs, as well as precision diagnosis and treatment of tumors.

Biography

Xiong Zhuo is a tenured professor in the Department of Mechanical Engineering, Tsinghua University. He currently serves as Vice Chairman of the Beijing Mechanical Engineering Society, Deputy Director of both the Bio-Manufacturing Engineering Branch and Additive Manufacturing Technology Branch of the Chinese Mechanical Engineering Society, and Director of the Beijing Key Laboratory of Intelligent Organ Biofabrication and Regenerative Repair. He launched his research on 3D bioprinting of biomaterials in 1999, being among the pioneers in the emerging interdisciplinary field of biofabrication and extended 3D printing technologies to biomedical applications. His core research directions include bioinks and process equipment for 3D bioprinting, additive manufacturing of biomimetic multi-scale tissue engineering scaffolds, developmental biology-inspired construction strategies for complex organs, and DNA data storage. He has published over 100 papers, garnered more than 4,000 citations, been granted over 40 invention patents, and received numerous academic honors, including the Science and Technology Award of China Machinery Industry and Beijing Science and Technology Award.

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For enquiries, please contact Ms. Joyce Chan, Department of Biomedical Engineering at 3943 8278