

**Structural and optical properties of  $Zn_xCd_{1-x}O$  nanoparticles****P.Malarkodi<sup>1</sup>, J.C. Kannan<sup>2</sup>**<sup>1</sup>Department of Physics, Kongu Engineering College, Perundurai, India<sup>2</sup>Department of Physics, K S R I T, Thiruchengode, India

**Abstract:**  $Zn_xCd_{1-x}O$  is a promising optical material to enhance the luminescence property for possible applications in luminescent devices. They have unique optical, thermal and structural properties. Zinc and Cadmium nanoparticles and Cd substituted ZnO nanoparticles with different concentration were prepared by microwave assisted method. The effect of Cd substituted ZnO concentrations on the crystal structure, morphology and optical properties of the nanoparticles was also investigated. Temperature is deemed as a key parameter for the formation of different morphologies of  $Zn_xCd_{1-x}O$  nanostructures. In this paper, we reported the synthesis of  $Zn_xCd_{1-x}O$  nanoparticles successfully with the diameter of 20nm. By using scanning electron microscope (SEM) the surface morphology of synthesized material was investigated. The structure and phases of  $Zn_xCd_{1-x}O$  were analyzed by powder X-ray diffraction (XRD) method and the optical properties were measured by using UV visible spectrophotometer and photoluminescence spectroscopy. The results suggest the applicability of these nano materials as transparent conductors in various solid state devices.

**Keywords:**  $Zn_xCd_{1-x}O$ ; microwave method, XRD, SEM, PL and Photoconductivity.

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