

Synthesis and Characterization Studies of Pure ZnO by Sol-Gel Method

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Abstract: *The pure ZnO nanoparticles were synthesized by Sol-Gel method. The synthesized samples are characterized by X-ray diffraction, energy dispersive x-ray (EDAX) analysis EDAX, UV-visible spectrometer, Scanning Electron Microscope. The XRD studies of the sample confirmed the formation of monoclinic structure and the particle size and lattice constants were analyzed. The XRD patterns show that the average particle size is in the range of 10nm for ZnO respectively. SEM results show Spherical shape for ZnO. A broad absorbance band from UV-Vis spectra is located at around 4.98eV. This is the simple synthesis method and they are used in optical and gas sensor applications, telecommunication cables, conductor wires, connector wires and automotive switches.*

Keywords: ZnO Sol-Gel Method

REFERENCES

- [1]. J.H. Li, X.R. Liu, Y. Zhang, F.F. Tian, G.Y. Zhao, Q.L.Y. Yu, F. L. Jiang, Y. Liu, Toxicity of nano zinc oxide to mitochondria, *Toxicol. Rev.* 1(2) (2012) 137-144.
- [2]. A. Nel, T. Xia, L. Madler, N. Li, Toxic potential of materials at the nanolevel, *Sci.* 311 (2006) 622-626.
- [3]. Gul Amin, (2012) ZnO and CuO Nanostructures: Low Temperature Growth, Characterization, their Optoelectronic and Sensing Applications, PhD thesis, Linkoping University, Sweden.
- [4]. Liu Changsong Li Zhiwen, Zhang Qifeng, *Microstructural*(2007) Evolution of well-aligned Zn On anorods array films in aqueous solution, *material science*, 22, 4, 603-606.
- [5]. G. Kenanakis, D. Vernardou, E. Koudoumas, N. Katsarakis,(2009) Growth of c-axis oriented ZnO nanowires from aqueous solution: The decisive role of a seed layer for controlling the wires diameter, *Journal of Crystal Growth*, 311, 4799-4804.
- [6]. Monika Gupta, Vidhika Sharma, Jaya Shrivastava, Anjana Solanki, A psingh Singh, V rsatsang R, Sdass and Rohit Shrivastav, (2009) Preparation and characterization of nanostructured ZnO thin films for photoelectron chemical splitting of water, *Bull. Mater. Sci.*, Vol. 32, 1, 23-30
- [7]. Hui Zhang, Xiangyang Ma, Jin Xu, Junjie Niu and Deren Yang, (2003) Arrays of ZnO nanowires fabricated by a simple chemical solution route, *Nanotechnology*, 14, 423-426
- [8]. V. Keerthika, A. Ananth, M.R. Rajan *Journal of Nanoscience and Technology* 4(4) (2018) 439-442 Visit Journal at <http://www.jacsdirectory.com/jnst>
- [9]. P.K. Giri, S. Bhattacharyya, D.K. Singh, R. Kesava-moorthy, B.K. Panigrahi, K.G.M. Nair, Correlation between microstructure and optical properties of ZnO nanoparticles synthesized by ball milling, *J. Appl. Phy.* 102(9) (2007) 1-8.