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Effect of HNT on mechanical and thermal properties of poly(lactic acid)/polypropylene carbonate blends

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Abstract In this work, the influence of halloysite nanotubes (HNTs) on the mechanical and thermal properties of the poly(lactic acid)/polypropylene carbonate (PLA/PPC 70/30) blend was studied. The HNT was incorporated into the PLA/PPC blend by melt mixing. It was found that addition of 2-6 wt % HNT successfully improved the tensile and flexural strength as well as the flexural and Young's

moduli of PLA/PPC blend, due to the reinforcing effect. Although the elongation at break decreases with increasing HNT content, its value is much higher than that of pure PLA. Moreover, the addition of HNT did not affect the miscibility of PLA and PPC, since two glass transition temperatures were observed in the DSC thermograms. However, a higher content of HNT may improve the compatibility between PLA and PPC as evidenced by the lower difference between the glass transition temperature of PPC and PLA and reduced crystallinity resulting in higher tensile strength of nanocomposites.

Keywords

Author Keywords: PLA; PPC; HNT; mechanical properties; thermal properties
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