

Preparation and Characterization of Poly(lactic acid)-Based Composites Reinforced with Poly Dimethyl Siloxane/Ultrasound-Treated Oil Palm Empty Fruit Bunch

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ABSTRACT

Oil palm empty fruit bunch fiber and polylactic acid were used to produce composites by melting cast method. Fiber loading was considered up to 40 wt%. Oil palm empty fruit bunch fibers were treated using ultrasound and polydimethylsiloxane to improve the interfacial adhesion. The structure and surface properties of the fibers were analyzed by Fourier transform infrared spectroscopy, X-ray diffraction, scanning electron microscopy, and contact angle measurement. Moreover, Fourier transform infrared spectroscopy, tensile, flexural, X-ray diffraction, contact angle, differential scanning calorimetry, and thermogravimetric analysis were used to investigate composites' properties. The analysis revealed that polydimethylsiloxane treatment composites show reduced wettability with increased crystallinity.

KEYWORDS: Biomaterials, Compounding, Fibers, Poly(lactic acid), Thermal properties

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