Recycling of plastic wastes with poly (ethylene-co-methacrylic acid) copolymer as compatibilizer and their conversion into high-end product

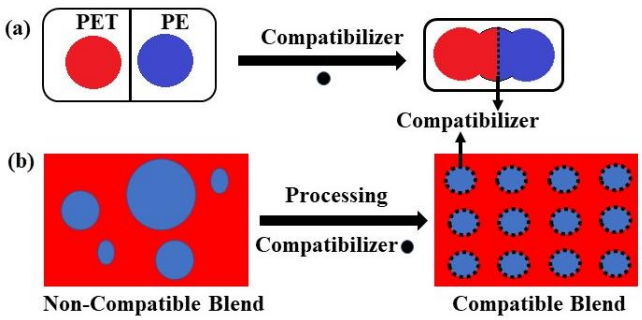
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Abstract

This paper deals with the utilization of plastic wastes to a useful product. The major plastic pollutants that are considered to be in maximum use i.e. PET bottle and PE bags have been taken for consideration for recycling. As these two plastic wastes are not compatible, poly (ethylene-co-methacrylic acid) copolymer has been used as compatibilizer to process these two plastic wastes. Effect of dose of poly (ethylene-co-methacrylic acid) copolymer as compatibilizer has been studied here. It has been shown that only 3 weight percentage of poly (ethylene-co-methacrylic acid) copolymer is sufficient to make 3:1 mass ratio of PET bottle and polyethylene bags compatible. Compatibility has been examined through mechanical testing, thermal and morphological analysis. After analyzing the property of recyclates, better mechanical and thermal property has been observed. Almost 500% of tensile property has been improved by addition of 3 weight percentage of poly (ethylene-co-methacrylic acid) copolymer in 3:1 mass ratio blend of PET bottle and PE bags than that of pristine blend. Morphological analysis by FESEM and AFM has also confirmed the compatibility of the blend. Experimental data showed better performance than available recycling process.

Image



● Compatibilizer
(a) - Function of compatibilizer unit
(b) - Effect of compatilizer in processing of blend

Figure 1: Schematic representation of role of compatibilizer

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Biography

Divya Rajasekaran (PhD scholar) has her expertise in polymer and process engineering. Her practical thinking and theoretical background helped her in solving various problems in a new dimension. She has established a new way of tackling existing environmental issue and after years of research in polymer she has proposed a solution for plastic pollution now and in future.

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Notes/Comments: