

A Study on Preparation of Iron Nanoparticles Dispersant Using Surfactants

김창영, 김창영, 이성철*, 문세기
한양대학교
(scyi@hanyang.ac.kr*)

Nanoparticles of metal, with a wide range of dimensions, are anticipated to yield size-dependent optical, electronic, magnetic and chemical properties suitable for applications in optoelectronic devices, catalysis and chemical and biosensors.

Especially iron nanoparticles have attracted special attention because they may be used in power-transformer cores and magnetic storage media as well as for catalysis.

Iron nanoparticles dispersant were prepared by the thermal decomposition of iron(III) acetylacetonate in the presence of reduction agent and stabilizing agent. The molecular of reduction agent led to the formation of the Fe(III) to the Fe(0) form and the stabilizing agent led to the formation of emulsion droplets possessing iron nanoparticles surrounded by stabilizing agent shell. The several stabilizing agent were compared to investigate an appropriate surfactant.

The morphology, structure, and composition of the nanoparticles ate studied by transmission electron microscopy(TEM), X-ray diffraction(XRD) and Thermogravimetric analysis(TGA).