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Rare earth doped lanthanum strontium borate ($\text{La}_2\text{Sr}_3(\text{BO}_3)_4$: $x\text{Tb}^{3+}$) polycrystalline green phosphors

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Recently, great efforts have been made to develop efficient phosphor systems. Among these, a number of works have been carried out on investigations of the luminescent properties for borates, aluminates and garnets [1, 2]. Since the first white light emitting diodes (W-LED's) became commercially available, it has attracted great attention for their obvious advantages such as long lifetime, high luminescence efficiency, low power consumption and environmental friendliness, consequently they are expected to replace incandescent and fluorescent lamps for general lighting application in the future. Good glass host is very important for efficient luminescence of rare-earth ions. Borate glass is a suitable optical material with high transparency, low melting point, high thermal stability and good rare-earth ions solubility. Among them, $\text{La}_2\text{Sr}_3(\text{BO}_3)_4$ is one of the best candidates for the desired host materials of phosphors, and $\text{La}_2\text{Sr}_3(\text{BO}_3)_4:x\text{Tb}^{3+}$, as a green phosphor could be possibly used extensively in future in plasma display panels. Tb^{3+} -doped phosphors are considered more important due to their efficiency in the display of sharp and intense green emission at 544 nm due to an electronic transition of $5\text{D}_4\text{-}7\text{F}_5$. In this paper, we report combustion synthesis of some important, borate based, PL phosphors using commonly available fuels and oxidizers.

Are you currently a postgraduate student? (Yes/No)

Yes

At what level of studies are you currently? (Hons/MSc/PhD)

MSc

Please provide the name and email address of your supervisor.

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