

## Synthesis of ZnO Nanoparticles by Sol-gel Processing

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**Abstract:** Zinc oxide (ZnO) nanoparticles can potentially be applied to photo-catalysis, composite materials, chemical, gas, vapor, and humidity sensors and dye-sensitized solar cells due to their excellent optical, electrical, mechanical and chemical properties. The aim of this study was to synthesis and characterize ZnO nanoparticles by sol-gel technique. ZnO nanoparticles were prepared from zinc acetate dihydrate and oxalic acid dihydrate precursors and ethyl alcohol solvent. The effects of process parameters such as the solution molar concentration, pH and calcination temperatures on the size of the synthesized nanoparticles were investigated. Particle size of synthesized ZnO nanoparticles was determined by using a ZetaSizer. Structural and chemical properties of synthesized ZnO nanoparticles were investigated by X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR) respectively.

**Keywords:** Nanoparticles, sol-gel technique, zinc oxide, particle size, XRD.