Biodegradable Polymers in the Circular Plastics Economy
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DESCRIPTION

Biodegradable Polymers in the Circular Plastics Economy

A comprehensive overview of the burgeoning field of biodegradable plastics

As the lasting impact of humanity’s reliance on plastics comes into focus, scholars have begun to seek out solutions to plastic litter. In *Biodegradable Polymers in the Circular Plastics Economy*, an accomplished team of researchers delivers a focused guide (1) to understand plastic degradation and its role in waste hierarchy besides recycling, and (2) to create and use biodegradable plastics where appropriate. Created preferably from renewable resources, these eco-friendly polymers provide an opportunity to create sustainable and lasting solutions to the growing plastic-driven pollution problem.

The broad approach to this handbook allows the authors to cover all aspects of these emerging materials, ranging from the problems present in the current plastics cycle, to the differences in type, production, and chemistry available within these systems, to end-of-life via recycling or degradation, and to life-cycle assessments. It also delves into potential commercial and policy issues to be addressed to successfully deploy this technology.

Readers will also find:

- A thorough introduction to biodegradable polymers, focusing not only on the scientific aspects, but also addressing the larger political, commercial, and consumer concerns

- Mechanisms of biodegradation and the environmental impact of persistent polymers
• An in-depth discussion of degradable/hydrolysable polyesters, polysaccharides, lignin-based polymers, and vitrimers

• Management of plastic waste and life cycle assessment of bio-based plastics

_Biodegradable Polymers in the Circular Plastics Economy_ is the perfect overview of this complicated but essential research field and will appeal to polymer chemists, environmental chemists, chemical engineers, and bioengineers in academia and industry. The book is intended as a step towards a circular plastics economy that relies heavily on degradable plastics to sustain it.

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**ABOUT THE AUTHOR**

Michiel Dusselier is tenure track professor at KU Leuven, Belgium, in the faculty of Bioscience Engineering. He co-founded the Center for Sustainable Catalysis and Engineering (CSCE), where he explores zeolite synthesis, reactor design, functional biodegradable plastics, and heterogeneous catalysis (CO2 activation). He has co-authored over 60 peer-reviewed papers, 7 patents, and 8 book chapters.

Jean-Paul Lange is senior principal science expert at Shell in Amsterdam, The Netherlands, and professor at the University of Twente, The Netherlands, where he is exploring novel catalytic processes for producing fuels and chemicals from natural gas, oil, biomass, and waste plastic. He is co-author of 100 patents, 70 papers, and 7 book chapters.

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