

EFFECT OF Li₂O ON THE PHYSICAL PROPERTIES OF Nd₂O₃ DOPED TELLURITE GLASS

W. A. W. Razali 1,* , K. Azman^{1,b}, H. J. M. Ridzwan 1, H. Azhan¹, S.A. Senawi¹, M. R. Sahar² and M. S. Rohani²

¹*Universiti Teknologi MARA Pahang, 26400 Bandar Jengka, Pahang, Malaysia*

²*Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor Bahru, Malaysia*

*Corresponding author: wanaizuddin@pahang.uitm.edu.my

ABSTRACT

The effects of Li₂O on the physical properties of mixed alkali tellurite glasses of the system Nd₂O₃-(10-x) PbO_xLi₂O-89TeO₂ such as refractive index and microhardness have been identified. The glass densities were varied from 5903.30 kg m⁻³ to 5710.43 kg m⁻³ with respect to mol % of Li₂O. The decreasing trend in density implies that addition with atomic masses less than PbO tend to decrease the packing density of the glass structures since the atomic masses of Li₂O and PbO are 29.88 and 223.19, respectively. However, the refractive indices and microhardness of the glass showed anomaly trend. From these results, other physical parameters such as reflection loss, molar refractivity, ionic concentration, electronic polarizability and inter-ionic separation have also been identified. The parameter non-linearly with respect to mol% of Li₂O content.

Keywords: Li₂O; tellurite glass; density; refractive index; microhardness; mixed alkali Effect

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