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Thermoluminescent properties of BaAl₂O₄:Eu²⁺,Gd³⁺ phosphors prepared by combustion method at different initiating temperatures.

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Europium (Eu²⁺) and gadolinium (Gd³⁺) doped BaAl₂O₄ powder phosphors were prepared by combustion method at different initiating temperatures (400-1000 °C), using urea as a comburent. The powders were annealed at different temperatures in the range of 400-1000 °C for 3 hours. X-ray diffraction data show that the crystallinity of the BaAl₂O₄ structure greatly improved as the annealing temperature increased. The FT-IR absorption bands observed at 533, 629 and 798 cm⁻¹ for the samples annealed at higher temperatures (1100-1200 °C) are consistent with the stretching mode frequencies of BaAl₂O₄. Blue-green photoluminescence, with persistent / long afterglow, was observed at 503 nm. This emission was attributed to the 4f⁶d¹-4f⁷ transitions of the Eu²⁺ ions. The phosphorescence decay curves were obtained by irradiating the samples with a monochromatized xenon lamp at an excitation wavelength of 393 nm. The glow curves and the decay curves of the samples irradiated by UV source (360 nm) were investigated using the Thermoluminescence Reader (Integral-Pc Based) Nucleonix TL 1009I.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

No

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

YES

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