MgO nanoparticles in large mordenite matrix synthesized via the green chemistry route

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Among the different types of hosts which are used for the synthesized of semiconductor nanoparticles, Zeolites have been the focus of researches in the last few years. Due to the structure of zeolites, they are three- dimensional supper lattices in which semiconductor nanoparticles can be embedded. The nanocomposite properties can be changed either by modifying the superlattice structure through usage of different kind of zeolites, or by changing the type of semiconductor nanoparticles. Magnesium oxid (MgO) is a semiconductor with band gap (Eg 7.8 ev) which shows an excellent material for the fabrication of useful, various electronic and optoelectronic machines. Studies have shown that MgO is an effective antibacterial agent. In this study, MgO nanoparticles were synthesized through using solid-State method in the large mordenite matrix. The samples were characterized by X-Ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Transmission Electron Microscopy (TEM), and Scanning Electron Microscopy (SEM). The pattern of Xray diffraction shows that particles are synthesized in cubic form. TEM image show small spherical MgO nanoparticles with mean diameter of 14 nm.

Keywords : Large mordenite, MgO, Nanocomposite, TEM

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