

Synthesis and Photoluminescence Studies of an Orange Red Color Emitting novel $\text{CaAl}_2\text{O}_4:\text{Sm}^{3+}$ nanophosphor for LED Applications

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Abstract

A novel $\text{CaAl}_2\text{O}_4:\text{Sm}^{3+}$ (1 – 9 mol%) was synthesized by solution combustion method by using ODH as a fuel. The final product was well characterized by PXRD, DRS, SEM, TEM and PL. The PXRD profile of $\text{CaAl}_2\text{O}_4:\text{Sm}^{3+}$ well matched with JCPDS NO.172155. The average crystallite sizes are found to be in the range 20 - 40 nm. From Diffuse Reflectance Spectra, the energy gap of the samples were calculated and found to be ~ 2.6 - 3.1 eV. The PL emission peaks centered at ~ 564, 601 and 647

Keywords

Combustion synthesis; Nanophosphor; Light emitting diodes; Photoluminescence