**Synthesis, Structural and Morphological Analysis of Zn doped (WO3) Tungsten Oxide Nanoparticles**

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**Abstract**

Zinc-doped tungsten trioxide (Zn-doped WO₃) nanoparticles were successfully synthesized using the co-precipitation method. The nanoparticles were prepared at varying temperatures, including room temperature, 100°C, and 400°C, to evaluate the influence of temperature on their structural and morphological properties. The synthesized nanoparticles were characterized using X-ray diffraction (XRD), scanning electron microscopy (SEM), and energy dispersive spectroscopy (EDS). XRD analysis revealed that the Zn-doped WO₃ nanoparticles exhibit a polycrystalline spherical structure with well-developed crystallinity. SEM images demonstrated that the degree of agglomeration increased significantly with a rise in synthesis temperature. This study highlights the impact of synthesis temperature on the structural and morphological features of Zn-doped WO₃ nanoparticles, providing valuable insights for their potential applications in various fields.

Keywords: Zn-doped WO₃ nanoparticles, co-precipitation, XRD, SEM, temperature-dependent synthesis.

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