

Graft Copolymers for Biomedical and Tissue Engineering Applications

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Rishabha Malviya
Sonali Sundram
Editors

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Contents

<i>Contributors</i>	<i>ix</i>
<i>Foreword</i>	<i>xiii</i>
<i>About the Book</i>	<i>xv</i>
<i>Preface</i>	<i>xvii</i>
1. Chitosan-Based Graft Copolymers: Synthesis and Application	1
Anas Islam, Usama Ahmad, Asad Ahmad, and Mohd. Muazzam Khan	
2. Green Synthesized Nanobactericides Using Medicinal Plant <i>Calotropis gigantea</i>: A Review	39
G. Ambarasan Govindasamy, Rabiatul Basria S. M. N. Mydin, and Srimala Sreekantan	
3. Emerging Potential of Semi-Synthetic Biodegradable Polymer in Medical Science	91
Sunny R. Shah, Dhaval D. Mori, Moinuddin M. Soniwala, Advaita B. Chauhan, Sudarshan Singh, Bhupendra Prajapati, and Popat Mohite	
4. Advances in Development of Shape Memory Polymer Using Grafted Polysaccharides	121
Rohit Raj, G. S. N. Koteswara Rao, Rajasekhar Reddy Alavala, Yashoda Jadhav, Aparna Badwane, and Darshan Patel	
5. Improving Biodegradability and Biocompatibility of Copolymer Using Grafting	145
Aparna Badwane, G. S. N. Koteswara Rao, Rohit Raj, Darshan Patel, and Yashoda Jadhav	
6. Development of Smart Hydrogel Using Polysaccharide-Based Graft Copolymer	169
Darshan Patel, G. S. N. Koteswara Rao, Divya Soares, Rohit Raj, Yashoda Jadhav, and Aparna Badwane	
7. Application of Grafted Polysaccharide in Bone Marrow Regeneration	197
Yashoda Jadhav, G. S. N. Koteswara Rao, Darshan Patel, Rohit Raj, Aryan Patel, and Aparna Badwane	

8. Current Study in Synthesis and Application of Chitosan-Based Grafted Copolymers	219
Prakash Jakhar, Shaily Sharma, and Himanshu Sharma	
9. Grafted Copolymer of Polysaccharide in the Development of Nanoparticles	277
Popat Mohite, Abhijeet Puri, Sudarshan Singh, Sachin Kothawade, and Vishal Pande	
10. Grafted Polymer for Biomedical Applications	343
Azadeh Izadyari Aghmiuni, Arezoo Ghadi, Amirali Esmailzadeh Amoli, Faezeh Akbarifard, and Amir Reza Abedi Amoli Namazi	
11. Nanotechnology-Driven Biomolecules for Healthcare Applications	379
Shadrudhan Prajapati, Rishabha Malviya, Priyanshi Goyal, and Sonali Sundram	
12. Grafted Polysaccharide as an Excipient for the Formulation of Solid Dosage Form	403
Phool Chandra, Zeeshan Ali, Neetu Sachan, Nishat Fatma, and Anurag Verma	
<i>Index</i>.....	439

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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