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Characterisation of the optical thermometry properties of a phosphor material

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Abstract content
   (Max 300 words)
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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 it's structural and chemical properties by utilising the X-ray Diffraction and X-Ray Photo-electron Spectroscopy techniques.

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Professor J.J. Terblans, terblansjj@ufs.ac.za , University of the Free State

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Primary authors: Prof. TERBLANS, JJ (Koos) (UFS); Mr ERASMUS, Lucas (University of the Free State)

Co-author: Prof. SWART, Hendrik (University of the Free State)

Presenter: Mr ERASMUS, Lucas (University of the Free State)

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