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## Zn doped CdO thin films with enhanced linear and third order nonlinear optical properties for optoelectronic applications

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### Abstract

Thin films of undoped and zinc doped CdO have been deposited on glass substrate using spray pyrolysis technique with various dopant concentrations of Zn such as 1, 5 and 10%. Influence of Zn doping on CdO thin films for the structural, morphological, optical and nonlinear optical properties are reported. XRD analysis reveals that as prepared pure and Zn doped CdO films show polycrystalline nature with face centered cubic structure. Also, Zn doping does not significantly modify the crystallinity and not much increase in the crystallite size of the film. SEM images shows grains which are uniform and grain size with increase in dopant concentration. The transmittance of the prepared CdO films recorded in the UV visible spectra and it shows 50 to 60% in the visible region. The estimated optical band gap increases from 2.60 to 2.70 eV for various dopant concentrations. The nonlinear

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Significant effect of film thickness on morphology and third-order optical nonlinearities of Cd<sub>1-x</sub>Zn<sub>x</sub>O semiconductor nanostructures for optoelectronics

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Role of Zn in tuning the band gap, surface morphology, photoluminescence and optical nonlinearities of CdO nanostructures for photonic device applications

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