

Characterization Copper (II) Chloride Modified Montmorillonite filled PLA Nanocomposites

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Abstract: The thermal behaviour of polymer layered silicate nanocomposite were characterised to compare the improvement of the nanocomposite with the pristine polymer. It is known that pristine polymers have some weakness in its thermal properties especially biodegradable polymers. The approach of making the nanocomposite out of modified layered silicate and biodegradable polymer is to enhance the thermal behaviour of the biodegradable polymer. The nanocomposites were produced by solution method technique using dichloromethane as a solvent and the two types of nanoclay were used. One was modified with transition metal ion and another type of nanoclay is pristine nanoclay. Wide angle X-ray diffraction (XRD) was used to characterise the structure of the nanoclay after the modification and the type of nanocomposite obtained. Melting temperature and degradation temperature of the nanocomposite were obtained by using differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA) respectively. Decrease in both thermal degradation temperature and melting temperature of the nanocomposites were observed.

Keywords: Modifications, Nanocomposite, Poly(lactic acid) (PLA), Solution Method, Thermal Property

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