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## INFLUENCE OF PHASE PURITY ON PHOTOLUMINESCENCE PROPERTIES OF STRONTIUM OXYNITRIDE PHOSPHOR DOPED WITH $\text{Eu}^{2+}$ IONS

**B. J. Adamczyk, D. Poelman, M. Sopicka-Lizer, K. Korthout, D. Michalik**

The aim of the work was to improve phase crystallization of strontium europium oxynitride by usage of fluxing agent or by altering the partial pressure during the process of synthesis.  $\text{SrSi}_2\text{O}_2\text{N}_2:\text{Eu}^{2+}$  phosphor powders were obtained via a solid state reaction method with various amount of  $\text{Na}_2\text{CO}_3$  flux or by a gas pressure synthesis. The phase composition of obtained materials was investigated by XRD analysis. In order to confirm location of Eu ions in the structure the X-ray absorption near-edge spectroscopy (XANES) studies were carried out. The photoluminescent properties were determined a.o. by emission, excitation and decay times measurements. Thermal quenching studies in the range of 0 - 225°C confirmed good thermal stability of investigated powders combined with satisfactory quantum efficiency at room temperature. Luminous efficacy and CIE 1931 color points were determined as well. Performed measurements confirmed the influence of the involved gas partial pressure on the phase crystallization. Analysis of materials with fluxing agent proved the significant influence of  $\text{Na}_2\text{CO}_3$  flux on phase purity as well. In both cases enhancement of optical properties was observed. An optimum concentration of the flux is 5 wt% - exceeding this value results in development of an excessive amount of glassy phase.