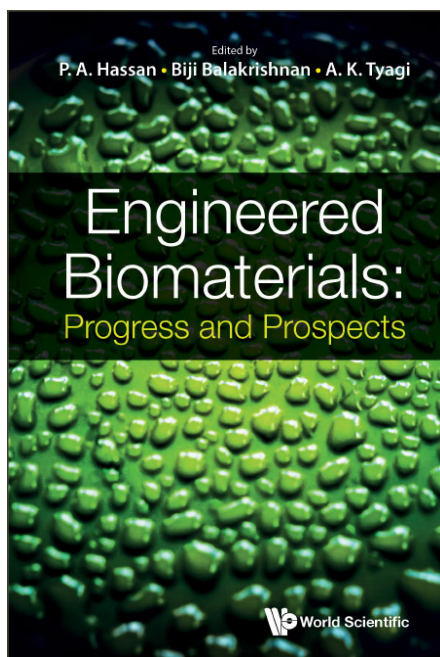


Engineered Biomaterials: Progress and Prospects



Edited By: P A Hassan
(*Bhabha Atomic Research Centre, India*)

Biji Balakrishnan
(*Bhabha Atomic Research Centre, India*)

A K Tyagi
(*Bhabha Atomic Research Centre, India*)

ISBN 9789811272004

Extent: 400pp, HB

Pub Date: 2023

Price: US\$138

Subject: Life Sciences / Biology

ABOUT THE BOOK

Engineered Biomaterials: Progress and Prospects presents state-of-the-art developments in the area of biomaterials research exemplified by experts in the fields of tissue engineering, wound healing, bio-diagnostics, novel therapeutics and advanced drug delivery systems.

It provides a comprehensive account of preparation, characterisation, properties, processing, biological and clinical evaluation of a large variety of materials for specific biomedical applications. Basic concepts related to wound healing, tissue engineering and drug delivery systems, and the principal role played by macro, micro and nano scaled structures in biomaterials are presented in a clear manner. Developments in the area of conventional and advanced wound care strategies, materials for periodontal therapeutics, in-situ gelling tissue adhesives, biodegradable composites etc are illustrated in a lucid manner. Advanced processing techniques explored for the fabrication of micro-needles for vaccine delivery, 3D printing of personalized pharmaceuticals, bio-resorbable coatings, metallosurfactants and surface engineering of nanosystems are depicted in a straightforward and reasonable way.

This book also discusses various advanced therapeutic and diagnostic systems such as magnetic nanoparticle based hyperthermia and their surface functionalization techniques. Lipid-based nano delivery systems for psoriasis, irritable bowel syndrome and pain management, polyrotaxane polymers, wearable devices for sensing etc are also depicted in this book. The contents are designed in a manner that will be highly suited for academic researchers, clinicians and industrialists who wish to explore in the versatile field of biomaterials as it contains a wealth of valuable information that will be equally useful to both beginners as well as established researchers.

READERSHIP

Graduate students and researchers in Bioengineering, Biomedical Engineering and Materials Science.

CONTENTS

- Introduction to Biomaterials
(*Biji Balakrishnan, P A Hassan, A K Tyagi*)
- **Biomaterials for Wound Healing and Tissue Engineering:**
 - Biomaterial Mediated Wound Healing: Approaches, Pre-clinical Evaluation and Current Status (*Rekha M R and Harikrishnan V S*)
 - Nanotechnology-Driven Engineered Biomaterials Approaches for Periodontal Tissue Repair and Regeneration
(*Deepali Rasila, Shubham Sharma, Vinoy Thomas*)
 - In Situ Gelling Tissue Adhesive Hydrogels for Wound Closure and Tissue Regeneration
(*Roshan Kesari, Rajkumar Govindan, Biji Balakrishnan, P A Hassan*)
 - Biodegradable Nanocomposites for Orthopedic Applications
(*Satish Jaiswal, Siddhi Chaudhuri, Debrupa Lahiri*)
 - Hydroxyapatite Nanocomposites for Drug Delivery and Tissue Engineering
(*Gunjan Verma, Mural Quadros*)
- **Processing Biomaterials for Advanced Applications:**
 - Protein Micro-Needles as Controlled Delivery Platform
(*Shubhmita Bhatnagar, Raghuraman Manimaran, Radha Balkrishna Kulkarni, Venkata Vamsi Krishna Venuganti*)
 - 3D Printing of Pharmaceutical Dosage Forms for Personalised Medicine
(*Suranjana Banerjee and Guruswamy Kumaraswamy*)
 - Drug Eluting Bio-Resorbable Materials for Cardiovascular Stents
(*Ankit A Agrawal, Vandana B Patravale*)
 - Collagen from Marine Sources as a Prospective Biomaterial
(*Ashutosh Srivastava and Arti Srivastava*)
 - Self Assembled Structures of Metallosurfactants as Potential Bioinspired Material
(*Baljinder Kaur, Gurpreet Kaur, Ganga Ram Chaudhary*)
 - Nanomaterials for Cancer Therapy Through Hyperthermia
(*Manas Srivastava, Rashmi Joshi, Bheeshma Pratap Singh, Raghmani Singh Ningthoujama*)
 - Surface Engineering of Nanomaterials for Biodiagnostic Applications
(*Bijaideep Dutta, KC Barick, P A Hassan*)
 - Advanced Theranostics Nanomaterials
(*Jagrit Gupta, P A Hassan, and K C Barick*)
- **Biomaterials in Advanced Therapeutic Delivery:**
 - Lipid Based Drug Delivery Systems for Psoriasis
(*Roshan Keshari, Amarjitsing Rajput, Gautam Sharma, Runali Patil, Rinti Banerjee*)

