MICROMAGNETIC SIMULATIONS OF TEMPERATURE BEHAVIOUR OF Co FERROFLUID

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9.7 cm

The magnetic properties of a frozen ferrofluid composed of isolated Co-particles separated by a surfactant layer and a diester carrier were investigated with d.c. magnetisation measurements as well as micromagnetic modelling. The micromagnetic simulations were based on the resolution of the Landau-Lifchitz equation with the material parameters taken from the equivalent experimental data. With increasing temperature the decrease of coercitivity and the corresponding decrease of the remanence was obtained by including into the model the transition of single domain grains to a superparamagnetic state by lowering the energy barrier. The comparison of the numerical and experiment results reveals a good agreement that additionally verifies the expediency of the micromagnetic approach to the numerical simulations of frozen ferrofluids.

13.4 cm

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