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SMART POLYMER NANOCOMPOSITES

BIOMEDICAL AND ENVIRONMENTAL APPLICATIONS

Edited by
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Preface

Smart polymers are capable of undergoing rapid change, reversible phase transition from a hydrophilic to a hydrophobic microstructure when triggered by a small change in their environment such as temperature, pH or ionic strength, light, magnetic or electric field, etc. The living systems respond to external stimuli and adapt themselves to changing conditions. In this context, polymer scientists have been trying to mimic this behavior for the last two decades to make smart polymers. Smart polymers have shown promising applications in various fields such as delivery systems for drugs, tissue engineering scaffolds, cell culture sports, bioseparation, and sensors or actuator systems.

The present book is a collection of valuable reference materials for researchers working in the fields of materials science, biomaterials, regenerative medicines, drug delivery, polymer science/chemistry, chemical engineering, mechanical engineering and in the polymer industry. This book will be useful for scientists working on bioseparation and bioprocessing. This will be very helpful for the students in the development of new polymers as well as graduates in polymer technology, environmental science, and biotechnology.

This book covers topics such as Introduction, Processing and Properties, Manufacturing and design of smart polymer composites, Shape memory polymer composites, Smart polymer hydrogels, Smart biopolymers, Enzyme-responsive polymer composites and its applications, Biomedical applications of smart polymer composites, Smart polymer composites for tissue engineering, Nanomedicine, bioseparation, drug delivery, environmental applications, membranes for wastewater treatments, textile and plastics, wood protection, protection of corrosion, and antifouling application.

We are highly thankful to all the authors who contributed book chapters and provided their valuable ideas and knowledge on Smart Polymer Nanocomposites for Biomedical and Environmental Applications in this edited book. We have made an attempt to gather all this information from recognized researchers from Malaysia, India, Morocco, Bangladesh, Italy, and Egypt in the areas of smart polymer nanocomposites and finally

complete this venture in a fruitful way. We greatly appreciate the authors' commitment to their support to compile our ideas in reality.

We are highly thankful to the Elsevier team for their generous cooperation at every stage of the book's production.

Showkat Ahmad Bhawani
Anish Khan
Mohammad Jawaid

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About the book

Description

Smart Polymer Nanocomposites: Biomedical and Environmental Applications presents the latest information on smart polymers and their promising application in various fields, including their role in delivery systems for drugs, tissue engineering scaffolds, cell culture sports, bioseparation, and sensors or actuator systems.

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Key Features

- Features detailed information on the preparation, characterization and applications of smart functional polymer composites
- Covers a broad range of applications in both the biomedical and environmental engineering fields
- Chapters are written by authors with diverse background expertise from the faculties of chemistry, engineering and the manufacturing

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Details

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