

Abstract Submitted
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Synthesis and characterization of iron platinum magnetic nanoparticles with controlled morphology and size¹ TRINIDY COMBS, Oberlin College, HAFSA KHURSHID, HARIHARAN SRIKANTH, University of South Florida — We report the synthesis and characterization of monodispersed iron-platinum nanoparticles by the thermal decomposition of organometallic compounds. First, platinum (Pt) seeds were synthesized at 100C, followed by the addition of iron pentacarbonyl via injection method in the presence of oleic acid and oleylamine surfactants. An immediate injection after the decomposition of Pt acetylacetonate made alloy nanoparticles of Pt nanoparticles, whereas its injection after a prolonged period of time formed mixed particles of iron oxide and Pt. Particle shape was tuned from spherical to cubic by varying molar ratios of oleic acid to oleylamine during the reaction. The particles' size was controlled by varying the injection temperature of the iron precursor. XRD was used to confirm the crystallographic phases of the samples. Particle size and shape were investigated using TEM. Magnetic properties indicated that as-synthesized FePt nanoparticles are superparamagnetic with a blocking temperature of 64 K for 7 nm and shifted to 29 K for 3 nm.

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