

## Low-Temperature Luminescence Spectroscopy of Violet Sr-Al-O:Eu<sup>2+</sup> Phosphor Particles

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**Abstract :** Violet Sr-Al-O:Eu<sup>2+</sup> phosphor particles were synthesized from a metal-ethylenediaminetetraacetic acid (EDTA) solution of Sr, Al, Eu, and particulate alumina via spray drying and sintering in a reducing atmosphere. The crystal structures and emission properties at 85-300 K were investigated. The composition of the violet Sr-Al-O:Eu<sup>2+</sup> phosphor particles was determined from various Sr-Al-O:Eu<sup>2+</sup> phosphors by their emission properties' dependence on temperature. The highly crystalline SrAl<sub>12</sub>O<sub>19</sub>:Eu<sup>2+</sup> emission phases were confirmed by their crystallite sizes and the activation energies for the 4f<sup>5</sup>d-8s<sup>7/2</sup> transition of the Eu<sup>2+</sup> ion. These results showed that the material identification for the violet Sr-Al-O:Eu<sup>2+</sup> phosphor was accomplished by the low-temperature luminescence measurements.

**Keywords :** low temperature luminescence spectroscopy, material identification, strontium aluminates phosphor, emission properties

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