

Synthesis and Functionalization of MnFe_2O_4 Nano-Hollow Spheres for Optical and Catalytic Properties

Authors : Indranil Chakraborty, Kalyan Mandal

Abstract : Herein, we synthesize MnFe_2O_4 nano-hollow spheres (NHSs) of average diameter 100 nm through a facile template free solvothermal process and carry out a time dependent morphological study to investigate their process of core excavation. Further, a surface engineering of as-synthesized MnFe_2O_4 NHSs has been executed with organic disodium tartrate dihydrate ligand and interestingly, the surface modified MnFe_2O_4 NHSs are found to capable of emerging multicolor fluorescence starting from blue, green to red. The magnetic measurements through vibrating sample magnetometer demonstrate that room temperature superparamagnetic nature of MnFe_2O_4 NHSs remains unaltered after surface modification. Moreover, functionalized MnFe_2O_4 NHSs are found to exhibit excellent reusable photocatalytic efficiency in the degradation of cationic dye, methylene blue with rate constant of 2.64×10^{-2} min.

Keywords : nano hollow sphere, tartrate modification, multiple fluorescence, catalytic property

Conference Title : ICMSEM 2018 : International Conference on Materials Science, Engineering and Manufacturing

Conference Location : Rome, Italy

Conference Dates : May 03-04, 2018