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Facile Synthesis and Rheological characterization of Nanocomposite Hyaluronan-Organoclay Hydrogels

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Abstract

We report a facile methodology for the synthesis of inorganic-organic hydrogels based on integrative assembly aminopropyl magnesium phyllosilicate (aminoclay) and sodium salt of hyaluronic acid. The viscoelastic materials produced by electrostatic interactions and crosslinking of hyaluronan in the presence of exfoliated synthetic organoclay results in the formation of gel-like behavior retaining a high amount of water. This was confirmed by a rheological study revealing significant dominance of the elastic response over the entire deformation frequency range used. The mechanical strength of the aminoclay-hyaluronan hydrogels was found to be higher than that for related materials based on poly(vinylpyrrolidone)-aminoclay hydrogels.