Short Communication

Growth of Well-aligned Ag-doped ZnO Nanorods Arrays on FTO Substrate Using Electrochemical Approach: Optical Properties and Photocatalytic Activity

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A simple electrochemical synthesis was successfully used for the growth of Ag-doped ZnO nanorods on fluorine-doped tin oxide to investigate the photocatalytic degradation activity. Photoluminescence (PL) spectroscopy and UV–Vis absorbance spectra at normal atmospheric conditions were used to examine the optical characteristics of the nanorods. Composition and morphology were investigated using energy-dispersive X-ray spectroscopy (EDX) and field emission scanning electron microscopy (FESEM). FESEM images show the synthesized Ag-doped ZnO nanostructures possess very high-density rod-shaped morphologies. UV-visible spectroscopy indicates a red shift in absorption peaks centered at 376 nm for Ag-doped ZnO nanorods in comparison to undoped ZnO nanorods. PL results reveal that initially as the Ag doping is done, the vision emission intensity decreases. Photocatalytic analysis of the samples shows the degradation rate increases by doping Ag ions into ZnO lattice structures which show much higher photocatalytic degradation rates.

Keywords: Ag-doped ZnO nanorods; Electrochemical method; Optical properties; Photocatalytic activity

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