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IMPACT OF COMPOSITION ON LUMINESCENT PROPERTIES OF Eu AND/OR Tb DOPED SILICATE GLASSES

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Abstract:

The Eu and/or Tb doped silicate glasses are a good candidate for light emitting diode (LED) applications. But the optical performance of these glasses is sensitive to variation in chemical composition. In this presentation we report our recent findings about the effect of addition of minor components such as B₂O₃, Al₂O₃ and CaF₂ on the luminescent properties of the above-mentioned glasses. We explore the function of Eu³⁺ ions as a structural probe of the glasses by determining the asymmetry factor, i.e., the ratio of the emission intensity of the ⁵D₀→⁷F₂ transition to that of the ⁵D₀→⁷F₁ transition of Eu³⁺ luminescence. The results show that the asymmetry factor and luminescence lifetimes of as-prepared materials are dependent of composition. The energy transfer between Tb and Eu ions is investigated by performing fluorescence decay kinetics analysis.

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