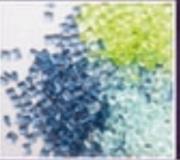


ADVANCES IN POLYMERS AND FIBERS

BIOPOLYMER GRAFTING SYNTHESIS AND PROPERTIES





EDITED BY: VIJAY KUMAR THAKUR



Elsevier

Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom 50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States

Copyright © 2018 Elsevier Inc. All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: www.elsevier.com/permissions.

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

Notices

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

Library of Congress Cataloging-in-Publication Data

A catalog record for this book is available from the Library of Congress

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-0-323-48104-5

For information on all Elsevier publications visit our website at https://www.elsevier.com/books-and-journals



Publisher: Matthew Deans
Acquisition Editor: David Jackson
Editorial Project Manager: Jennifer Pierce

Production Project Manager: Sujatha Thirugnana Sambandam

Cover Designer: Greg Harris

Typeset by TNQ Books and Journals



Table of contents

ctions for selected	
napters elect all / Deselect all	 Full text access Front Matter, Copyright, Dedication, Contributors, About the Editor,
Download PDFs	Preface
	Book chapter O Abstract only
Export citations	Chapter I - Synthesis and Characterization of Graft Copolymers of Plan Polysaccharides
	Amit Kumar Nayak, Hriday Bera, Dilipkumar Pal
	Pages 1-62 View abstract >
	Book chapter 0 - Abstract only Chapter 2 - Functional Separation Membranes From Grafted Biopolymers
	Tadashi Uragami
	Pages 63-114
	View abstract 🗸
	Book chapter O Abstract only
	Chapter 3 - Grafting Derivate From Alginate Tong Zongrul, Chen Yu and Luo Wei
	Pages 115-173
	View abstract ✓
	Book chapter • Abstract only
	Chapter 4 - Polysaccharides in Alternative Methods for Insulin Delivery
	Ana M. Morales-Burgos, Elizabeth Carvajal-Millan, Jaime Lizardi-Mendoza Pages 175-197
	View abstract ∨
	☐ Book chapter 0 Abstract only Chapter 5 - Development of Bioactive Paper by Capsaicin Derivative Grafting Onto Cellulose
	Florencia Muratore, María L. Goñi, Raquel Martini
	Pages 199-233
	View abstract 🗸
	Book chapter 6 - Abstract only Chapter 6 - Peptide-Based Derivative-Grafted Silica for Molecular
	Recognition System: Synthesis and Characterization Abul K. Mallik, Mohammed M. Rahman and Hirotaka Ihara
	Pages 235-294
	View abstract ✓
	Book chapter O Abstract only
	Chapter 7 - Grafting Modification of Chitosan
	Chen Yu, Xiao Kecen and Qu Xiaosai Pages 295-364
	View abstract ✓
	Book chapter O Abstract only
	Chapter 8 - Nanopolymers: Graphene and Functionalization
	Mostafa Rajabi, Fahimeh Najafi, Vijay Kumar Thakur
	Pages 365-407 View abstract 🗸
	view abstract
	Book chapter O Abstract only Chapter 9 - Cellulose Nanocrystals Functionalization by Grafting
	Marivane T. Koschevic, Maycon dos Santos, Silvia M. Martelli
	Pages 409-439
	View abstract ✓
	Book chapter O Abstract only
	Chapter 10 - Bioactive Materials Based on Biopolymers Grafted on Conducting Polymers: Recent Trends in Biomedical Field and Sensing
	Salma Khan and Anudeep K. Narula
	Pages 441-467
	View abstract ✓
	Book chapter • Abstract only
	Chapter 11 - Grafting of Polysaccharides: Recent Advances
	Amal A. Aly and Manal K. El-Bisi Pages 469-519
	View abstract
	Book chapter o Abstract only Chapter 12 - Grafted Nanocellulose as an Advanced Smart Biopolymer
	Samira Bagheri and Nurhidayatullaili M. Julkapli
	Pages 521-549
	View abstract ✓
	■ Book chapter ● Full text access
	Index

Synthesis and Characterization of Graft Copolymers of Plant Polysaccharides

Amit Kumar Nayak¹, Hriday Bera², M. Saquib Hasnain³, Dilipkumar Pal⁴

Seemanta Institute of Pharmaceutical Sciences, Odisha, India; ²AIMST University, Kedah, Malaysia;

Shri Venkateshwara University, Gajraula, India; ⁴Guru Ghasidas Vishwavidyalaya, Bilaspur, India

Abbreviations

AA Acrylic acid

AIBN Azo bisiso butyronitrile

AM Acrylamide

AN Acrylonitrile

APS Ammonium persulfate

ATRP Atom transfer radical polymerization

CAN Ceric ammonium nitrate

CG Cashew gum

CTKP Carboxymethyl tamarind kernel polysaccharide

DSC Differential scanning calorimetry

EA Ethyl acrylate

EMA Ethyl methacrylate

FG Fenugreek gum

FTIR Fourier transform-infra red

GA Gum acacia

GG Guar gum

GGt Gum ghatti

GK Gum kondagogu

GRAS Generally regarded as safe

HPMC Hydroxy propyl methylcellulose

HPTS Hydroxypropyl tapioca starch

IPN Interpenetrating polymer network

ITG Iranian tragacanth gum

KGM Konjac glucomannan

KPS Potassium persulfate

KSAP Konjac glucomannan-based superabsorbent polymer

LBG Locust bean gum

MA Methacrylamide

MBA N,N'-methylene bisacrylamide

MMA Methyl methacrylate