**SAIP2013** 



Contribution ID: 559

Type: Poster Presentation

# Synthesis and characterization of luminescence properties of CaAl2O4:Eu2+,Tm3+ phosphors powder

Tuesday, 9 July 2013 17:40 (1 hour)

### Abstract content <br> &nbsp; (Max 300 words)

Photoluminescent powders of CaAl2O4 co-doped with Eu2+ and Tm3+ ions prepared by combustion method were studied. The reaction temperature used was about 500oC. The effect of different excitation wavelength on the luminescent properties of the phosphor is discussed. The as prepared samples were compared with the samples annealed in air at the temperature of 450 oC. The annealing temperature of 450oC used was estimated from the TGA curve of the CaAl2O4:Eu2+,Tm3+ sample. Red emission peaks from the unreacted Eu3+ ions were measured. The emission spectra of the as prepared and annealed samples were compared. Wavelength selective excitations show that the 200 and 360 nm give the intense emission from Tm3+ ions. Bright emission from all emitting centers (Tm3+, Eu3+ and Eu2+ ions) was measured when the excitation wavelengths of 250, 260, 285 and 300 nm were used. The most intense red emission from Eu3+ ions was observed at the excitation wavelength of 230 nm.

Corresponding author: e-mail dhlamms@unisa.ac.za Fax: +27 12 429 2716, Tel: +27 12 429 3643

Keywords: Photoluminescence, Excitation wavelength, Phase transition, Combustion, Luminescence

### Apply to be<br> considered for a student <br> &nbsp; award (Yes / No)?

No

### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD)?

N/A

#### Main supervisor (name and email)<br>and his / her institution

N/A

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

No

Primary author: Prof. DHLAMINI, Mokhotjwa Simon (University of South Africa)

**Co-authors:** Dr MOTHUDI, Bakang Moses (University of South Africa); Dr MHLONGO, Gugu Hlengiwe (Council for Scientific and Industrial Research); Prof. SWART, Hendrik (University of the Free State); Prof. NT-WAEABORWA, Odireleng Martin (University of the Free State); Prof. HILLIE, Thembela (Council for Scientific and Industrial Research)

**Presenter:** Prof. DHLAMINI, Mokhotjwa Simon (University of South Africa)

Session Classification: Poster1

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