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## Optical and Photocatalytic applications of synthesized Strontium doped Zinc oxide nanoparticles through chemical co-precipitation method

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### Abstract

Strontium (Sr) doped Zinc oxide (ZnO) nanoparticles were synthesized through a chemical co-precipitation method; ( $\text{Zn}_{1-x}\text{Sr}_x\text{O}$ ,  $x = 0.00, 0.025, 0.05, 0.075$ ). The synthesized nanoparticles underwent comprehensive characterisation employing XRD, FTIR, SEM, PL and UV-Visible spectroscopy techniques. XRD analysis showed that the nanoparticles exhibited a hexagonal wurtzite structure, with decreasing average crystalline size and lattice parameters corresponding to higher levels of strontium doping. FTIR spectroscopy confirmed vibrational stretching modes of octahedral and tetrahedral sites, through SEM analysis the form and morphology of the nanoparticles was determined, which showed wurtzite structures with flower like dimensions. UV-Vis DRS spectral studies showed a decline in the band gap with an incline in doping concentration. Photoluminescence studies exhibited a green emission peak. Additionally, photodegradation of these nanoparticles was assessed through degradation of MB dye. (Poster presentation)

Keywords: ZnO, Sr doped ZnO nanoparticles, optical performance, photocatalytic.

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