



Contribution ID: 132

Type: Oral Presentation

The influence of ammonium hydroxide solution on ZnAl₂O₄ nanophosphor prepared by chemical bath deposition method

Friday, 12 July 2019 12:00 (20 minutes)

ZnAl₂O₄ powders were prepared by chemical bath deposition (CBD) method by varying ammonium hydroxide solution (AHS). The volume of the AHS was varied from 5 – 100 mL in order to determine the optimum volume that is needed for preparation of ZnAl₂O₄ powders. The effect of AHS volume on the structure, morphology, and optical properties of ZnAl₂O₄ powders was investigated. The X-ray diffraction (XRD) patterns showed that the powder samples correspond to the cubic crystalline ZnAl₂O₄ phase. The intensity of the most intense peaks increased with the increase in volume of AHS up to 50 mL. The scanning electron microscopy (SEM) results revealed that the AHS volume does not influence the surface morphology of the prepared powders. Transmission electron microscopy (TEM) confirmed that the prepared samples are in a nanoscale region and cubic. Elemental energy dispersive (EDS) analysis confirmed the presence of the expected elements. The ultraviolet - visible (UV – vis) spectra showed that by varying the volume of AHS influenced the band gap (Eg). The photoluminescence (PL) results revealed that 50 mL has the highest intensity.

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

No

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

N/A

Primary author: Mrs MHLONGO, Motlalepula Rebecca (Sefako Makgatho Health Sciences University)

Co-authors: Prof. SWART, Hendrik (University of the Free State); Mr KOAO, Lehlohonolo (UFS (Qwa Qwa Campus)); Prof. KROON, R. E. (University of the Free State); Prof. MOTLOUNG, Setumo Victor (SMU)

Presenter: Mrs MHLONGO, Motlalepula Rebecca (Sefako Makgatho Health Sciences University)

Session Classification: Physics of Condensed Matter and Materials

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