

## **Glycopolymer-based materials : Synthesis, properties, and biosensing applications**

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### **ABSTRACT**

Glycopolymer materials have emerged as a significant biopolymer class that has piqued the scientific community's attention due to their potential applications. Recently, they have been found to be a unique synthetic biomaterial; glycopolymer materials have also been used for various applications, including direct therapeutic methods, medical adhesives, drug/gene delivery systems, and biosensor applications. Therefore, for the next stage of biomaterial research, it is essential to understand current breakthroughs in glycopolymer-based materials research. This review discusses the most widely utilized synthetic methodologies for glycopolymer-based materials, their properties based on structure–function interactions, and the significance of these materials in biosensing applications, among other topics. When creating glycopolymer materials, contemporary polymerization methods allow precise control over molecular weight, molecular weight distribution, chemical activity, and polymer architecture. This review concludes with a discussion of the challenges and complexities of glycopolymer-based biosensors, in addition to their potential applications in the future. Graphical Abstract: [Figure not available: see fulltext.]

### **KEYWORDS**

Biosensor; Detection; Glycopolymer; Hydrogel; SARS-CoV-2; Sensing

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