DMA Study of Thermoplastic Starch/Montmorillonite Nanocomposites

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Abstract. Dynamic mechanical analysis was used to study the viscoelastic behavior of nanocomposites consisting of thermoplastic corn starch plasticized with glycerol and/or urea and addition of 2 or 5 wt. % of montmorillonite-type nanofiller. Motional heterogeneity of the studied materials was inferred from the temperature dependences of the damping factor. Relaxation processes in composites with starch plasticized only with one plasticizer proceeded in a similar manner in the same temperature range for both nanofiller concentrations, in contrast to the composite with starch plasticized with both plasticizers, for which these processes were detected at temperatures with more than 10 °C shift.