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Synthesis and Characterization of Ba1-xMgxAl2O4:Eu nanophosphors Prepared Using Solution – Combustion Method.

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<p>Europium-doped barium magnesium aluminate (BaMgAlx0y:Eu) phosphors were obtained at low temperatures (500˚C) using the solution - combustion of corresponding metal nitrate–urea solution mixtures. The particle size and morphology and the structural and luminescent properties of the as-synthesized phosphors were examined by means of scanning electron microscopy (SEM), X-ray diffraction (XRD), Auger spectroscopy, transmission electron spectroscopy (TEM) and photoluminescence (PL). It was found that the Ba:Mg molar ratios showed greatly influence not only on the particle size and morphology, but also on their PL spectra and crystalline structure. The BaMgAl2O4 nanophosphors display a monoclinic structure indicating a small change in peak position at high angles due to differences in size between Ba and Mg ions. The peak of the emission band occurs at longer wavelength (around 615nm) with increase in Mg concentration but display a broad band emission at 515 nm for lower Mg concentration. The green emission is probably due to the influence of 5d electron states of Eu2+ in the crystal field because of atomic size variation causing crystal defects while the red emission is due to f-f transitions. This finding clearly demonstrate the possibility of fine tuning the color emission and solid solubility limit in Ba1-xMgxAl204:Eu phosphors through the simple and cheap process. A green phosphor with almost pure phase with significantly enhanced luminescence and longer after glow can be easily prepared by solution combustion method by doping with slight magnesium concentration (1 mole

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

No

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

Yes

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