

Experimental investigation of Néel relaxation effects on magnetostatic properties of a ferrofluid

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Ferrofluid particles with sufficiently small magnetic anisotropy show a non-permanent fixation of their magnetic dipoles. Anisotropy-controlled Néel relaxations of the magnetic moments within the particles determine the degree of correlation between field-induced particle alignment and magnetization of a ferrofluid. The influence of this correlation on the optical anisotropy in the liquid phase and the magnetization anisotropy of the textured ferrofluid in the solid phase have been investigated for a commercial water-based Fe_3O_4 magnetic liquid. The experimental data are compared to theoretically obtained results.