

Simulation of Acoustic Properties of Borate and Tellurite Glasses

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Abstract : Makishima and Mackenzie model was used to simulation of acoustic properties (longitudinal and shear ultrasonic wave velocities, elastic moduli theoretically for many tellurite and borate glasses. The model was proposed mainly depending on the values of the experimentally measured density, which are obtained before. In this search work, we are trying to obtain the values of densities of amorphous glasses (as the density depends on the geometry of the network structure of these glasses). In addition, the problem of simulating the slope of linear regression between the experimentally determined bulk modulus and the product of packing density and experimental Young's modulus, were solved in this search work. The results showed good agreement between the experimentally measured values of densities and both ultrasonic wave velocities, and those theoretically determined.

Keywords : glasses, ultrasonic wave velocities, elastic modulus, Makishima & Mackenzie Model

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