

A simple process for metal oxide ($\text{Fe}_3\text{O}_4, \text{Mn}_3\text{O}_4$) nanoparticles in an aqueous solution

정의영, 유태경†
경희대학교
(tkyu@khu.ac.kr†)

We developed a facile aqueous-phase route to metal oxide ($\text{Fe}_3\text{O}_4, \text{Mn}_3\text{O}_4$) nanoparticles by reacting metal salt with alkylamine in the presence of polyethylenimine (PEI) as a stabilizer at relatively low temperature of 95°C without any post-treatment such as calcination or heating in an autoclave. Also, we studied the roles of alkylamine and PEI in the formation of metal oxide nanoparticles by measuring the pH change of the reacting solution during the reaction. The synthesized nanomaterials were characterized by using TEM, XRD, FT-IR and superconducting quantum interference device (SQUID). The synthesized nanoparticles have octahedron shape and narrow size distribution. We can easily remove for radioactive ion having negative charge, since the synthesized materials have a positive charge.