

ACID BASED SYNTHESIS OF ERBIUM-DOPED COLLOIDAL SiO₂ MICROSPHERES

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TÓM TẮT:

In this work we investigate and discuss the morphological properties and composition of Erbium – doped colloidal silica spheres, which can have interesting applications in bio-imaging and bio-sensing. The base catalyzed reaction fails to fabricate Erbium – 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. Erbium ions were incorporated in the SiO₂ by replacing the water by an aqueous solution of ErCl₃.6H₂O. To avoid the poly-dispersible Erbium – 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