

# Preface

Polysaccharides play an important role in the field of science and technology because of their unique properties such as non-toxicity, biodegradability, and availability from renewable resources. Polysaccharide-based graft copolymers have drawn much attention in recent decades because of their controlled biodegradability, shear stability, and high efficiency in various applications. One of the important applications of polysaccharide-based graft copolymers is in biomedical science.

Modification of polysaccharides through graft copolymerization is very versatile to improve the properties of polysaccharides. Polymer grafting is known to improve the characteristic properties of the polymer backbone such as water repellency, thermal stability, flame resistance, dye-ability, and resistance towards acid–base attack, abrasion, etc.

Polysaccharides and their graft copolymers find extensive applications in diversified fields. Applications of modified polysaccharides include drug delivery devices, controlled release of fungicides, selective water absorption from oil–water emulsions, purification of water, etc.

In Chap. 1, methods of grafting and applications of polysaccharide graft copolymers are briefly discussed. Synthesis, properties, and applications of different polysaccharide graft copolymers such as cellulose-g-copolymers, starch-g-copolymers, chitosan-g-copolymers, gum-g-copolymers, and dextran-g-copolymers are reviewed in Chaps. 2–6.

Chapter 7 covers the review on natural backbone-based superabsorbent hydrogels and their classification. The applications of hydrogels in different fields like biomedical, pharmaceuticals, agriculture, and metal ions sorption are also discussed in this chapter. Chapter 8 describes the hyaluronic acid graft copolymers and the chemical strategies employed for their synthesis, characterization procedures, and applications in biomedical and pharmaceutical fields. Chapter 9 deals with the techniques employed for the synthesis of grafted polysaccharides and applications of grafted polysaccharides in controlled/targeted drug delivery.

There is no special book published yet for polysaccharide-based graft copolymers. This book is a single book with contributions from the renowned experts of the area of research. This book covers almost all the topics related to

graft copolymerization; polysaccharides; graft copolymers of cellulose, chitosan, starch, dextran, gum, etc.; and biomedical applications of polysaccharide graft copolymers. Therefore, this book will be in the benefit of society as it covers the essential aspects of “polysaccharide-based graft copolymers.”

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