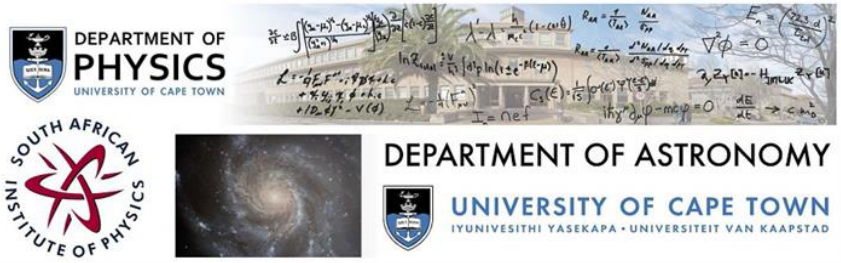

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Effect of annealing temperature on the structure, morphology and optical properties of Sm³⁺ doped lanthanum phosphovanadate

Tuesday, 5 July 2016 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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This work explores the influence of annealing temperature on the Sm³⁺ activated lanthanum phosphovanadate phosphor powders prepared by solution combustion method. The prepared phosphor powders were annealed at different temperatures (600–1000 ℃) for 2 hours. The structure and surface morphology were investigated by X-ray diffraction (XRD) and scanning electron microscopy (SEM) respectively. The XRD analysis indicated that as the annealing temperature is increased, the crystal structure of the prepared phosphor powders changed from monoclinic to tetragonal phase. The SEM images showed different morphologies and sizes. The estimated band gap from diffuse reflectance spectra (DRS) is ˜ 3 eV. The excitation spectra showed a strong broad band extending from 200 to 350 nm with maximum at λ = 273 nm.The photoluminescence result showed three emission peaks and they are attributed to ⁶G_{5/2} — ⁶H_{5/2}, ⁶G_{5/2} — ⁶H_{7/2} and ⁶G_{5/2} — ⁶H_{9/2} transitions of Sm³⁺ ion.

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