

Preparation and characterization of fluorotellurite glasses in the ternary system $\text{TeO}_2\text{-Nb}_2\text{O}_5\text{-PbF}_2$

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Lead fluorotellurite glasses with high lead fluoride contents, despite the great technological potential, were little investigated, because of the difficulty of glass formation and low thermal and chemical stability of these materials¹. In this work we carried out the determination of the vitreous domain of lead fluorotellurite glasses in the ternary system $\text{TeO}_2\text{-Nb}_2\text{O}_5\text{-PbF}_2$, prepared by the melt-quenching method, where the tellurium dioxide acts as the vitreous former, the niobium (V) oxide as an intermediary of the glass structure, stabilizing and ensuring greater homogeneity of glasses, and the lead fluoride as a modifier with interesting optical properties. Glass samples with lead fluoride contents as high as 30 mole% were obtained by melt-quenching. Thermal properties of the samples were investigated by means of Differential Scanning Calorimetry (DSC) technique, showing relative thermal stability at considerably high proportions of lead fluoride and decrease of the glass transition temperature for higher PbF_2 contents. Furthermore, the DSC curves exhibited an exothermic event after the glass transition, related with precipitation of PbF_2 cubic phase. Therefore, the detailed investigation of this system allowed the obtaining of glass compositions not yet reported with relevant properties for optical applications.

1. Klimesz, B.; Ryba-Romanowski, W.; Lisiecki, R.; *Optical Materials* **2015**, *42*, 538.

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