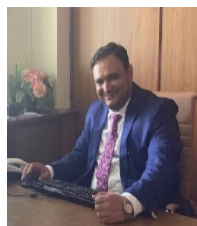

Title: Biopolymer-Based Hydrogels: Applications and Trends



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Proposal

This special issue aims to provide a comprehensive overview of the latest advancements and emerging trends in the field of biopolymer-based hydrogels. As versatile materials with significant applications in various domains such as biomedical engineering, environmental science, and agriculture, hydrogels have garnered considerable attention from researchers and industry professionals alike. This issue will highlight cutting-edge research that explores the synthesis, characterization, and functionalization of these hydrogels, as well as their applications in tissue engineering, drug delivery, wound healing, and beyond. Additionally, the issue will focus on the development of sustainable biopolymer-based hydrogels and their potential impact on global challenges related to healthcare, environmental sustainability, and food security. This comprehensive special issue will serve as a valuable resource for researchers, industry professionals, and policymakers looking to explore the potential of biopolymer-based hydrogels in various sectors. The Special Issue will cover the following main topics:

1. Synthesis and characterization of biopolymer-based hydrogels.
2. Biopolymer-based hydrogels in drug delivery systems.
3. Applications in tissue engineering and regenerative medicine.
4. Environmental applications of biopolymer hydrogels, including water purification.
5. Biopolymer hydrogels in wound healing and skin regeneration.
6. Functionalization and modification of biopolymer hydrogels for specific applications.
7. Biopolymer hydrogels in agriculture and controlled release of fertilizers.
8. Advanced manufacturing techniques for biopolymer hydrogels.
9. Biodegradability and environmental impact of biopolymer-based hydrogels.
10. Emerging trends in biopolymer hydrogels for food and cosmetic applications.

Sub-Topics

- Crosslinking methods for biopolymer-based hydrogels.
- Biopolymer hydrogel composites and nanocomposites.
- Smart hydrogels with stimuli-responsive properties.
- Biopolymer hydrogels for 3D printing and additive manufacturing.

- Hydrogels derived from renewable resources.
- Hydrogels for encapsulation and controlled release of bioactive compounds.
- Advances in injectable hydrogels for minimally invasive therapies.
- Biopolymer-based hydrogel scaffolds for cell culture and organoid development.
- Antibacterial and antifungal properties of biopolymer hydrogels.
- Regulatory and commercialization challenges for biopolymer-based hydrogels.

Keywords: Biopolymers, Hydrogels, Molecular chemistry, Tissue engineering, Drug delivery, Environmental sustainability, Functional hydrogels, Agricultural applications, Biodegradability.
