## PURE AND CORE-SHELL CoFe<sub>2</sub>O<sub>4</sub> NANOPARTICLES

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Pure cobalt ferrite nanoparticles as well as core-shell structures composed of two magnetic materials with different characteristics ferrimagnetic  $\text{CoFe}_2\text{O}_4$  core surrounded by an antiferromagnetic CoO surface layer, were prepared by a wet chemistry method. Microstructure and magnetic properties of these materials have been studied with Xray diffraction, transmission electron microscopy, <sup>57</sup>Fe Mössbauer spectrometry and static magnetic measurements. Pure  $\text{CoFe}_2\text{O}_4$  nanoparticles form agglomerates and their behaviour is dominated by the interparticle magnetostatic interactions. In turn the core/shell nanoparticles are more susceptible to thermal fluctuations as the antiferromagnetic shell effectively reduces the interparticle coupling. These particles display a superparamagnetic behavior with a single blocking temperature indicating a strong exchange coupling between magnetic moments of the core and shell.

-13.4 cm -

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 $9.7~\mathrm{cm}$