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Specific Ion Effects in Polysaccharide Dispersions

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Highlights

- The thermal and rheological properties of three polysaccharide dispersions were investigated in the presence of salts and neutral cosolutes.
- The solutes modify the hydration of the macromolecules and the interactions between the chains.
- The texture of the gels is significantly changed by the kosmotropic species.
- The study has potential applications in the formulation of greener frac fluids for shale gas extraction.

Abstract

The specific effects induced by some strong electrolytes or neutral cosolutes on aqueous mixtures of guar gum (GG), sodium alginate (SA) and sodium hyaluronate (SH) were studied through rheology and DSC experiments. The results are discussed in terms of changes in the polymer conformation, structure of the network and hydration properties. This study is also aimed at controlling the viscosity of the aqueous mixtures for application in green formulations to be used as fracturing fluids for shale gas extraction plants.

Keywords: *polysaccharide(s); guar gum; sodium hyaluronate; specific ion effect; viscosity; thermal properties.*

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