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# Luminescent properties of $\text{Eu}^{3+}$ doped heavy tellurite scintillating glasses

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## Abstract:

$\text{Eu}^{3+}$  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  $5.89 \text{ g/cm}^3$  to  $6.05 \text{ g/cm}^3$ . 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  $\text{Bi}_4\text{Ge}_3\text{O}_{12}$  (BGO) scintillating crystal. The results reveal that  $\text{Eu}^{3+}$  doped tellurite glass could be a scintillator candidate used in X-ray detection field.

**Keywords:**  $\text{Eu}^{3+}$ ; 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<sup>[1-6]</sup>. However, the low light yield and the low density restrict scintillating glass's application and development. As is

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