

Surface Modification of Core/Shell($\text{Fe}_3\text{O}_4@\text{SiO}_2$) Hybrids Nanoparticles with B-Cyclodextrin

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Abstract: In general, Magnetic nanoparticles were used for developing target specific magnetic resonance imaging (MRI) contrasts agents and bio-separation applications. Surface modified of core/shell($\text{Fe}_3\text{O}_4@\text{SiO}_2$) nanoparticles were prepared from the reaction between $\text{Fe}_3\text{O}_4@\text{SiO}_2$ nanoparticles and monochlorotriazinyl- β -cyclodextrin (MCT- β -CD). Surface of core/shell($\text{Fe}_3\text{O}_4@\text{SiO}_2$) nanoparticles are modified by grafting with monochlorotriazinyl- β -cyclodextrin (MCT- β -CD) via this molecule contains chlorine atom. Considering the material importance of nano- materials, the method described herein would be beneficial in many areas, such as devices and sensors. The resulting hybrid nanoparticles($\text{Fe}_3\text{O}_4@\text{SiO}_2@\beta\text{-CD}$) was expected to be biocompatible and drug carrier for biomedical applications. The structure of the product was confirmed by FE-SEM(Field-emission Scanning Electron Microscope), FE-TEM(Field-Emission Transmission Electron Microscope), Energy Dispersive X-ray Spectroscopy, FT-IR(Fourier Transform Infrared Spectroscopy), DLS(Dynamic Light Scattering), TGA(Thermogravimetric Analysis), $^1\text{H-NMR}$ (^1H Nuclear Magnetic Resonance) and ESI-MS(Electrospray Ionization-Mass Spectrometry).

Keywords: Core/shell($\text{Fe}_3\text{O}_4@\text{SiO}_2$) nanoparticles, Magnetic nanoparticles, β -cyclodextrin, Monochlorotriazinyl- β -cyclodextrin(MCT- β -CD)

1. References

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