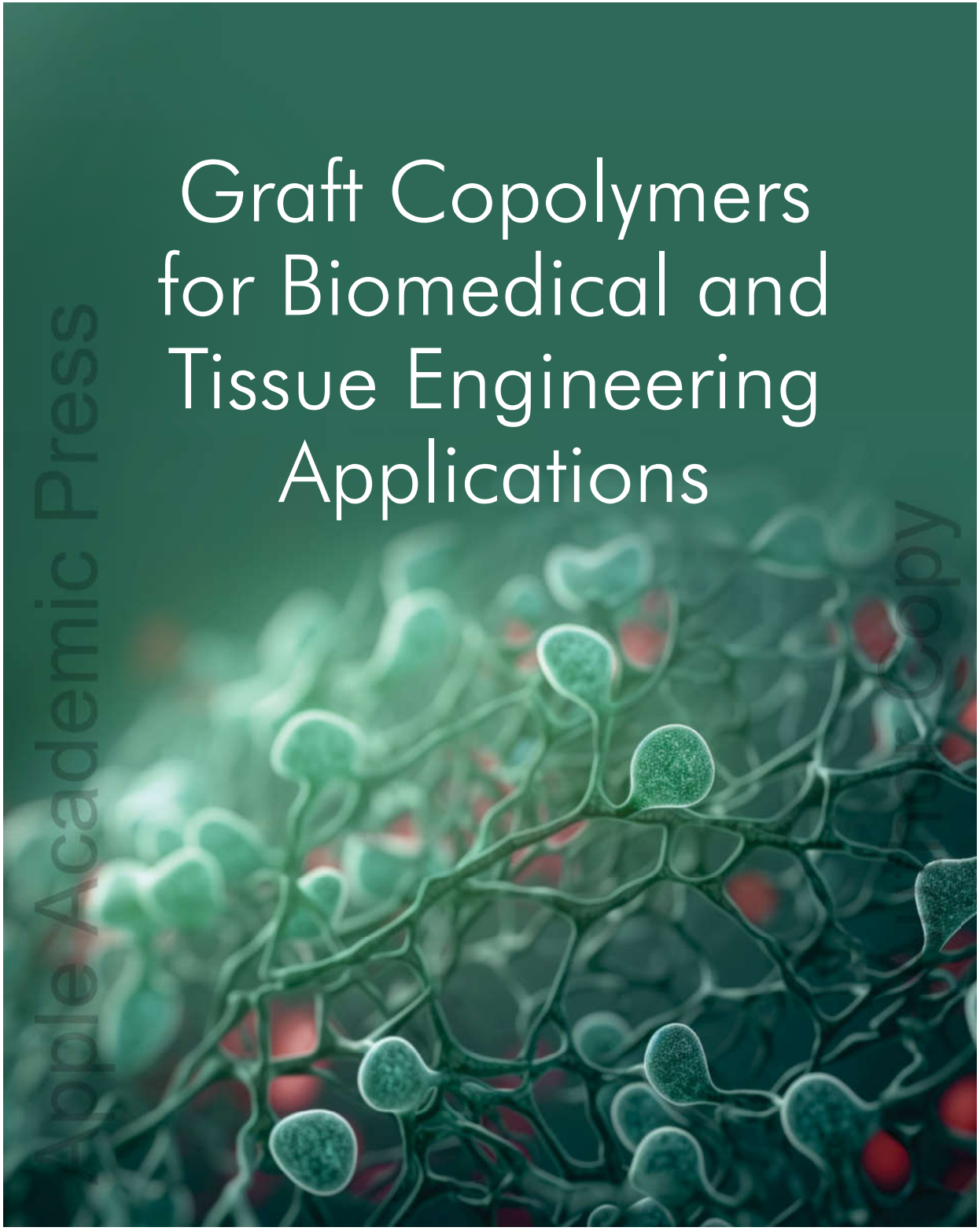
Graft Copolymers for Biomedical and Tissue Engineering Applications



Rishabha Malviya
Sonali Sundram
Editors

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Rishabha Malviya, PhD
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CHAPTER 1

Chitosan-Based Graft Copolymers: Synthesis and Application

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ABSTRACT

Recently, there has been a notable surge in attention towards chitosan due to its crucial role as a constituent in the advancement of drug delivery systems. This is primarily attributed to its polysaccharide nature, which affords it the desirable traits of biodegradability and biocompatibility. One such system that has shown promising results is the use of chitosan-based graft copolymers. Graft copolymers are composed of a polysaccharide backbone (in this case, chitosan) and synthetic polymers grafted onto it, offering the potential for improved properties over those of the individual components. The current progress in the amalgamation of graft copolymers based on chitosan has exhibited significant capability for a range of uses in the realm of administering medications. Although the outcomes appear encouraging, there exist certain difficulties related to the implementation of chitosan-derived graft copolymers as agents for transporting drugs. One of the main challenges is the lack of stability of the copolymers in biological environments, leading to rapid degradation and reduced drug release efficacy. Additionally, the synthesis of chitosan-based graft copolymers can be complex and time-consuming, and there is a need for more efficient and cost-effective synthetic methods. Furthermore, there is still a limited understanding of the relationships between the drug and the copolymer, as well as the mechanisms for the release of the drug, which require further investigation. In conclusion, the

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