

Research Title	Study on the improvement of mechanical properties of polylactide by synthesizing a block copolymer with polybutyrate.
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Abstract

The synthesis optimization of poly(L-lactide) PLLA and polybutyrate (PBAT) block copolymer was approved by ring opening polymerization at 160°C and incubated for 4 and 8 hours. The ratios of L-lactide and PBAT were varied to be 100/0.3, 100/0.6, and 100/1.0 by weight percent. The synthesized polymers were analyzed chemical structure by Proton Nuclear Magnetic Resonance (¹H-NMR), it was found that the structure of all samples showed to be PLA and PBAT and verified that the functional groups at the end chain of both polymers were condensed together to generate the block copolymer. Molecular weight was measured by Gel Permeation Chromatography (GPC), thermal properties and percent of crystallinity were analyzed by Differential Scanning Calorimetry (DSC). When the ratio of L-lactide/PBAT as 100/0.3 and immersed the reaction for 8 hours, obtained the highest molecular weight of PLLA-*b*-PBAT (34,097 g/mol). Melting temperature presented at 168°C that is a character of PLA as has been cited and the crystallinity showed in high quality at 70.89%. We can conclude that the conditions mentioned above were an optimum for PLLA-*b*-PBAT synthesis in this research.