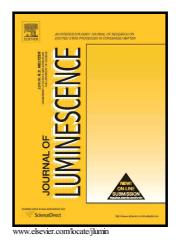
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Luminescent properties of Eu³⁺ doped heavy tellurite scintillating glasses

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Abstract:

 Eu^{3+} doped tellurite scintillating glasses were prepared by the conventional melt-quenching method. The physical and luminescent properties of glasses were investigated by DTA, density, transmittance spectra, photoluminescence spectra, and X-ray excited luminescence (XEL) spectra. The densities of the glasses are in the range from 5.89 g/cm³ to 6.05 g/cm³. The glasses exhibit intense red emissions upon 393 nm light and X-ray excitations. The maximum integral XEL intensity of the glasses is about 6 % of that of commercial $Bi_4Ge_3O_{12}$ (BGO) scintillating crystal. The results reveal that Eu^{3+} doped tellurite glass could be a scintillator candidate used in X-ray detection field.

Keywords: Eu³⁺; Tellurite glass; Scintillating glass; Luminescence

1. Introduction

Recently, rare-earth doped high density glass scintillator shows great promising application in X-ray detection compared with scintillator ceramics or crystals due to its low cost, large-volume production, and easy shaping of elements^[1-6]. However, the low light yield and the low density restrict scintillating glass's application and development. As is

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