

"SYNTHESIS OF ERBIUM-DOPED SILICA MICROSPHERES BY ACID-BASED METHOD FOR BIOLOGICAL APPLICATIONS"

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TÓM TẮT:

In this work we investigate and discuss the morphological properties and composition of Erbium - doped silica spheres, which can have interesting applications in bioimaging and biosensing. The base catalyzed reaction fails to fabricate Er - doped silica spheres because the RE ions immediately form an insoluble RE hydroxide. For this reason, an acid catalyzed reaction was used to form erbium - doped silica spheres. The molar composition of TEOS : CH₃COOH : H₂O was 1:4:4. Erbium ions were incorporated in the SiO₂ by replacing the water by an aqueous solution of ErCl₃.6H₂O. To avoid the polydispersible Er - doped silica spheres made by an acid catalyzed method, we use a base catalyzed reaction to fabricate a pure SiO₂ core with size about 600nm, after that a shell containing erbium was created by an acid catalyzed reaction. The morphology of Er - doped silica spheres was examined by Scanning electron microscopy (SEM) images and the appearance of erbium was examined by Energy Dispersive X - ray fluorescence spectrometer (EDXRF).