

## Effect of Modified Layered Silicate Nanoclay on the Dynamic Viscoelastic Properties of Thermoplastic Polymers Nanocomposites

**Authors :** Benalia Kouini, Aicha Serier

**Abstract :** This work aims to investigate the structure-property relationship in ternary nanocomposites consisting of polypropylene as the matrix, polyamide 66 as the minor phase and treated nanoclay DELLITE 67G as the reinforcement. All PP/PA66/Nanoclay systems with polypropylene grafted maleic anhydride PP-g-MAH as a compatibilizer were prepared via melt compounding and characterized in terms of nanoclay content. Morphological structure was investigated by scanning electron microscopy. The rheological behavior of the nanocomposites was determined by various methods, viz melt flow index (MFI) and parallel plate rheological measurements. The PP/PP-g-MAH/PA66 nanocomposites showed a homogeneous morphology supporting the compatibility improvement between PP, PA66 and nanoclay. SEM results revealed the formation of nanocomposites as the nanoclay was intercalated and exfoliated. In the ternary nanocomposites, the rheological behavior showed that, the complex viscosity is increased with increasing the nanoclay content; however, at low frequencies this increase is governed by the content of nanofiller while at high frequencies it is mainly determined by talc content. A similar trend was also observed for the variations of storage modulus ( $G'$ ) and loss modulus ( $G''$ ) with frequency. The results showed that the use of nanoclay considerably affects the melt elasticity.

**Keywords :** nanocomposites, polypropylene, polyamide66, modified nanoclay, rheology

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