

DMA and NMR Study of Polyurethane-Based Nanocomposites

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Abstract. Polyurethane-based nanocomposites with magnesium oxide (MgO) as nanofiller were studied using dynamic mechanical analysis (DMA) and nuclear magnetic resonance (NMR) spectroscopy to evaluate the effects of MgO content on their structure and viscoelastic properties. The MgO nanoparticles influenced molecular mobility in the studied composites, as reflected in the values of glass transition temperature and linewidths estimated from deconvolution of the broad-line ¹H NMR spectra. The reinforcing effect of MgO nanoparticles was also deduced from the increase of storage modulus in the studied composites.

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