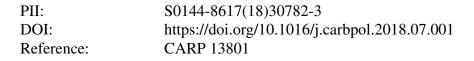
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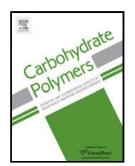
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ACCEPTED MANUSCRIPT

Effect of a functional polymer on the rheology and microstructure of sodium alginate

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Abstract

Here, we report on the effect of functional copolymer poly(N-isopropylacrylamide-co-4-vinylphenylboronic acid) (NIBA) on the rheology and network structure formed by sodium alginate (SA) through linear and nonlinear viscoelasticity measurements. The hydrogel moduli at pH 3 increased with increasing NIBA addition, while the yield point decreased. Furthermore, these hydrogels showed strain-softening behavior, weak G"-overshoot marking the onset of nonlinearity, and good selfhealing properties after large deformation. The zero-strain nonlinearity parameter (Q₀) was found to be more sensitive to NIBA-addition than the linear viscoelastic properties. The blends showed a clear peak in the startup test except for SA alone and the peak intensity increased with increasing NIBAconcentration. Finally, based on all data, gelation mechanism and interaction of SA and NIBA will be clarified. Download English Version:

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