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Synthesis and Characterization of Structural and Luminescent properties of long afterglow CaAl_2O_4 : Eu^{2+} , Nd^{3+} , Dy^{3+} nano-scaled phosphors by solution – combustion technique.

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Long afterglow calcium aluminate phosphors doped with Eu^{2+}

Eu^{2+} and co-doped with Nd^{3+} /or Dy^{3+} (CaAl_2O_4 : Eu^{2+} , Nd^{3+} , Dy^{3+}) were fabricated by urea-nitrate solution – combustion method at 500 °C. The effects of varying concentrations of Ca:Al and co-dopants molar ratio (Nd^{3+} : Dy^{3+}) on the structural and luminescent properties of the phosphor were investigated. It was observed that Ca:Al molar ratios greatly affect the crystalline structure of the material. The results of the X-ray diffraction (XRD) analysis reveal that the formation of several crystalline phases depends on the molar ratios of the host material. The peaks show the presence of other phases such as $\text{Ca}_3\text{Al}_2\text{O}_6$ and CaAl_4O_7 but the predominant phase formed was that of CaAl_2O_4 . As the concentration of Ca ions increase, the peak intensity increase which led to formation of monoclinic CaAl_2O_4 as a single phase for the 1.5PL studies revealed a general rise in intensity with increase in the mole ratio of Ca:Al. The highest PL intensity was observed with 1.5

Level (Hons, MSc, PhD, other)?

M.Sc

Consider for a student award (Yes / No)?

Yes

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

Yes

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