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## Measuring the optical thermometry properties of a phosphor

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

This study is focused on the investigation and measurement of optical thermometry properties of different phosphors by utilising the Photoluminescence (PL) technique. After a literature study it was concluded that the optical thermometry properties of phosphors can be measured by two techniques. Firstly the fluorescence intensity ratio technique, where fluorescence spectra of a phosphor is obtained and the intensity ratio between two thermally coupled levels are monitored as a function of temperature. The second technique is where an excited phosphor's fluorescence peaks are monitored as relaxation takes place. The fluorescence half-life of the phosphor is determined as a function of temperature. Currently the PL system in the Physics department at the University of the Free State is capable of measuring fluorescence spectra of a phosphor at room temperature and thus the aim of this study is to enhance the current system to investigate and measure the optical thermometry properties of different phosphors at different temperatures by using both these techniques. The preliminary results obtained and the custom build system will be discussed in detail.

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

Yes

**Please indicate whether this abstract may be published online (Yes / No)**

Yes

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