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Characterization of Polymer Nanocomposites Filled with Silicate Layers and Spheres

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Properties of polymer composites filled with 5 wt.% of montmorillonite and silica nanospheres have been presented. Nanocomposites have been prepared by polycarbonate melt intercalation. Their structure, viscoelastic and mechanical properties have been characterized by WAXS, uniaxial tensile, DMA tests, whereas melt rheology by oscillatory measurements. Distribution of nanospheres in composites was estimated by means of a response to light of the chromophore groups attached to a surface of silica particles.

Young modulus of nanocomposites at tensile test depends on a filler kind and was of 30% higher for composites with montmorillonite in comparison to that of polycarbonate matrix.

Calculation of the interfacial tension has been attempted by using viscoelastic properties of the nanocomposites.