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Study of a New Colloidal Composite: Polymer-Magnetite Particles/Lyotropic Liquid Crystal

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Liquid crystals/magnetic particles composites have been shown to exhibit very interesting behaviors when subjected to different external fields, finding new applications in the field of functional nanomaterials. We present a new colloidal composite formed by combining polymer-magnetite nanoparticles and a lyotropic nematic liquid crystals. TEM investigations on the polystyrene magnetite show magnetite nanocrystals anchored in polymeric chains. The optical transmission of the ferronematic was investigated when the samples were subjected to different values of static magnetic field and the critical magnetic field corresponding to the Fredericksz transition was estimated.