

High-Performance Carbon Nanotube-Reinforced Bioplastic

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Abstract

The inherent properties of poly(lactide), a biocompatible and biodegradable polymer, are concurrently improved by the incorporation of a small amount of surface functionalized carbon nanotubes. A new method has been used to functionalize the CNTs' outer surface with hexadecylamine. A composite of PLA with functionalized CNTs has been prepared by melt-extrusion. FT-IR spectroscopy, Raman spectroscopy, DSC, and optical microscopy are used to investigate the thermal and mechanical property improvement mechanism in f-CNTs containing PLA composite.