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Abstract
Polymers have many applications in the biomedical field. For example, high strength hydrogel has the potential to be used to repair the damaged articular cartilage due to its low friction and high mechanical strength and bio-compatability. Besides, shape memory magnetic polymer films have the potential to be used as active medical devices. In this research, viscoelastic properties of PAA-Alg-Si hydrogels with different silica weight percentages were investigated. The experiments were performed under uniaxial test and the experiment data were fitted into linear viscoelastic constitutive models. it can be seen that the mechanical properties of PAA-Alg-Si hydrogels is strongly dependent on the weight percentage of Silica in PAA-Alg-Si hydrogels. Furthermore, mechanical properties of hybrid poly (MMA-co-MAA-co-BA) copolymer films with different weight ratios of magnetite (Fe3O4) nano particles were also investigated. The influence of weight ratios of magnetite (Fe3O4) nano-particles on the time dependent mechanical properties of hybrid copolymer films was investigated. Linear viscoelastic models have been used to provide proper fits to the time dependent stress strain relations of aforementioned copolymer film material. It can be seen that the magnetite nano-particles weight percentage of polymer films has strong effect on the stress-strain relations of polymer films.
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