



## Advances in Synthesis, Testing, and Applications of Natural and Synthetic Polymer Hydrogels

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### Message from the Guest Editors

Hydrogels are crosslinked, three-dimensional networks of highly hydrophilic polymers capable of absorbing significant amounts of water or biological fluids. Natural-polymer-based hydrogels contain starch, chitosan, cellulose, alginate, guar gum, and hyaluronic acid, and they are extensively used in biomedical applications such as tissue regeneration and drug delivery. Synthetic polymer hydrogels (such as polyacrylamide and polyethylene glycol) are made using different routes such as bulk polymerization, the free radical mechanism, the radiation method, and solution mixing and casting, leading to enhanced mechanical properties, swelling, stimuli sensitivity, and compatibility in biomedical as well as other engineering applications. Extensive research is being carried out on functionalized hydrogels and their state-of-the-art synthesis methods that have extensive applications in regenerative medicine, separation processes, enhanced oil recovery, and water and wastewater treatment processes.

This Special Issue welcomes articles and reviews on the discovery of novel polymer hydrogels, their manufacturing methods, and analytical methods for their characterization and applications.





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