

عنوان مقاله:

Investigation on the role of nanoclay and nano calcium carbonate on morphology and crystallinity of binary and ternary nanocomposites based on PLA

محل انتشار:

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خلاصه مقاله:

poly lactic acid (PLA) is a biodegradable thermoplastic polymer which due to some limitation like crystallinity, it is necessary to use an essential method to improve properties such as adding nanoparticles in the form of nanocomposites. In the present work, hybrid nanocomposites of PLA/ nanoclay (NC)/ nano-sized calcium carbonate (NCC) in 3 wt. % of NC and 7 wt. % of NCC were prepared and compared with binary ones. The morphology and crystallinity of nanocomposites were investigated and compared with neat polymer. Images of electron microscopy (FESEM), demonstrated relatively favorable distribution of NCC in the polymer matrix and the results of the X-ray diffraction (XRD) showed an increase in distance between NC plates in both binary and hybrid samples. Moreover, the results of the differential scanning calorimetry (DSC) showed the crystalline temperature of the hybrid sample containing 7 wt.% of NCC was about 8 °C higher than the neat sample, which could be due to increasing the rate of crystallinity.

کلمات کلیدی:

nanocomposite, poly (lactic acid), crystallinity, nanoclay, nano-sized calcium carbonate

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