



	Experiment title: Dynamics of magnetic colloids in dependence on external magnetic fields	Experiment number: SC1709
Beamline: ID10C	Date of experiment: from: 20.4.2005 to: 26.4.2005	Date of report: 16.2.2009
Shifts: 18	Local contact(s): Dr. Aymeric Robert	<i>Received at ESRF:</i>
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Report:

We investigate the structure and dynamics of charge-stabilized $\text{CoFe}_2\text{O}_4\text{-SiO}_2$ core-shell magnetic nanoparticles in suspensions. Small angle x-ray scattering and x-ray photon correlation spectroscopy allow us to analyze the intraparticle (core-shell) and interparticle structure of the suspension, as well as their dynamic and hydrodynamic behavior. Due to the weak magnetic interactions, the liquidlike structure is governed by screened Coulomb interactions. The hydrodynamic interactions of the measured systems are significantly stronger than predicted by current theories.

A. Robert, J. Wagner, T. Autenrieth, W. Härtl, and G. Grübel, *J. Chem. Phys.*, 122:084701, 2005.

