



Contribution ID: 337

Type: Poster Presentation

Effect of annealing temperature on the structure, morphology and optical properties of Sm^{3+} doped lanthanum phosphovanadate

Tuesday, 5 July 2016 16:10 (1h 50m)

Abstract content
 (Max 300 words)
 http://events.saip.org.za/getFile.py/target=_blank
 Formatting & Special chars

This work explores the influence of annealing temperature on the Sm^{3+} activated lanthanum phosphovanadate phosphor powders prepared by solution combustion method. The prepared phosphor powders were annealed at different temperatures (600–1000 °C) for 2 hours. The structure and surface morphology were investigated by X-ray diffraction (XRD) and scanning electron microscopy (SEM) respectively. The XRD analysis indicated that as the annealing temperature is increased, the crystal structure of the prepared phosphor powders changed from monoclinic to tetragonal phase. The SEM images showed different morphologies and sizes. The estimated band gap from diffuse reflectance spectra (DRS) is ~ 3 eV. The excitation spectra showed a strong broad band extending from 200 to 350 nm with maximum at $\lambda = 273$ nm. The photoluminescence result showed three emission peaks and they are attributed to ${}^6\text{G}_{5/2} \rightarrow {}^6\text{H}_{5/2}$, ${}^6\text{G}_{5/2} \rightarrow {}^6\text{H}_{7/2}$ and ${}^6\text{G}_{5/2} \rightarrow {}^6\text{H}_{9/2}$ transitions of Sm^{3+} ion.

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

No

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

PhD

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

Prof OM Ntwaeaborwa

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

Yes

**Please indicate whether
this abstract may be
published online
(Yes / No)**

No

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

Co-authors: Dr TSHABALALA, Kamohelo George (University of The Free State); Dr SHAAT, Samy (Islamic University of Gaza Palestine)

Presenter: Dr TSHABALALA, Kamohelo George (University of The Free State)

Session Classification: Poster Session (1)

Track Classification: Track A - Division for Physics of Condensed Matter and Materials