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Thermoluminescence study of beta -irradiated SrAl₂O₄:Eu²⁺,Dy³⁺ phosphors.

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Abstract content
 (Max 300 words)

The Eu²⁺ doped and Dy³⁺ co doped strontium aluminate (SrAl₂O₄:Eu²⁺,Dy³⁺) phosphors were synthesized by solution - combustion synthesis technique using urea as a reducer at initiating temperature of 500oC, a widely known method for preparing nano sized phosphors. Sr(NO₃)₂, Al(NO₃)₃.9H₂O, CH₄N₂O, Eu(NO₃)₃.5H₂O and Dy(NO₃)₃ are used as the raw materials for the preparation of SrAl₂O₄ (RE: Eu, Dy) precursor. The thermoluminescence (TL) properties of beta irradiated Eu²⁺ doped and Dy³⁺ co doped strontium aluminate (SrAl₂O₄:Eu²⁺,Dy³⁺) have been studied. The optical properties in terms of TL glow curves are discussed in detail. The TL intensity was recorded for different beta doses and heating rates as a function of temperature. The influence of repeated measurements on peak temperature and TL intensity was also recorded. The different parameters like activation energy (E), frequency factor (S) and shape factor are calculated using TL glow curves. We have also calculated the trap depth by different methods including initial rise, variable heating and peak shape methods. The dependence of the peak position on the T_m-T_{stop} confirmed first order kinetics of the obtained glow curves.

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