CONTRIBUTED POSTERS

Nanoparticles (N)
Structural and Magnetic Characterization of Ni Nanoparticles Synthesized in Ionic Liquids

P.M.da Silva¹, S.R.Teixeira², G.Machado¹, M.C.M.Alves¹, J.Geshev² and J.Dupont¹

¹Instituto de Química-UFRGS, P.O.Box 15003, 91501-970, Porto Alegre, Brazil
²Instituto de Física-UFRGS, P.O.Box 15051, 91501-970, Porto Alegre, Brazil

Ni(0) nanoparticles were obtained by thermal decomposition (at 75 oC and 5 bar of molecular hydrogen) of the organometallic precursor bis(η⁴-1,5cyclooctadiene)nickel(0) in ionic liquids, derived of the cation 1-butyl-3-methylimidazolium with three different anions (Tetrafluoroborate, BF₄⁻, hexafluorophosphate, PF₆⁻, and bis-trifluorosulfonimidate, N(Tf)₂⁻). A colloidal suspension of Ni(0) nanoparticles was obtained after decomposition. X-ray diffraction and X-ray absorption spectroscopy show that approximately 3.0 nm Ni nanoparticles embedded in ionic liquids have an fcc cubic structure. These nanoparticles have a small size distribution as determined by transmission electron microscopy. Small-angle X-ray scattering shows that the colloid exhibits around 3.0 nm mean distance between the nanoparticles as well as some organization that depends on the anion, being more ordered for the BF₄⁻. Magnetization curves show a typical superparamagnetic behavior with no hysteresis. ZFC and FC thermal magnetization curves show typical superparamagnetic response with blocking temperatures around 100 K. They are interesting as new materials because they open an opportunity to use these colloid suspensions as a new class of magnetic fluids.

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