

Rheological properties of xanthan/nanoclay hydrogel

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Xanthan hydrogels are widely used as viscosity regulators and stabilizers for cosmetics, food, and other industrial applications. Such composites work as thickeners and texturizers due to formation of three-dimensional network and polysaccharide order-disorder transitions under change of temperature, concentration or ionic strength of the solution. Addition of the nanofillers can influence on rheological properties of the polysaccharide solution and change the character of fluidity significantly. Another option to govern the composite-hydrogel rheology is temperature change. In this research we investigated influence of several heating/cooling cycles on the fluidity behavior of the xanthan/montmorillonite solution.

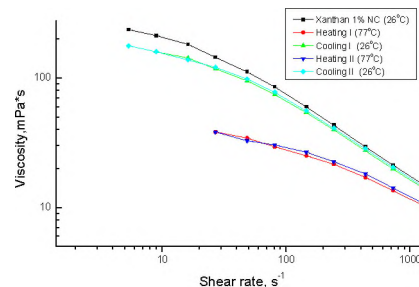


Fig. 1. Dependence of viscosity of 1%Xanthan/20%nanoclay(w/w) on the repeating heating/cooling

At low concentration (1% of nanofiller) the character of fluidity for composite hydrogel is similar to the pure xanthan hydrogel and represents the shape of the curve of non-newtonian solution. Heating the composite hydrogel over the xanthan conformation transition temperature (60–70 °C) leads to sufficient growth of viscosity with further relaxation to the initial viscosity after cooling as well.