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Effect of RE (Nd³⁺, Sm³⁺) oxide on structural, optical properties of Na₂O-Li₂O-ZnO-B₂O₃ glass system

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Zinc borate glass activated with rare earth oxide (Nd₂O₃, Sm₂O₃) of Na₂O-Li₂O-ZnO-B₂O₃ quaternary system has been prepared successfully by melt quenching method. The nucleation and growth of RE oxide were controlled temperature range 950-1000° C and rapid cooling at room temperature. The physical, structural and optical properties were characterized by using X-ray diffraction (XRD), SEM, Ultraviolet-visible spectroscopy (UV-Vis). XRD and SEM studies confirmed the amorphous nature, surface morphology of prepared zinc borate glass. The physical parameters like density, molar volume, molar mass of Nd³⁺, Sm³⁺ doped borate glass are summarized in the present article. The optical absorption spectra along with tauc's plot are presented. The optical energy band gap increases due to the addition of rare earth oxide confirming the role of network modifier.

Topics

[Band gap](#), [Glass](#), [X-ray diffraction](#), [Optical properties](#), [Oxides](#), [Transition metals](#), [Absorption spectroscopy](#), [UV-visible spectroscopy](#).

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