

WOODHEAD PUBLISHING IN MATERIALS



**ADVANCED NANOCARBON
POLYMER BIOCOMPOSITES**
SUSTAINABILITY TOWARDS ZERO BIOWASTE



Edited by
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Advanced Nanocarbon Polymer Biocomposites Sustainability Towards Zero Biowaste

- 1st Edition - August 1, 2024
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- Editors: Md Rezaur Rahman, Muhammad Khusairy Bin Bakri
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- Language: English
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- Paperback

Description

Nanocarbon polymer biocomposites have gained increased attention from both researchers and manufacturers due to the significant improvement in their physico-mechanical, thermal and barrier properties when compared to conventional materials. Their dimensions, biodegradable character, cost-effectiveness, and sustainability are among the main drivers for increasing demand.

However, it is difficult to achieve uniform dispersion between the carbon filler and matrix as it easily forms agglomerations. Production of nanocarbon polymer biocomposites with high mechanical and thermal properties is also limited, but there has been rapid progress in processing possibilities to produce nanocomposites based on various biodegradable fillers.

Advanced Nanocarbon Polymer Biocomposites: Sustainability Towards Zero Biowaste collects all these novel scientific findings in one place. It discusses in detail their physical, chemical, and electrical properties and presents the latest research findings on nanocarbon polymer biocomposites with filler loadings and their improvement on compatibility. The book will be of great interest for those researchers who are concerned with the production and use of nanocarbon polymer biocomposites as a new innovative advanced material.

About the editors

Md Rezaur Rahman

Md Rezaur Rahman is currently working as a senior lecturer (Assistant Professor), in the Department of Chemical Engineering and Energy Sustainability, Faculty of Engineering, Universiti Malaysia Sarawak (UNIMAS), Malaysia. He has also been a visiting research fellow at the Faculty of Engineering, Tokushima University, Japan since June 2012. Previously he worked as a teaching assistant, at the Faculty of Engineering, Bangladesh University of Engineering and Technology (BUET) and worked as a research project leader supported by the Ministry of Higher Education, Malaysia. He was appointed as an external supervisor for the Faculty of Engineering, Swinburne University of Technology, Melbourne, Australia in 2015. He received his Ph.D. from the Universiti Malaysia Sarawak, Malaysia. He has more than 12 years of experience in teaching, research, and working with industry. His areas of research include: conducting polymers, silica/clay dispersed elastomeric polymer nanocomposites, hybrid filled loaded polymer composites, advanced materials: graphene/nanoclay/fire retardants, nanocellulose (cellulose nanocrystals and nanofibrillar) cellulose reinforced/filled polymer composites, chemical modification and treatment of lignocellulosic fibres including jute, coir, sisal, kenaf, hemp and solid wood, nanocomposites and nanocellulose fibres, and polymer blends. So far, he has published 7 books and 20 book chapters, and more than 100 International journal papers.

Affiliations and expertise

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Muhammad Khusairy Bin Bakri

Muhammad Khusairy Bin Bakri obtained his Doctor of Philosophy, PhD (2018), Master of Engineering (by Research), MEng (2016) and Bachelor of Engineering (Mechanical Engineer), BEng (2014) from Swinburne University of Technology, Australia. Currently, he is working with UNIMAS as a Research Fellow with priority on materials science, polymer composites, biomaterials, and education. He is working under the supervision of Dr. Md Rezaur Rahman at the Faculty of Engineering - Universiti Malaysia Sarawak (UNIMAS). Previously, he joined as a Higher Degree Researcher/Teaching Assistant from 2014 to 2018. During that time, he taught subjects such as computer aided design (CAD), materials and process, materials and manufacturing, and thermodynamics. He also assists his supervisors, in monitoring undergraduate final year projects. He has published more than 60 publications, both local and international (journal, book chapters, and conference papers). He is also one

of the main contributors for the book on “Silica and Clay Dispersed Polymer Nanocomposites” published by Elsevier that is available in ScienceDirect.

Affiliations and expertise

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Key features

- Emphasis on nanoscale fillers and their improvement on compatibility
- Evaluates the impact of polymer production through life cycle analysis of both single and hybrid polymers and nanocomposites
- A strong focus on sustainability and green chemistry perspectives

Readership

Academic and industrial researchers working in the development of sustainable polymers, biocomposites and advanced nanocarbon polymer composites,
Postgraduate students working in materials science and engineering

Product details

- No. of pages: 350
- Language: English
- Edition: 1
- Published: August 1, 2024
- Imprint: Woodhead Publishing
- Paperback ISBN: 9780443139819

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