

Rubber-Toughened Polyamide 6 / Polypropylene Nanocomposites: The effect of maleated polyethylene-octene elastomer on the morphological and mechanical properties

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Abstracts

A series of blends constituted by a polyamide 6 (PA6) and polypropylene (PP) matrix (70:30) added with 4wt% of organophilic modified montmorillonite (MMT) and 10% of maleated polyethylene-octene elastomer (POE-g-MA) were prepared using a co-rotating twin-screw extruder followed by injection molding. POE-g-MA was used as impact modifier. The mechanical properties of the blends were studied through tensile, flexural and impact test. Scanning electron microscopy (SEM) and X-ray diffraction (XRD) was used to assess the blends morphology and to characterize the formation of nanocomposites respectively. Incorporation of the POE-g-MA elastomer into the blends significantly increased the toughness. However, the strength and stiffness were slightly decreased with increasing the concentration of POE-g-MA elastomer. In the POE-g-MA compatibilized PA6/PP nanocomposites, uniform dispersion of POE-g-MA in matrix has been observed through SEM which provide a good improvement of the compatibility between PA6, PP and organoclay. XRD result revealed that PA6/PP nanocomposites were successfully formed and the organoclay were dispersed more uniformly in the presence of POE-g-MA.

Key words: polyamide 6 / polypropylene blends, polyethylene-octene elastomer, morphological, mechanical properties.