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Chemically synthesized FePt nanoclusters[1] VICTOR VELASCO, Instituto de Magnetismo Aplicado, UCM-ADIF-CSIC, P.O. Box 155, 28230, Las Rozas, Spain, FRANK ABEL, XIAOCAO HU, Department of Physics and Astronomy, University of Delaware, 217 Sharp Lab, Newark, DE 19716, United States, PATRICIA CRESPO, Instituto de Magnetismo Aplicado, UCM-ADIF-CSIC, P.O. Box 155, 28230, Las Rozas, Spain, GEORGE HADJIPANAYIS, Department of Physics and Astronomy, University of Delaware, 217 Sharp Lab, Newark, DE 19716, United States — FePt nanoparticles (NPs) are being widely investigated due to their high potential applications in magnetic recording media and biomedicine. These NPs are expected to be ideal candidates due to their excellent magnetic properties, such as high K and high Ms together with a high chemical stability. In this work, the FePt NPs have been synthesized by chemical routes according to the method reported by M. Chen *et al.*[2] At high temperature, surfactants together with iron pentacarbonyl are added to the solution and thermally decomposed. By controlling the injection temperature and the heating rate, we have been able to obtain homogeneous spherical clusters with an average size of 38 ± 10 nm formed by 5 nm-FePt NPs. These clusters are found to be superparamagnetic above Tb of 55 K whereas at 5 K exhibit a coercive field of 1.2 kOe. Furthermore, these NPs seem to be highly stable in water after replacing the surfactants by TMAOH. These clusters appear to be good candidates for MRI and hyperthermia applications.

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[2]M. Chen. J. P. Liu and S. Sun, J. Am. Chem. Soc. 2004, 126, 8394-8395.

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