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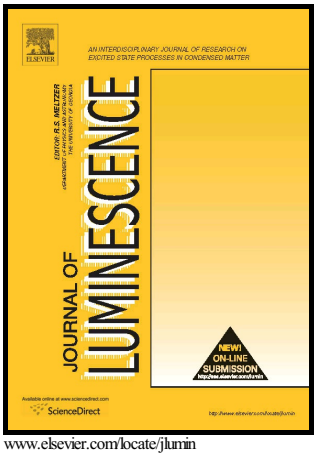

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Flux influenced morphology tailoring and emission color tuning to pure white in $ZrO_2:Eu^{3+}$phosphors

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Abstract

Influence of volatile fluxes like NH_4Cl, $B(OH)_3$ and their combination on the photo luminescence and morphological properties of $ZrO_2:Eu^{3+}$ phosphor was investigated. The samples were characterized by XRD, UV-Vis spectroscopy, scanning electron microscopy and photoluminescence spectra. XRD pattern shows that the samples prepared using ammonium chloride and by combination of ammonium chloride, boric acid crystallizes in tetragonal phase, whereas samples prepared without flux and using boric acid, crystallizes in cubic phase. The results revealed that particle size, morphology, phase and photoluminescence emission color were largely influenced by the flux. Type of flux employed significantly influenced the morphology and emission color of the phosphor. Addition of two fluxes resulted in pure white-light emission, with CIE chromaticity coordinates of (0.327, 0.331), which is very close to the essential requirement to the NTSC (**National Television System Committee**) system for standard white light.

Keywords: phosphors; XRD; CIE; W-LEDs;SEM;

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