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## Structural deformations in liquid crystals with dispersed magnetic nano-colloids

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### Abstract

The stable colloidal dispersions of magnetic nano-particles in nematic liquid crystals are called ferronematics. Their behaviour in magnetic fields depends on various parameters such as anchoring energy, magnetic anisotropy, and shape and volume fraction of the particles. In the present paper, the threshold field is obtained for these colloidal nematics. Then, the influence of magnetic anisotropy, cell thickness, magnetic moment, and volume fraction of the particles are discussed. It is found that due to the influence of some effective parameters, the threshold field changes when compared to pure nematic liquid crystals. The obtained results are consistent with the reported experimental results.

**Keywords:** nematic, colloid, Fredericks transition

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