



Defect Mediated Blue Emission and Ferromagnetism in Ni doped ZnO Nanocrystals

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Abstract : This article deals with the synthesis and characterization of nickel doped zinc oxide nanopowder prepared by precipitation method. Synthesized nanopowders were analysed for morphological, structural and optical properties. X-ray diffraction study confirmed the substitution of nickel ion without disturbing the basic wurtzite structure of zinc oxide. The average crystalline size was found to increase on nickel doping as compared to undoped zinc oxide. The lattice constants also increased with nickel content. Scanning electron microscope study also confirmed the existence of particles in nanometer size. Furthermore, scanning electron micrograph established the increase of particle size on nickel doping. Tauc's relation shows that energy gap of zinc oxide decreases with the increase of nickel content. The violet and blue emission lines of photoluminescence spectrum also deep-rooted the substitution of nickel ion in zinc oxide.

Keywords : Nanoparticle; Energy gap; Crystal structure; Microstructure; Photoluminescence.

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