

Luminescent Investigations of CaS: Eu²⁺ phosphor Thin Films Prepared by the method of Pulsed Laser Deposition

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The main objective of my work is to employ the technique of pulsed laser deposition (PLD) to form thin films of Calcium

Sulfide (CaS) doped with Eu^{2+} ions. The structure, morphology and optical properties of the thin films deposited under different parameters will be investigated.

An intense red photoluminescence (PL) broad band was observed at 650 nm from the powder excited at 484 nm. Thin films formed at substrate temperatures lower than 400° C have been found to be amorphous while increase of substrate temperature improved the crystallinity of the thin films and hence the observed better PL.

The pulsed laser deposited thin films of CaS: Eu^{2+} are proposed as potential candidates for applications in LEDs for lighting.

Some results of the investigations are presented in figure 1.



Fig 1: a) Powder PL, b) Thin film PL different substrate temp, c) & d) SEM different laser wavelengths