

Waste Management in the Fashion and Textile Industries: The Textile Institute Book Series

Recycling of plastics and composites materials and degradation technologies for bioplastics and biocomposites

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Abstract

Plastic becomes a necessity for our day-to-day life, since it has been widely used in all major sectors including the textile industry. However, the tackling of these recalcitrant plastic-based products wastes is becoming the most challenging part around the world contributing severe environmental pollution and greenhouse gas emission. Currently, the paradigm shifts from the use of conventional oil-based plastics to biobased plastics from renewable sources as a solution to environmental pollution and reduces carbon footprint. Biobased materials provide as a green alternative through the recycling of plastic wastes along with biogenic capitals that are available within our ecosystems across the globe. In this chapter, the biodegradation propensities, biodegradation technologies, and mechanisms of bioplastics and biocomposites were highlighted. Diverse certification systems to ensure environmental safety and sustainability of bioplastic and biocomposites in our environment were also presented. This chapter presents the potential and opportunities for manufacturing biobased plastics and biocomposites to offer considerable benefits in the circular economy concept and high environmental significance to replace conventional plastics.