Abstract

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Role of Neodymium on Some Acoustic and Physical Properties of Bi2O3 - B2O3- SrO Glasses

tSrO-Bi2O3- B2O3glass systems with different content of neodymium oxide Nd2O3 were prepared by rapid-quenching technique. On Record FTIR deconvoluted spectra were in the range of 400–2000 cm\(^{-1}\). Some parameters such as density and molar volume were acquired. Ultra-sonic wave velocities (longitudinal and shear) and elastic moduli were acquired. The results were interpreted as due to the role of Nd2O3. Formation of BO4 causes an increase in the rigidity of glass, and consequently resulted in an increase in the glass density. Increment of molar volume revealed that addition of Nd2O3 results in an extension of glass network. The presence of [BiO6] octahedral units builds up the bismuthate structure of investigated glasses. The Nd3+ ions caused the proportion of average bonds elongations to diminish from 48.18 % to reach the value of 45.59 % at 5.7 mol. % of Nd2O3.