



Contribution ID: 47

Type: Oral Presentation

## Investigation of Luminescence Properties of Dy<sup>3+</sup> Doped different Alkaline based White-light emitting Phosphors

Wednesday, 6 July 2016 14:40 (20 minutes)

**Abstract content** <br> &nbsp; (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/?target="\_blank">Formatting &<br>Special chars</a>

Dy<sup>3+</sup> doped different alkaline based sodium-phosphate (NaMPO<sub>4</sub>, where M= Mg, Ca, Sr and Ba) phosphors were prepared by solution combustion method. The prepared phosphors were characterized by powder X-ray diffraction, field emission scanning electron microscope (FE-SEM), fluorescent spectrophotometry and UV–vis spectroscopy. The XRD and FE-SEM results confirm that the samples contain mixed phases of crystals. The band gap of the phosphors was calculated from diffuse reflectance spectra data using the Kubelka–Munk function. The excitation spectra of the phosphors showed a broad band extending from 250 to 500 nm, which are characteristics of near ultraviolet (NUV) excitation wavelength for light emitting diode (LED). Upon near-UV excitation, the phosphor emits intense blue and yellow with a weak red band emissions, which originate from 4F<sub>9/2</sub>→6H<sub>15/2</sub>, 6H<sub>13/2</sub>, 6H<sub>11/2</sub> transitions of Dy<sup>3+</sup> ion. Different results on the luminescence features of Dy<sup>3+</sup>:NaMPO<sub>4</sub> will be discussed on the basis of crystal structure. The effect of the Dy<sup>3+</sup> concentration on the luminescence properties of NaMPO<sub>4</sub>:Dy<sup>3+</sup> phosphors will also be discussed. The calculated CIE coordinates were found to be lying in the white region of the horse shoe plot of color gamut. All the results imply that the Dy<sup>3+</sup>:NaMPO<sub>4</sub> phosphors could be used as a NUV excited white LEDs.

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**Session Classification:** Division for Physics of Condensed Matter and Materials (1)

**Track Classification:** Track A - Division for Physics of Condensed Matter and Materials