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## Characterization of cerium doped yttrium gadolinium aluminate garnet (Y-Gd)<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Ce<sup>3+</sup> phosphor thin films fabricated by pulsed laser deposition

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**Abstract content** &nbsp; (Max 300 words) <a href="http://events.saip.org.za/getFile.py/a" target="\_blank">Formatting & Special chars</a>

Thin films of cerium doped yttrium gadolinium aluminate garnet (Y-Gd)<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Ce<sup>3+</sup> (YGAG:Ce) were deposited on Si(100) substrates by a pulsed laser deposition (PLD) technique using a 266 nm NdYAG pulsed laser under varying deposition conditions, namely; substrate temperature, substrate – target distance, number of laser pulses and the working atmosphere during the film deposition process. Luminescent films have significant technological applications in high resolution display devices such as electroluminescent devices, cathode-ray tubes (CRTs), television screens, fluorescent lamps, plasma display panels and field emission displays (FED's). The effect of substrate temperature, number of laser pulses, working atmosphere and annealing temperatures on the structure and morphology properties of the (YGAG:Ce) thin film phosphor were analysed. Photoluminescence (PL) data were collected in air at room temperature using a 325 nm He-Cd Laser. The films with well-defined grains (rougher surfaces) showed higher PL intensity compared to films with poorly-defined grains (smooth surfaces) as confirmed from the atomic force microscopy data [1]. A slight shift in the wavelength of the PL spectra was observed from the thin films when compared to the PL spectra of the phosphor in powder form which is probably due to a change in the crystal field. The PL intensity increased with an increase in the substrate temperature [2].

### References

- (1) Nsimama P. D. PhD thesis, University of the Free State 2010.
- (2) J.J. Dolo, H.C. Swart, E. Coetsee J.J. Terblans, O.M. Ntwaeaborwa, B.F. Dejene, Hyperfine Interact 2010 197,129 –134.

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

YES

**Level for award (Hons, MSc, PhD)?**

PhD

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

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

YES

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