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## Influence of different solvents on portrayal and photocatalytic activity of tin-doped zinc oxide

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### ABSTRACT

Tin doped zinc oxide (Sn-ZnO) nanoparticles were synthesized by precipitation-deposition method in different polar and non-polar solvents (2-propanol, acetonitrile, n-hexane and 3-Methyl-1-butanol). As-synthesized Sn-ZnO nanoparticles (NPs) were characterized by x-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), thermogravimetric analysis (TGA), Raman spectroscopy and photoluminescence (PL) techniques. Solvents showed variable effect on Sn-ZnO NPs physico-chemical characteristics. Sn-doped ZnO NPs showed smaller particle size in *n*-hexane versus 2-propanol and 3-methyl-1-butanol (isoamyl alcohol). Moreover, the doping of Sn was more favorable in the presence of non-polar solvent. As-synthesized Sn-ZnO NPs also showed a significant photocatalytic activity (PCA), which was more promising for Sn-ZnO versus ZnO. Results revealed that solvents (polar and non-polar) have variable effect for the doping of Sn with ZnO and Sn-ZnO NPs proved to be highly active photocatalyst.

**Keywords:** ZnO; Sn doping; solvent effect; photo-catalysis; nanoparticles

### 1. Introduction

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