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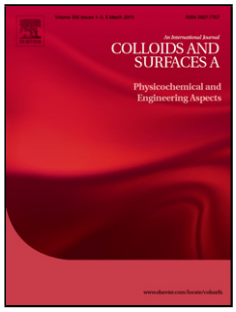

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Improved magneto-viscoelasticity of cross-linked PVA hydrogels using magnetic nanoparticles

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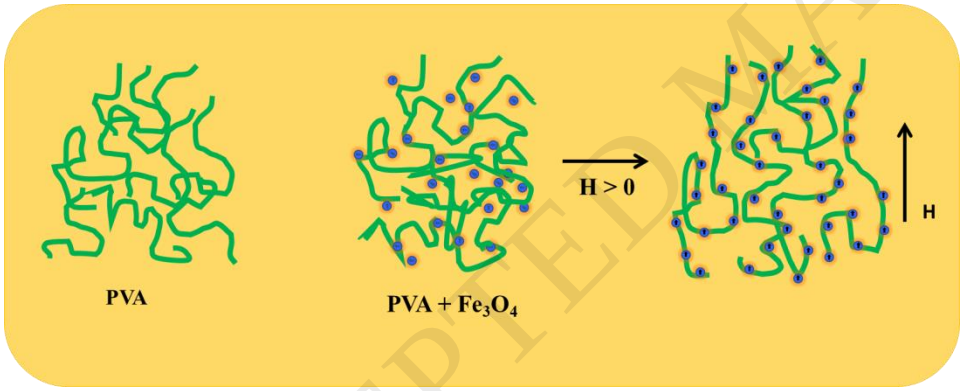
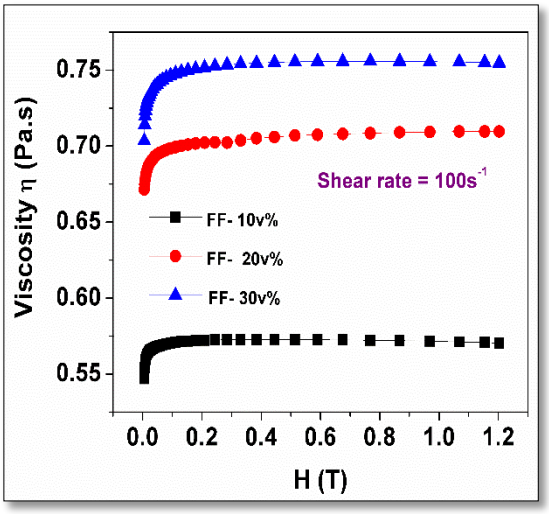
Graphical abstract

In this work, we report the effect of magnetic nanoparticles in cross-linked PVA matrix. The static and dynamic viscoelastic investigation confirms that the mechanical properties of the magnetic gel are improved. Tunable viscoelastic properties of magnetic gels make it very useful for the development of a device with enhanced performance.





Abstract

Magnetic nanoparticle (MNP) incorporation in soft host media offers great possibilities to control its properties and flow dynamics via external magnetic field. In the present work we report, synthesis of stable homogeneous crosslinked PVA hydrogels with MNP and their detailed rheological investigations in static and dynamics modes. The measurement results were fitted with the theoretical model presented for nonlinear and transient static & dynamic flow behavior.