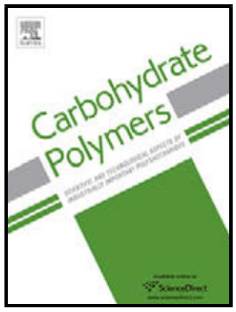

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Development of Regenerated Cellulose/Halloysites Nanocomposites via Ionic Liquids

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Abstract

In this study, regenerated cellulose/halloysites (RC/HNT) nanocomposites with different nanofillers loading were fabricated by dissolving the cellulose in 1-ethyl-3-methylimidazolium chloride (EMIMCl) ionic liquid. The films were prepared via solution casting method and were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The mechanical properties were investigated by tensile testing. It clearly displayed a good enhancement of both tensile strength and Young's modulus with HNT loading up to 5wt %. As the HNT loadings increased to 5wt%, the thermal behaviour and water resistance rate was also increased. The TEM and SEM images also depicted even dispersion of the HNT and a good inter tubular interaction between the HNT and the cellulose matrix.

Keywords: Regenerated cellulose, ionic liquid, EMIMCl, halloysites, nanocomposites