

Poly(Lactic Acid) Based Flexible Films

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Abstract : Poly(lactic acid) (PLA) is a biodegradable polymer which has good mechanical properties, however, its brittleness limits its usage especially in packaging materials. Therefore, in this work, PLA based polyurethane films were prepared by synthesizing with different types of isocyanates; methylene diisocyanate (MDI) and hexamethylene diisocyanates (HDI). For this purpose, PLA based polyurethane must have good strength and flexibility. Therefore, polycaprolactone which has better flexibility were prepared with PLA. An effective way to endow polylactic acid with toughness is through chain-extension reaction of the polylactic acid pre-polymer with polycaprolactone used as chain extender. Polyurethane prepared from MDI showed brittle behaviour, while, polyurethane prepared from HDI showed flexibility at same concentrations.

Keywords : biodegradable polymer, flexible, poly(lactic acid), polyurethane

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