S1-P.42

Characterization of TiO_2 Nanoparticles and ZnO/TiO_2 Composite Obtained by Hydrothermal Method

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ZnO and TiO_2 nanoparticles as well as ZnO/TiO_2 core/shell structures have been prepared by hydrothermal method and characterized by means of scanning electron microscopy, XRD and EDX analysis, FTIR and luminescence spectroscopy. Porous ZnO/TiO_2 nanocomposites with micron sized channels and walls consisting of nanoparticles with size of 30-80 nm for the ZnO component and 10-20 nm for the TiO_2 component have been obtained. Wurtzite and anatase strucrures have been revealed for the ZnO and TiO_2 constituents, respectively, from XRD analysis. The analysis of FTIR spectra indicates on a strong interaction of intrinsic atoms with species from organic solvents occurring at the surface of nanoparticles constituting the nanocomposite. A strong green emission coming from the TiO_2 component has been observed in luminescence spectra.