

Supramolecular Polysaccharide Hydrogels: Design, Characterization, and Applications

In recent years, the development of advanced biomaterials has gained significant attention in biomedical and pharmaceutical research. Polysaccharide-based hydrogels, particularly those incorporating supramolecular interactions, hold immense potential for various applications, ranging from drug delivery to tissue engineering. However, the design and optimization of these supramolecular polysaccharide hydrogels pose challenges that necessitate thorough investigation. Addressing these challenges will contribute to the advancement of next-generation biomaterials with enhanced properties and functionalities.

We will focus on the design, synthesis, and characterization of supramolecular polysaccharide hydrogels. This interdisciplinary project integrates principles from chemistry, materials science, and biology to create hydrogels that exhibit improved mechanical properties, tunable drug release profiles, and biocompatibility. The aim is to design a hydrogel with tailored characteristics suitable for a chosen biomedical application.

Project goal

Design a supramolecular polysaccharide hydrogel

During this project you carry out:

Synthesis of functionalized polysaccharides, small molecules and inclusion complexes

Development of an supramolecular hydrogel

Preparation and analysis of hydrogels

Assess the biocompatibility of developed hydrogels through in vitro studies