- Polyrotaxane Polymers in Nucleic Acid Delivery
(*Shailesh Dugam, Ratnesh Jain and Prajakata Dandekar*)
- Tailoring Drug Delivery Platforms for Irritable Bowel Disease: Challenges, Strategies and Opportunities
(*Ling Li, Helna Mary Baby, Nitin Joshi*)
- Wearable Devices for Biosensing and Drug Delivery Applications
(*Abhinanda Kar, Mahima Dewani, Runali Patil, Lisha Awasthi, Nadim Ahamad, and Rinti Banerjee*)
- Synthetic Polysaccharides as Potential Drug Carriers in Polymer Therapeutics
(*Arul Prakash Francis and A Jayakrishnan*)
- Therapeutic Applications of Functionalized Magnetic Nanoparticles and Composites
(*K C Barick, Bijaideep Duttaa*)
- Biomaterial Based Therapeutic Strategies for Pain Management Systems
(*Erick Orozco Morato, Devika Kishnan, Lakshmi S Nair*)
- Surface Chemistry of Biomaterials for Drug Delivery and Biomedical Sensors
(*Prashant D Sawant*)

ABOUT THE EDITORS

Dr A K Tyagi joined BARC in 1986 and presently is Director, Chemistry Group, BARC and Senior Professor (Chemistry) at Homi Bhabha National Institute (HBNI), Mumbai. His research interests are in the field of nanomaterials, functional materials, nuclear materials, hybrid materials etc. He has published about 650 papers in international journals, five books and several review articles. He has been conferred with a number of awards such as DAE-Homi Bhabha Science and Technology Award, DAE-SRC Award, MRSI Medal, CRSI Bronze Medal; Rheometric-ITAS Award, ISCA Platinum Jubilee Lecture Award; Metallurgist of the Year Award from Ministry of Steel etc. He is a Fellow of the Royal Society of Chemistry; National Academy of Sciences, India; Indian Academy of Sciences and Asia Pacific Academy of Materials. He did postdoctoral research at Max-Planck Institute, Stuttgart, Germany(1995–96) and subsequently has been a visiting scientist to several countries like USA, France, Canada, Japan, Germany etc.

Dr P A Hassan joined Bhabha Atomic Research Centre (BARC), Mumbai in 1993 and presently serving as Head of Nanotherapeutics and Biosensors Section, Chemistry Division, BARC. He was a visiting researcher at the University of Louis Pasteur, Strasbourg, France in 1995 and pursued his post-doctoral research at the Department of Chemical Engineering, University of Delaware, USA in 2000–2002. He has visited advanced neutron scattering facilities like National Centre for Neutron Research, USA and Institute Lau Langevin, France. He has co-authored more than 160 papers in peer-reviewed journals, contributed to six book chapters, transferred two technologies and filed one patent. He has worked extensively in the area of surfactant assemblies, magnetic nanoparticles and novel drug delivery systems. His current research interests include self assembled materials, biopolymers, bio-diagnostics and nano drug delivery systems. He is an elected fellow of the National Academy of Sciences, India.

Dr Biji Balakrishnan secured Master's degree in Chemistry with highest honors. She received her PhD degree in Biomaterials from Sree Chitra Tirunal Institute for Medical Sciences and Technology, Kerala, India. Her PhD thesis got the Shah-Schulman award for the best PhD thesis in the area of colloids and interfacial science. She worked as DST Scientist at Department of Biosciences & Bioengineering, IIT Bombay, India, till 2017. She is a life member of the Society of Biomaterials and Artificial organs, India, Materials Research Society of India and the Society for Polymer Science India. Her research interests include injectable in-situ gelling hydrogels for tissue regeneration, trigger responsive drug delivery systems and surface modification of polymers to improve blood compatibility. She has 18 publications in peer reviewed journals (*Biomaterials*, *Acta Biomaterialia* etc) and 5 patents and 2 book chapters to her credit. Currently she is working as DST Scientist, Chemistry Division, BARC, Mumbai.

For orders and enquiries, please contact us:



FEELBOOKS PVT. LTD.

www.feelbooks.in

DELHI	4381/4 Ansari Road, Daryaganj, New Delhi 110002 Pushpendra Kumar	Mobile: +91 9015043442	Tel: +91-11-47472630 Email: orders@feelbooks.in
BENGALURU	C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070 Shekar Reddy	Mobile: +91 9945234476	Tel: +91-80-26762129 Email: bangalore@feelbooks.in
MUMBAI	Alok Dube	Mobile: +91 9833435804	Email: adube@feelbooks.in
CHENNAI	G Srinivasan	Mobile: +91 9003047502	Email: gsrinivasan@feelbooks.in
KOLKATA	Dhrubajyoti Bhattacharjee	Mobile: +91 9836160013	Email: dbhattacharjee@feelbooks.in
HYDERABAD	Kundan Kumar.S	Mobile: +91 8106726072	Email: kundan@feelbooks.in

For any queries, please email us at marketing@feelbooks.in