

OPTICAL ABSORPTION EDGE AND TRANSITION STUDIES OF BISMUTH PHOSPHATE (Bi₂O₃)_x(P₂O₅)_{1-x} GLASSES

Sheik Azrif Bux Sheik Azmi Bux, Sidek Hj. Abdul Aziz,
Zainal Abidin Talib, & W. Mohd. Daud W. Yusoff

*Ultrasonic and Glass Research Laboratory, Physics Department
Faculty of Science and Environmental Studies
Universiti Putra Malaysia
43400 UPM Serdang, Malaysia.*

Email:bux_79@hotmail.com

ABSTRACT

Glasses with composition $x\text{Bi}_2\text{O}_3 \cdot (1-x)\text{P}_2\text{O}_5$ were prepared over the range $0.05 \leq x \leq 0.23$ by a single step process of Bi_2O_3 and P_2O_5 . The amorphous nature of the glass compositions was confirmed by x-ray powder diffraction (XRD) studies. The optical absorption was recorded at room temperature in a wavelength range of 200-800 nm using UV-Visible Spectrophotometer. The values of optical band gap (E_{opt}) have been evaluated and were found to depend on the glass composition. It gives a very good fit for indicating indirect transitions. Different Thermal Analysis (DTA) data were used to determine the glass transition temperatures of the glass and has been interpreted in terms on the role of alkaline oxide in the matrix.

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