

## Analysis of $\text{Eu}^{3+}$ emission from different sites in $\text{Lu}_2\text{O}_3$ .

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$\text{Lu}_2\text{O}_3$  doped with Eu of varying concentrations was prepared using a convenient combustion technique. Emissions from two different crystallographic sites,  $C_2$  and  $S_6$ , were found and analyzed. Using various spectroscopic techniques, luminescence of  $\text{Eu}^{3+}$  exclusively from site  $C_2$  or site  $S_6$  could be detected. Kinetics of both emissions was characterized and time constants of 1.5 and 4.3 ms were found, respectively. Energy transfer from  $\text{Eu}^{3+}$  in site  $S_6$  to  $\text{Eu}^{3+}$  in site  $C_2$  was proved to take place when the dopant content reaches about 1% or higher. For rising activator concentration the transfer becomes more efficient and for heavily doped samples the emission from  $S_6$  site lasts in a vestige form only. The only emission transitions detected from Eu in centrosymmetric site  $S_6$  were the  ${}^5\text{D}_0$ – ${}^7\text{F}_1$  three-line band.

### Adres publiczny

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