

Synthetic Characterization and Surface Modification of FePt Monodispersive Nanoparticles(99.01)

吳泓均, D. H. Wei, P. H. Chen, Y. D. Yao, 馬廣仁, 簡錫新

Mechanical Engineering

Engineering

ma600229@ms17.hinet.net

Abstract

Monodispersive FePt magnetic nanoparticles with hydrophobic ligand were chemically synthesized and with controllable surface-functional properties. In order to compare and select the high saturation magnetization of FePt nanoparticles, the synthesized solvents were changed to effectively increase magnetization due to the increased particle size and isolated distance of each nanoparticles. The surface modification of FePt nanoparticles by using mercaptoacetic acid (thiol) and 11-mercaptoundecanoic acid (MUA) as a phase transfer reagent through ligand exchange turned the nanoparticles hydrophilic, and the nanoparticles were water-dispersible. Transmission electron microscopy images indicate the nanoparticles slightly agglomerate after ligand exchange. FTIR spectra suggest that thiol and MUA bind to the FePt atoms of the surface, respectively.

Keywords:

Keyword : FePt, Chemically synthesized nanoparticles, surface-functional