Clustering Effect of Magnetic Nanocrystals: Molar Ratio Control of Double Layered Stabilizers

김봉준, 함승주*
연세대학교 화공생명공학과
(haam@yonsei.ac.kr*)

Water soluble clustered magnetic nanocrystals as precise diagnostic magnetic resonance imaging probes were prepared using the solvent evaporation nanoemulsion method. This physicochemical technique of magnetic core encapsulation using amphiphilic polymers as phase transfer agents to prepare mangetic nanoclusters of varying morphologies is very dependent on the composition of the oil phase and on the composition of the water phase (kinds of polymers, polymer concentrations, kinds of solvents, magnetic nanocrystal concentrations). Herein the oleic acid (primary layer) coated magnetic nanocrystals as the oil phase and the tween 80 (secondary layer) as the water phase were chosen with controlled molar ratio of the primary layer and the secondary layer to prove that the size of the magnetic nanoclusters and the magnetic resonance contrast effect are successfully controlled. The approach we used in this experiment provide that synthetic method of magnetic nanoclusters with optimized size and contrast effect and these optimization successfully performed by control not only the secondary layer but also primary layer of the magnetic nanoclusters.