

Special Issue

Recycling of Plastics and Bioplastics: Strategies, Challenges, and Prospects for the Circular Economy

Message from the Guest Editor

The recycling of conventional plastics and bioplastics is essential for reducing the environmental impact of polymeric materials and advancing a circular economy. Fossil-based plastics, widely used for their lightweight, durability and versatility, generate large waste streams due to high production and low recycling rates, causing significant environmental and health concerns. Mechanical recycling, the most common method, allows recovery of plastics for new products but is limited by polymer degradation and difficulties in processing heterogeneous or contaminated waste. Chemical recycling enables depolymerization into monomers or basic chemicals, producing materials comparable to virgin plastics, though it requires dedicated infrastructure and higher energy input. Bioplastics, designed to reduce fossil resource use, present additional challenges, as not all are biodegradable and some, such as polylactic acid, are suitable only for industrial composting. Effective integration of plastics and bioplastics into a circular economy requires advanced recycling technologies, materials designed for recyclability, optimized waste management, supportive policies and public awareness.

Guest Editor

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I would like to invite you to contribute to the success of the journal by sending us your high quality research papers. We would be pleased to welcome you as one of our authors.

Editor-in-Chief

Prof. Dr. Alexander Böker

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