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Investigation of Physical-Mechanical Properties and Morphology of Thermoplastic-Elastomer of SEBS-Mg/Nylon6,6 Nanocomposites

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To produce rubber toughening nylon 6,6 with high modulus and tensile strength, organoclay nano-composite of rubber modified nylon 6,6 has been prepared with different percents of SEBS-g-MA rubber and organoclay. Mixing are done by a counter rotate twin extruder at a temperature profile in which two phases show the closet viscosity. Mechanical tests reveal that addition of organoclay has caused the tensile strengths and modulus of the prepared nanocomposites considerably enhance with respect to those of toughened nylons. In addition, results of the hardness test shows that addition of rubber slightly decreases hardness of nylons where addition of organoclay compensates this reduction. Comparison of low angle XRD obtaining from clay and different prepared composite samples show that interlayer spacing of organoclay must be considerably increased by melt intercalation of nylon and nylon blend. In addition obtaining TEM photo from different composite samples show that intercalation and exfoliations must be significantly done.