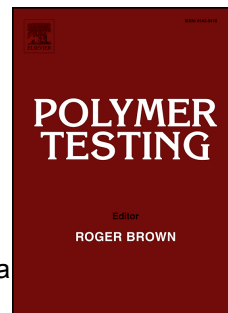


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Effect of Organically Modified Clay on the Morphology, Rheology and Viscoelasticity of Epoxy –Thermoplastic Nanocomposites

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Abstract

The effect of cloisite 20A clay on rheology and dynamic mechanical properties of epoxy and poly-(styrene-*co*-acrylonitrile) (SAN) blend system cured with diamino-diphenyl sulphone (DDS) was investigated. The effect of modified clay (cloisite 20A) on two different compositions of initially miscible epoxy/SAN system has been investigated based on the differences in the mechanism of phase separation during curing. The dynamics of phase separation was followed by optical microscopy coupled with a heating stage. The developed microstructures obtained after complete curing were examined by scanning electron microscopy (SEM) after preferential etching of SAN phase with dichloroethane. The processing parameters occurring during the curing reaction was analyzed by dynamic in-situ rheometry. The viscoelastic properties of fully cured blends and composites were further determined by dynamic mechanical analysis (DMA). Localization of filler among the blend phases was established from dynamic mechanical analysis.

Keywords

cloisite 20A clay; viscoelastic phase separation; dynamic asymmetry; rheometry.

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