STUDY OF THERMAL AND MECHANIC PROPERTIES OF CLAY/POLYMER NANOCOMPOSITE SYNTHESIZED VIA MODIFIED SOLUTION BLENDING

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In this work, the incorporation of layered nano-silicates in polymer matrixes greatly enhances the properties of the polymer. Nowadays, there are many applications of polymer nanocomposites including coatings and architectural, they are also parts of automotive and construction industry among others. In the present study, mechanical, and thermal properties, and wettability angle of especially prepared acrylic montmorillonita (MMT) nanocomposites were investigated. The acrylics were based on butyl acrylate (BA), styrene (sty), and methacrylic acid (MAA), and the nano-clay was Na-montomorillonite (MMT). The MMT clay was added to the polymer, the mixing matrix in physical state solution called (blend). The state of aggregation was investigated by mechanical properties (Youngs modulus). The increment in concentration of MMT in the polymer matrix produces more than one order of magnitude gain in the Youngs modulus. However by Differential Scanning Calorimetry (DSC), lost thermograms show an increase in the glass transition of nanocomposites for all the concentrations of MMT. Furthermore, it was also studied by wetting angle, to determine how much water is retained on the surface of the nanocomposite, the results showed that by increasing the particle of nano-clay in the polymer matrix induces a hydrophobic property to the nanocomposite.

Keywords: Coating, Youngs modulus, Hydrophobic

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