Investigation of the Effect Of Ce^{3+} Doping on The Luminescent Properties of $Baal_2o_4:Ce^{3+}$.

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B136/12173/2015

Abstract

Discovery and invention of different luminescent material has greatly contributed to the growth of the global economy, especially the technology. Different elements especially the lanthanides have been research in terms of their properties which plays a great role in the Nano phosphor industry.

In this study I considered properties of $BaAL_2O_4.Ce^{2+}$ purposely its luminescent properties when codoped with some of the lanthanides elements which include cerium (Ce), .This elements acts as activator ions they tend to increase the afterglow duration when codoped with different phosphor materials. Their effects vary depending on the number and type of ligands directly attached on the metal center of the complex forming the phosphor.

In this work I studied the effect of Ce^{2+} of different masses when doped on the luminescent properties of $BaAL_2O_4.Ce^{2+}$ Nano phosphor. In this samples of $BaAI_2O_4.Ce^{3+}$ phosphor used in this study will be synthesized using the solution - combustion method. The starting raw materials used in the preparation consisted of analytical pure grade Ba $(NO_3).4H_2O$, AI $(NO_3)_3$., Ce $(NO_3)_3$ and urea (CO (NH2)2) weighed in proportion to the chemical composition of $BaAI_2O_4.Ce^{3+}$ and also deionized water, magnetic stirrer and furnace will be included as apparatus for easy of doing the experiment and finding of more accurate results.

The mixture will be dissolved in 10 ml of de-ionized water and stirred for 15 minutes at ambient temperature using a magnetic stirrer to obtain a uniform saturated aqueous solution. The solution will be then poured into several crucibles and each placed in a muffle furnace pre-heated to 500^0C. The final product will be stored in glass bottles while awaiting characterization.