



applied sciences



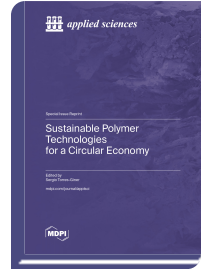
Special Issue Reprint

Sustainable Polymer Technologies for a Circular Economy

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We live in a defining moment in history, a moment when the scientific community has come together to agree on an ambitious framework to resolve environmental issues associated with plastic waste. Plastics are the “workhorse” materials of the modern economy, with multiple functions that help to tackle a number of challenges facing our society. Plastic production has increased from 15 million tons in the 1960s to 311 million tons in 2014 and is expected to triple by 2050, as plastics come to serve increasingly more applications. Plastic packaging is and will remain the dominant sectoral use of plastics globally, representing nearly 40% of the plastic market. However, after a first short-use cycle, most of the economic value of plastics is lost. Furthermore, hundreds of millions of tons of plastics escape collection systems, ending up in the environment whether as microscopic particles or surviving in a recognizable form for hundreds of years. Therefore, it is high time to implement the principles of circular economy in the plastic sector. The game-changing strategy is to promote sustainable polymer technologies that decouple plastics from fossil feedstocks, drastically reduce the leakage of plastics into natural systems, and increase the quality and uptake of plastic recycling, where only biopolymers can really “close the loop”. This reprint compiles recent research studies devoted to achieving a circular economy in the plastic packaging industry.



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