



Contribution ID: 307

Type: Oral Presentation

Characterisation of the optical thermometry properties of a phosphor material

Tuesday, 5 July 2016 15:20 (20 minutes)

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

This study is focused on the investigation of the optical thermometry properties of Lanthanum Oxysulphide doped with Europium (La₂O₂S:Eu) phosphor material by utilising an in-house modified Photo-luminescence (PL) system. After a literature study it was concluded that the optical thermometry properties of phosphor materials can be measured by several techniques. The technique discussed in this presentation is the fluorescence intensity ratio technique where the fluorescence spectra of a phosphor material was obtained and the intensity ratio between two thermally coupled levels was monitored. The peak intensities of the different PL peaks due to the different transitions from Eu³⁺ in La₂O₂S:Eu were monitored at different temperatures. It was clear that La₂O₂S:Eu can be used as a temperature sensor. The viability of La₂O₂S:Eu as a stable temperature sensor was also evaluated by investigating its structural and chemical properties by utilising the X-ray Diffraction and X-Ray Photo-electron Spectroscopy techniques.

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

Yes

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

MSc

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

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No

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Yes

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Session Classification: Applied Physics (1)

Track Classification: Track F - Applied Physics