Nanomatériaux

Characterization of zinc sulfide nanoparticles encapsulated in zeoliteY by MEB and UV–Vis spectroscopy

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Abstract

The present study deals with ZnS semiconductor nanoparticules incorporated in zeolite. The zeolitheY is synthesized using sol–gel method. In second, the Zn^{2+} ions are fixed on the zeolite by ionic exchange. Finally, γ rays are performed on Zn-Y with thiol; which leads to the generation of ZnS-Y nanoparticles. The location of ZnS nanoparticles inside zeolite hosts was confirmed by the blue-shifted reflection absorption spectra with respect to that of bulk ZnS materials. The model of the effective mass gives a
particle size varying from 1 to 2 nm, scanning electron microscopy (SEM) examinations show a porous morphology of the zeolite. After the adsorption of Zn^{2+} ions, an elongated shape of crystallites is observed. This shape is more marked and the faujasite porosity is reduced after the immersion of Zn-Y in RSH.

Keywords: Semiconductors; faujasite; ZnS nanoparticles; Zeolite Y; blue-shifted ;UV-Vis.