

Accepted Manuscript

A novel red emitting Eu^{3+} doped calcium aluminozincate phosphor for applications in w-LEDs

Sumandeep Kaur, M. Jayasimhadri, A.S. Rao



PII: S0925-8388(16)34068-3

DOI: [10.1016/j.jallcom.2016.12.150](https://doi.org/10.1016/j.jallcom.2016.12.150)

Reference: JALCOM 40072

To appear in: *Journal of Alloys and Compounds*

Received Date: 9 August 2016

Revised Date: 28 October 2016

Accepted Date: 12 December 2016

Please cite this article as: S. Kaur, M. Jayasimhadri, A.S. Rao, A novel red emitting Eu^{3+} doped calcium aluminozincate phosphor for applications in w-LEDs, *Journal of Alloys and Compounds* (2017), doi: 10.1016/j.jallcom.2016.12.150.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A novel red emitting Eu^{3+} doped Calcium Aluminosilicate Phosphor for Applications in w-LEDs

Sumandeep Kaur, M. Jayasimhadri * and A.S.Rao*

*Department of Applied Physics, Delhi Technological University,
Bawana Road, New Delhi-110 042, India.*

Abstract

A novel calcium aluminosilicate phosphor doped with Eu^{3+} ions has been synthesized by conventional solid state reaction method and characterized by using X-ray diffraction (XRD), Scanning Electron Microscope (SEM), Diffuse Reflectance Absorbance (DRA) and Spectrofluorophotometer to study the structural, morphological and photoluminescence (PL) properties. All the XRD peaks are matching well with the standard ICDD card confirm that the prepared phosphors consist of single phase orthorhombic structure ($\text{Ca}_3\text{Al}_4\text{Si}_2\text{O}_{10}$) having Pbc2 space group. The PL spectra recorded under near-UV/blue excitations demonstrates a very distinct and intense red emission from all the phosphors. In the present investigation, we found that 2 mol% of Eu^{3+} ions concentration is optimum in this host to give intense red emission. This result is also in consistent with the CIE chromaticity coordinates measured from the PL spectra of the samples under investigation. The results obtained for the optimized phosphor in the present investigation such as PL and CIE coordinates ($x= 0.629$ and $y= 0.370$) are close to the commercial red phosphor $\text{Y}_2\text{O}_3\text{:Eu}^{3+}$ ($x= 0.622$ and $y= 0.351$) and also very near to the coordinates specified by National Television Standard Committee (NTSC).

*Corresponding authors: **E-mail:** drsrallam@gmail.com, Tel: +91-85860 39007
jayaphysics@yahoo.com, Tel: +91-9013553360

Download English Version:

<https://daneshyari.com/en/article/5460649>

Download Persian Version:

<https://daneshyari.com/article/5460649>

[Daneshyari.com](https://daneshyari.com)