

# Characterization of zinc sulfide nanoparticles encapsulated in zeolite Y by MEB and UV–Vis spectroscopy

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## **Abstract**

The present study deals with ZnS semiconductor nanoparticles incorporated in zeolite. The zeolite Y is synthesized using sol–gel method. In second, the Zn<sup>2+</sup> ions are fixed on the zeolite by ionic exchange. Finally,  $\gamma$  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<sup>2+</sup> 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.