



Contribution ID: 154

Type: Poster Presentation

Annealing-Driven Structural and Optical Properties in $\text{BaAl}_2\text{O}_4/\text{MgAl}_2\text{O}_4:\text{Tb}^{3+}$ Mixed-Phase Nanophosphors Prepared by Citrate Sol-Gel Method

In this study the mixed phases $\text{BaAl}_2\text{O}_4/\text{MgAl}_2\text{O}_4: 0.1 \text{ Tb}^{3+}$ (BM:0.1% Tb^{3+}) nanophosphors were prepared via the citrate sol-gel method. The structural and optical properties were investigated by varying the annealing period from 1 hour to 5 hours, while keeping the annealing temperature at 1000°C and the doping concentration of 0.1% Tb^{3+} constant. The phase quantification of the X-ray diffraction (XRD) indicated that the mixed phases are composed of the hexagonal BaAl_2O_4 and cubic MgAl_2O_4 crystal structures. The Scanning Electron Microscope (SEM) results showed that AP influenced the morphology of the prepared samples, and the Energy dispersive X-ray spectroscopy (EDS) confirmed the expected elemental composition of Ba, Mg, Al, O and Tb^{3+} . Transmission Electron Microscope (TEM) confirmed the particle size of the prepared sample is in nanoscale range. The effects of the annealing period were observed on Photoluminescence (PL) results showed multiple emission peaks which were attributed to BaAl_2O_4 and $\text{MgAl}_2\text{O}_4 \text{ Tb}^{3+}$ transitions.

Apply for student award at which level:

PhD

Consent on use of personal information: Abstract Submission

Yes, I ACCEPT

Primary author: RATLHAGANE, Caroline

Co-authors: Dr BELE, A. (Sefako Makgatho Health Sciences University); Dr MATLOU, G. G. (Sefako Makgatho Health Sciences University)

Presenter: RATLHAGANE, Caroline

Session Classification: Poster Session

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