Spectroscopic Properties of Rare Earth Activated Phosphor for Solid State Lighting Applications

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Abstract

Trivalent rare earth doped phosphors were successfully synthesized following various synthesis procedures. Structural, morphological and photoluminescence properties of the derived phosphor have been investigated. Phase purity and crystal structure were confirmed by x-ray diffraction (XRD) studies as all the diffraction peaks were in accordance with the standard JCPDS pattern. Field emission scanning electron microscope (FE-SEM) was employed to observe the morphology and particle size of the as-synthesized sample. Photoluminescence properties and effect of concentration on the luminescence properties were measured and discussed in detail. CIE chromaticity coordinates and correlated colour temperatures of the synthesized phosphors were estimated using the emission spectra. Aforementioned results designate that the synthesized phosphor is expected to be a potential candidate for solid state lighting applications.