



SP4.03

Preparation and Characterization of PA6/EPDM blends Reinforced with Nanoparticles

R. Gallego (a), D. Garcia-Lopez (b), S. Lopez-Quintana (b), I. Gobernado-Mitre (b),
J. C. Merino (a,b), *J. M. Pastor (a,b)

(a) *Dept. of Condensed Matter Physics. ETSII, Valladolid University. Valladolid. Spain.*

(b) *CIDAUT. Centre for Automotive Research and Development. Technological Park of Boecillo. E-47151. Valladolid. Spain.*

Blends of Polyamide as matrix with elastomers have been extensively studied to obtain new materials with high impact properties at room and low temperatures. The incorporation of a relatively low content (less than 5% by weight) of layered silicate reinforcement into the polymeric matrix can result in significant improvements in a range of properties, provided that the clay particles are sufficiently exfoliated. The purpose of this work is the evaluation of the structure and properties of nanocomposites prepared from polymer blends based on polyamide 6 (PA6) and ethylene-propylene-diene (EPDM) matrices. The compounds were prepared via melt mixing technique by using two different mixing methods: in an internal mixer and in an extruder. A reactive polymer composed of ethylene-propylene-diene grafted maleic anhydride (EPDMgMA) containing 1 wt% maleic anhydride, was also added as a possible interfacial modifier to improve phase adhesion. The nanocomposites were prepared through three different blending sequences: (1) First it was prepared PA6/organoclay nanocomposite, then it was mixed with the EPDM + EPDMgMA to get the final nanocomposite; (2) Organoclays were first mixed with EPDM + EPDMgMA and the EPDM/EPDMgMA/organoclays obtained were mixed with PA6; (3) Finally it was blended PA6, EPDM, EPDMgMA and organoclays in one step. The structure of the PA6/EPDM/EPDMgMA/organoclay ternary hybrids was characterized according to the process of fabrication of the nanocomposites and was related with its properties.