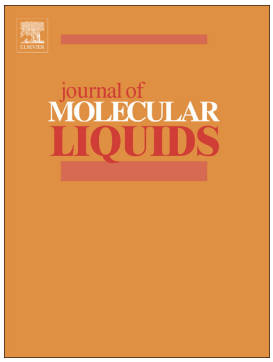

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PII: S0167-7322(18)30804-3
DOI: doi:10.1016/j.molliq.2018.03.074
Reference: MOLLIQ 8848

To appear in: *Journal of Molecular Liquids*

Received date: 13 February 2018
Revised date: 10 March 2018
Accepted date: 17 March 2018

Please cite this article as: Muhammad Arshad, Abdul Qayyum, Ghulam Abbas, Rizwan Haider, Munawar Iqbal, Arif Nazir , Influence of different solvents on portrayal and photocatalytic activity of tin-doped zinc oxide. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Molliq(2017), doi:10.1016/j.molliq.2018.03.074

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-proponol and 3-methyl-l-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 highly active photocatalyst.

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

1. Introduction