

Highly efficient protein separation with multi-functionalized magnetic silica nanoparticles

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This work will present the development of the highly selective protein separation process with molecularly assembled silica coated magnetic nanoparticles as the cooperative functional groups. The surface modification was performed with functionalized organosilanes such as thiol-, disulfide-, and dodecyl- groups. The silica coated magnetic nanoparticles were directly produced by the sol - gel reaction of the tetraethyl orthosilicate precursor. The protein separation with cooperative functionalized magnetic nanoparticles was achieved for model protein such as bovine serum albumin (BSA) and Lysozyme (LSZ) at different pH conditions. This method has the advantages such as easy preparation, easy handling and extensive potential of biotechnology application.