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Lanthanum phosphovanadate phosphors: Effect of terbium concentration

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Terbium activated lanthanum phosphovanadate phosphor powders were synthesized using solution combustion method. The concentration of terbium was varied from 1 – 10 mol %. The X-ray diffraction (XRD) indicated that all different concentrations exhibit the same trend, implying that dopant concentration on host did not affect crystal structure. Scanning electron microscopy (SEM) images show that the prepared phosphors consisted of agglomeration of particles of different shapes but when samples are put under high temperatures, clear shapes appeared. Energy dispersive x-ray spectroscopy (EDS) confirmed the presence of all main elements forming the desired compound. The band gap energies were estimated from Kubelka-Munk plot and they were found to range from 3.1 to 4.3 eV. The photoluminescence (PL) spectra show four emission peaks corresponding to transitions of terbium. The optimum concentration for this work was found to be 7 mol %. These materials are evaluated as possible candidates to improve the power conversion efficiency of dye sensitized solar cells.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

Main supervisor (name and email) and his / her institution

Tshabalala KG
tshabalalag@ufs.ac.za

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

Primary author: Mr MOLOI, Teboho (University of the Free State)

Co-authors: Dr TSHABALALA, Kamohelo George (University of the Free State); Prof. NTWAEABORWA, Odireleng (University of the Witwatersrand); Mr MOTLOUNG, Selepe Joel (University of the Free State)

Presenter: Mr MOTLOUNG, Selepe Joel (University of the Free State)

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