SAIP2012

Contribution ID : 177

Luminescence studies of a solution-combustion synthesized of blue-green $BaAl_xO_y:Eu^{2+},Dy^{3+}$ nanophosphors

Tuesday 10 Jul 2012 at 17:30 (02h00')

Abstract :

Blue-green luminescent BaAl2O4:Eu2+,Dy3+ phosphor powders were synthesized using the solution combustion method. The effects of preparation conditions such as the variation of amount of urea and the addition of boric acid as flux on the structural and luminescence properties of the powders were investigated. The phosphors were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM) and fluorescence spectrophotometer. In the combustion reaction process, the contents of urea determine the adiabatic temperature of combustion and the reaction sustainability which both influence the formation of BaAl2O4 phase and photoluminescence properties. So, we investigated the effect of urea and boric acid content on the host phase, and prepared some samples with poor-fuel, stoichiometric, rich fuel and with or without boric acid. The XRD patterns depict the dominant crystal phase of the product for samples without boric acid was hexagonal BaAl2O4 structure with some little impurity in the product. The excitation spectrum of phosphors display a broad-band spectrum extending from 250 to 400 nm while the emission spectra of samples without boric acid exhibits symmetrical blue-green broad peak at about 505nm which is attributed to the typical transition between the ground state (4f7) and the excited state (4f6 5d1) of Eu2+ ions. The position of the maximum intensity wavelength shifts from low to high edge with the boric acid content.

Award :

no

Level :

no

Supervisor :

N/A

Paper :

yes

Primary authors : Prof. DEJENE, Francis (University of the Free State)

Co-authors :

Presenter : Prof. DEJENE, Francis (University of the Free State)

Session classification : Poster Session

Track classification : Track C - Photonics

Type : Poster Presentation