Turkish Journal

of

Chemistry

Keywords
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Turkish Journal of Chemistry

Characterization of chitosan in acetic acid: Rheological and thermal studies

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Abstract: This study examined the influence of temperature, concentration, shearing time, and storage time on the rheological properties, i.e. the dynamic viscosity and shear stress, as a function of shear rate of chitosan solubilized in weakly acid solutions. The results showed that shear thinning behavior (pseudoplastic non-Newtonian behavior) was pronounced at temperatures from 20 to 50 °C, but was more remarkable at lower temperature. In addition, the activation energy value derived from ln η vs. 1/T data was found to be 20.86 kJ mol^{-1}. When the effect of concentration was studied, the shear thinning behavior was pronounced at all concentrations. The effect of shearing time on the dynamic viscosity and shear stress of chitosan solutions did not show any significant