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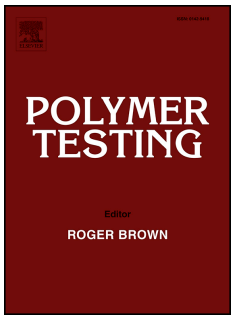

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Mechanical and Thermal Properties of Natural Rubber-Modified Poly(lactic acid) Compatibilized with Telechelic Liquid Natural Rubber

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Abstract

The effect of telechelic liquid natural rubber (TLNR) compatibilizer on natural rubber (NR) modified by melt-blending with poly(lactic acid) (PLA-NR) is studied using infrared spectroscopy (FTIR), differential scanning calorimetry (DSC) and notched Izod impact testing to determine the structural, thermal and mechanical properties. Scanning electron microscopy (SEM) is used to relate these properties to the morphology of the blends and fracture surface of the impact samples. Through this, it is revealed that the addition of LNR significantly improves the tensile and impact strength of PLA-NR, with the greatest compatibilization effect achieved with 6 wt% LNR. This improvement is confirmed through FTIR analysis to be due to a chemical interaction between LNR and PLA that improves the phase morphology of the blend.

Keywords: Telechelic liquid natural rubber, Poly(lactic) acid, Melt blending, Compatibilization