



SEMINAR

Multi-scale Multi-material 3D Printing of Advanced Scaffolds for Osteochondral Tissue Regeneration

Date: 21 November, 2025 (Friday)
Time: 2:30 p.m.
Venue: Room 7-34, Haking Wong Building
HKU

Speaker: Professor Chong Wang
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Abstract:

Osteochondral regeneration requires scaffolds with a heterogeneous structure, varied mechanical strength, sufficient interfacial bonding and locally loaded osteogenic/chondrogenic growth factors and even mesenchymal stem cells (MSCs) to form a desirable microenvironment to guide MSC to differentiate into osteoblasts/hyaline chondrocytes. In our research, cryogenic hybrid 3D printing was developed for fabricating growth factor-loaded and cell-laden polyester-based bone tissue engineering scaffolds. By adopting a sequential 3D printing strategy, advanced osteochondral scaffolds can be produced, which can induce spatially varied morphogenesis of MSCs and integrated osteochondral regeneration. To endow MSCs at the cartilage region with a high spatial distribution similarity to hyaline chondrocytes in natural cartilage, near field direct-write electrospinning was used to fabricate high-resolution grid patterns with much smaller pores. Through surface modification, grid patterns enabled self-aggregation of MSCs in cartilage scaffold pores, forming an array of MSC aggregates. Such MSC aggregates can be efficiently differentiated into hyaline chondrocyte clusters, via either physically restricting F-actin filament extension, or biochemically suppressing the F-actin expression.

Biography:

Chong Wang is a Full Professor at School of Mechanical Engineering, Dongguan University of Technology. His research focus on biofabrication, biomaterials, and tissue engineering. He has published over 50 SCI papers in journals such as Bioactive Materials, Biomaterials, Biofabrication, and Small Methods; and two of his journal articles are ESI 1% papers. He is also a 2% Top Scientist since 2023.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. Min Wang at 3917 7903.