

Effect of Clay Surface Characteristic on the Properties of Biodegradable PLA-based Nanocomposites

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Recently, biodegradable poly(lactic acid) (PLA) synthesized from renewable resources has drawn much attention due to its good mechanical properties, bio compatibility and low price. In this study, we utilized two different nanoclays with hydrophilic and hydrophobic surface characteristics to overcome the inherent shortcomings of the PLA resin. The organically modified clay nanosheets were effectively dispersed in PLA solution phase via mixing process consisting of vigorous mechanical stirring and sonication, and the resulting solution was casted to prepare PLA/clay nanocomposite films. We investigated the effect of the surface characteristic of clay as well as clay loading level on the morphology including the intercalated and exfoliated structure, optical transparency, oxygen barrier and mechanical properties of the prepared PLA/Clay nanocomposite films.