

SYNTHESIS AND CHARACTERIZATION OF β -cyclodextrin $\text{Ba}_3(\text{VO}_4)_2: \text{Dy}^{3+} @ \text{Fe}_3\text{O}_4$ AS A NANO CARRIER

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ABSTRACTS

In this study, β -Cyclodextrin functionalized $\text{Ba}_3(\text{VO}_4)_2: \text{Dy}^{3+} @ \text{Fe}_3\text{O}_4$ Nanoparticles were successfully prepared using co-precipitation method using ethylene glycol. The synthesized Hybrid magnetic nanoparticles were again functionalized with APTES followed by β -Cyclodextrin. The obtained luminescent magnetic nanoparticles can be used as a model hydrophobic drug. The synthesized luminescent magnetic nanoparticles were characterized by various analytical techniques including XRD, FTIR and photoluminescence (PL). The surface modification of individual Nanoparticles and their surface conjugation was confirmed by FTIR spectroscopy. X-Ray diffraction studies (XRD) reveals formation of a highly crystalline hybrid nanomaterials. Photoluminescence spectroscopy results confirmed the optical imaging capability of synthesized hybrid nanopaticles. A luminescent magnetic nanoparticle functionalized with β cyclodextrin was therefore a suitable synthetic procedure for the conversion of the nanoparticles into a drug nanocarrier.

Keywords: hybrid nanoparticles, β -cyclodextrin, Targeted drug vehicle, luminescent magnetic nanoparticle

