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PREPARATION AND CHARACTERIZATION OF SILANE GRAFTED POLYPROPYLENE CLAY NANOCOMPOSITES

H. Risite[a,b], M. Bousmina[a], O. Fassi Fehri[a,b], K. El Mabrouk[a]

[a]INANOTECH, Institute for Nanomaterials and Nanotechnology. MASciR, Moroccan for Advanced Science, Research and Innovation Fundation Ave. De l'Armée Royale, Madinat El Irfane 10.100, Rabat, Morocco and [b]Laboratoire de Mécanique, Université Mohammed V-Agdal, BP 1014 Avenue Ibn Battouta, Rabat, Morocco,

Filler-reinforced polymeric nanocomposite systems with well-dispersed inorganic nanoparticles exhibit significant improvements in physical and mechanical properties over their neat resin counterpart. The most commonly produced nanocomposite systems are polymer-layered silicate nanocomposites, which are of interest because of their exceptional reinforcement effects at very low clay loading. This characteristic has been exploited to prepare commercially viable structural components since minimized nanofiller loading results in a lighter structure, good processability, and increased ductility.
Polypropylene/clay nanocomposites found many applications in industry. However, preparing well dispersed nanofiller in polymer matrix becomes a challenge during processing. To overcome these problems, silane grafted polyolefin via radical reaction was used to enhance polarity of PP, increase its interaction with nanofiller and highlight polymer-nanocomposites in term of rheological and mechanical properties. The prepared new class of nanocomposites were characterised by X-ray diffraction (XRD), rheometry in small amplitude oscillatory shear, differential scanning calorimetry (DSC), thermogravimetric analysis (TGA) and Fourier transfer infrared (FTIR).