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## The influence of the number of pulses and post annealing on the morphology and photoluminescence properties of CaS: Eu<sup>2+</sup> pulsed laser deposited thin films

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

Thin films of CaS: Eu<sup>2+</sup> have been deposited on Si (100) substrates using the pulsed laser deposition (PLD) technique employing a 266-nm pulsed Nd: YAG laser. The influence of the number of pulses, and annealing on the photoluminescence properties of the grown films has been studied. The crystalline quality, surface morphology and photoluminescence (PL) properties of deposited films were characterized by X-ray diffraction (XRD), atomic force microscopy, scanning electron microscopy and photoluminescence spectroscopy. The roughness of the films increased with increase in the number of pulses. The PL intensity of the CaS: Eu<sup>2+</sup> films is dependent on the surface roughness of the films, with PL intensity increasing as the number of pulses is increased. XRD studies demonstrated an improvement in crystallinity of CaS: Eu<sup>2+</sup> thin films upon annealing, thus greatly improving the PL intensity. From these initial studies, thin films of this phosphor are promising for applications in phosphor-converted light emitting diodes.

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