

Special Issue

Microfabrication and Patterning Techniques in Tissue Engineering and Regenerative Medicine

Message from the Guest Editors

Microfabrication and patterning techniques are gaining more importance. 3D bioprinting shows great deal of promise to revolutionize the field of tissue engineering and regenerative medicine, due to its ability to generate mimetic tissues and organs. It can only be realized by advancing bioink development in order to produce patient-specific scaffolds with inbuilt hierarchical structures and memory-shape properties, while offering enhanced biological properties. It's expected that this will allow the realization of the bioinspired design approach. Further more, 3D patterning of scaffolding materials is possible using spatially controlled light exposure and capillary force lithography on biological films and scaffolds to tune mechanical and degradation properties. For example, femtosecond laser induced two-photon polymerization is capable of producing 3D nanoscale patterns on hydrogel scaffolds with precise control of geometry. Protein structures can be patterned within the 3D hydrogels with nanoscale resolution to allow the incorporated chemical cues associated with the extracellular matrix. The Issue aims to cover the latest research findings and recent advances in the field.

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