



## Tough Hydrogels for Biomedical Applications 2.0

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Deadline for manuscript  
submissions:  
**closed (25 February 2022)**

### Message from the Guest Editor

This Special Issue on “Tough Hydrogels for Biomedical Applications” is dedicated to recent developments in the design, synthesis, characterization, and medical application of tough hydrogels.

Although hydrogels are widely used in various biomedical applications, conventional hydrogels are fragile and unsuitable for most load-bearing applications. Fracture energies of hydrogels are several orders of magnitude lower than those of connective tissues, which routinely experience physiological loads that are significantly higher than the failure strengths of hydrogels. Designing mechanically-tough hydrogels with exceptional recovery properties remains a keen scope of interest in the field. Recent strategies in designing tough hydrogels include interpenetrating and double-network hydrogels, nanocomposite hydrogels, topological or ring-sliding gels, tetra-arm hydrogels, and hydrogels composed of various reversible and self-healing chemistries. Potential applications for tough hydrogels include tissue engineering scaffold, drug delivery, tissue regeneration, tissue adhesive, actuator, soft robotic component, and medical and electronic devices for interfacing biological systems.





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