DESCRIPTION

An exhaustive and timely overview of renewable polymers from a respected chemist and successful author

The recent explosion of interdisciplinary research has fragmented the knowledge base surrounding renewable polymers. *The Chemistry of Bio-based Polymers* brings together, in one volume, the research and work of Professor Johannes Fink, focusing on biopolymers that can be synthesized from renewable polymers. After introducing general aspects of the field, the book’s subsequent chapters examine the chemistry of biodegradable polymeric types sorted by their chemical compounds, including the synthesis of low molecular compounds. Various categories of biopolymers are detailed including vinyl-based polymers, acid and lactone polymers, ester and amide polymers, carbohydrate-related polymers and others. Procedures for the preparation of biopolymers and biodegradable nanocomposites are arranged by chemical methods and in vitro biological methods, with discussion of the issue of “plastics from bacteria.”

The factors influencing the degradation and biodegradation of polymers used in food packaging, exposed to various environments, are detailed at length. The book covers the medical applications of bio-based polymers, concentrating on controlled drug delivery, temporary prostheses, and scaffolds for tissue engineering. Professor Fink also addresses renewable resources for fabricating biofuels and argues for localized biorefineries, as biomass feedstocks are more efficiently handled locally.

Audience
The Chemistry of Bio-based Polymers will be read by chemists, polymer and materials scientists, chemical, bio-based, and biomedical engineers, agricultural and environmental faculty and all those who work in the bioeconomy area. This book will be critical for engineers in a number of industries including food packaging, medical devices, personal care, fuels, auto, and construction.

ABOUT THE AUTHOR

Johannes Karl Fink is Professor of Macromolecular Chemistry at Montanuniversität Leoben, Austria. His industry and academic career spans more than 30 years in the fields of polymers, and his research interests include characterization, flame retardancy, thermodynamics and the degradation of polymers, pyrolysis, and adhesives. Professor Fink has published several books on physical chemistry and polymer science including A Concise Introduction to Additives for Thermoplastic Polymers (Wiley-Scrivener 2009) and Polymeric Sensors and Actuators (Wiley-Scrivener 2012)

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