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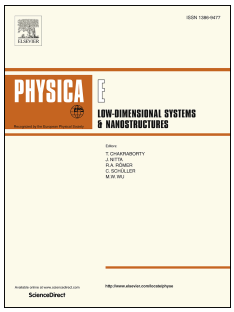

Optical properties and enhanced photocatalytic activity of Mg-doped ZnO nanoparticles

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Optical properties and enhanced photocatalytic activity of Mg-doped ZnO nanoparticles

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Abstract:

$Zn_{1-x}Mg_xO$ (x = 0.0, 0.03, 0.06, 0.09, 0.12, 0.15) nanoparticles were synthesized by chemical precipitation techniques using hydroxyoxalate type precursors. The XRD reveals hexagonal wurtzite structure in all the samples with crystallite size between33 to 35 nm. Grain Size and growth direction of lattice of the samples were determined using High Resolution Transmission Electron Microscopy (HRTEM). The doping of Magnesium (Mg) into the ZnO matrix in expected concentration was confirmed by Energy Dispersive X-ray (EDX) spectroscopy and Fluorescence (FL) spectroscopy. Fluorescence (FL) spectra exhibit an enhanced excitonic peak at 360 nm relating to near band edge emission for Mg doped ZnO nanoparticles. The enhancement of photocatalytic activity has been observed with the increase of Mg concentration in ZnO nanoparticles.

Keywords: Mg doped ZnO nanopowder, HRTEM, Fluorescence, Photocatalysis.

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