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Advanced bionanocomposite materials continue to be increasingly popular and are important for a wide range of scientific and engineering applications. In the race to exploit the unique mechanical, thermal, and electrical properties of bionanocomposite materials, researchers need to address new challenges in predicting, understanding, and managing the potentially adverse effects these materials could have on the environment and human life.

This book focuses on the fundamentals of bionanostructured materials and bionanocomposites. It deals with some recent developments in the synthesis and characterization of bionanomaterials as well as their incorporation into polymer matrixes. The biological applications of bionanomaterials are also discussed in detail, along with the synthesis of bionanostructured materials and bionanocomposites, reviews of food packing, water remediation, heavy metal ion adsorption from wastewaters, and other industrial applications. This book is aimed at beginners in this field as well as advanced undergraduate- and graduate-level students of materials science and researchers working in the fields of bionanocomposites, nanotechnology, and analytical chemistry, especially those with an interest in materials for analytical applications.

Shakeel Ahmed is assistant professor at the Department of Chemistry, Government Degree College Mendhar, Jammu and Kashmir, India. He obtained his PhD in biopolymers and bionanocomposites. He has worked as a national postdoctoral fellow at the Indian Institute of Technology, New Delhi, and as a research fellow at the Bio/Polymers Research Laboratory, Department of Chemistry, Jamia Millia Islamia, New Delhi. He has published several research papers on green nanomaterials and biopolymers, including biomedical applications, packaging, sensors, and water treatment. He has also written a few books on natural materials (biopolymers and biocomposites) and nanomaterials. He is a member of the American Chemical Society, USA; associate member of the Royal Society of Chemistry, UK; and life member of the Asian Polymer Association and Society of Materials Chemistry, India, and an active reviewer of many reputed journals. His research areas of interest include biopolymeric and green nanomaterials.

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