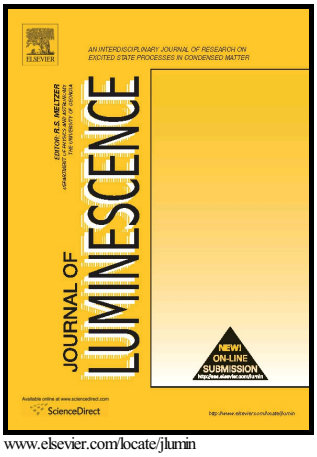

www.elsevier.com/locate/jlumin

Effect of Synthesis Parameters of Polyol technique on Photoluminescence Properties of ZnSe Nanoparticulates

S. Sathish, S. Balakumar

PII: S0022-2313(17)30362-9
DOI: http://dx.doi.org/10.1016/j.jlumin.2017.05.033
Reference: LUMIN14757

To appear in: *Journal of Luminescence*

Received date: 3 March 2017
Revised date: 12 May 2017
Accepted date: 12 May 2017

Cite this article as: S. Sathish and S. Balakumar, Effect of Synthesis Parameter of Polyol technique on Photoluminescence Properties of ZnSe Nanoparticulates *Journal of Luminescence,* http://dx.doi.org/10.1016/j.jlumin.2017.05.033

Effect of Synthesis Parameters of Polyol technique on Photoluminescence Properties of ZnSe Nanoparticulates

S. Sathish, S. Balakumar*

National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus,

Chennai 600 025, India

***E-mail: balasuga@yahoo.com**

Abstract:

The physical and chemical properties of nanomaterials significantly depend upon the morphological factors such as size and shape. In this work, the mono-dispersed ZnSe nanoparticulates have been prepared by polyol method at different synthesis conditions. The XRD and Raman results showed that the reaction time is the key parameter in the formation of phase pure ZnSe nanoparticulates. The ZnSe nanoparticulates prepared for 3 h reaction time have Se impurity even at higher concentration of hydrazine whereas the samples prepared for 5 h and above have pure phase. The FESEM images of nanoparticulates showed that all the samples have spherical morphology and HRTEM images evidently confirmed that, as reaction time increased the particles size increased gradually. Optical studies illustrate that the band gap value of the nanoparticulates prepared at 10 h has lowest value and the photoluminescence intensity of these nanoparticulates is decreased significantly. The possible reasons for this behavior have been detailed.

Keywords: Zinc Selenide; Polyol; Photoluminescence; Nanoparticulates.