

Abstract Submitted
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Dynamics of polymer microgel nanoparticles and polymer chains.

KIRIL STRELETZKY, JOHN MCKENNA, Cleveland State University, GERALD HILLIER — Microgel nanoparticles were synthesized in aqueous solutions of neutral polymer hydroxypropylcellulose (HPC) through self-association of amphiphilic HPC molecules and subsequent cross linking at room temperature. We present a Dynamic Light Scattering study of transport properties of HPC polymer chains and HPC microgels made out of the same starting polymer solution. The spectra of both systems are highly non-exponential requiring a spectral time moment analysis. Our findings indicate the existence of at least two modes of relaxation in both systems. The comparison of the mean relaxation rates and diffusion coefficients of the different modes in two systems under good solvent conditions will be reported. Temperature induced volume phase transition of the polymer nanoparticles and its sensitivity to salt, polymer, and cross-linker concentration will be reported.

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