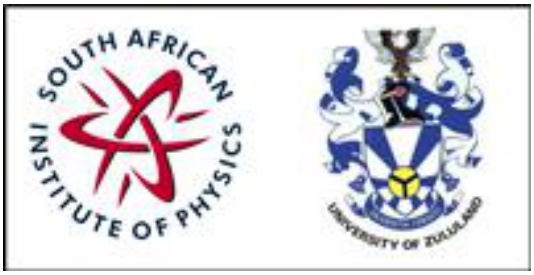

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Luminescence properties of blue-red emitting SrAlxOy:1 percent Eu2+,x percent Cr3+ phosphors prepared using sol-gel method

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Abstract content
   (Max 300 words)

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Abstract
SrAlxOy:1%Eu2+,x%Cr3+ powders were synthesized by sol-gel method at a low temperature below (˜80 0C). Metal nitrates were used as the source of metal ions and citric acid as a chelating agent. Concentrations of Cr3+ ions were varied in the precursor during synthesis. The annealed samples were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM) and photoluminescence (PL) spectroscopy. The XRD revealed that the annealed samples consist of mixture of orthorhombic, unknown, cubic and hexagonal phases. Varying the Cr3+ concentrations do not affect the crystal structure of the phosphor. Morphology of the phosphor was influenced by varying the Cr3+ concentrations in the precursors. The PL results showed strong luminescence in the blue to red regions of the spectrum. The highest emission peak is at 702 nm, which is attributed to the typical 4T2(4F) – 4A2(4F) cromophore (Cr3+) ion transition. It was observed from the PL spectra that Eu2+ ions emissions were being suppressed relative to those of Cr3+ possibly due to energy transfer from Eu3+ ions to Cr3+ ions.

Keywords: Sol-gel, SrAlxOy:1%Eu2+,x%Cr3+, luminescent, energy transfer

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