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Title:	NMR investigation of the thermogelling properties, anomalous diffusion, and structural changes in a Pluronic F127 triblock copolymer in the presence of gold nanoparticles(
Authors:	Ojha, J. (/jspui/browse?type=author&value=Ojha%2C+J.) Dorai, K. (/jspui/browse?type=author&value=Dorai%2C+K.)
Keywords:	Anomalous diffusion Gold nanoparticles NMR spectroscopy Pulsed field gradient NMR
Issue Date:	2020
Publisher:	Springer Nature.
Citation:	Colloid and Polymer Science, 298(11) pp.1571-1585.
Abstract:	We studied the thermogelation of a triblock copolymer Pluronic F127 (poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide)) in an aqueous solvent in the presence of gold nanoparticles, using pulsed field gradient diffusion, NMR temperature experiments, relaxation measurements, and 2D heteronuclear NMR experiments. Pulsed field gradient diffusion NMR is a powerful technique to study the transition between diffusive regimes in a polymer mesh which are modulated by phase transitions in the polymeric network. In the isotropic phase, the triblock copolymer diffusion is a classical Fickian process. As the onset of gelation occurs, diffusion in the system becomes anomalous and the mean square displacement in the direction of the applied magnetic field gradient shows a power law dependence. Our experiments show that the introduction of gold nanoparticles leads to a disruption of gelation and the shifting of the formation of the ordered phase of the triblock copolymer to a higher temperature.
Description:	Only IISERM authors are available in the record.
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