Effect of AgI addition on elastic properties of quaternary tellurite glass systems

ABSTRACT

A series of quaternary tellurite glasses {[(TeO2)70(B2O3)30] 90[Ag2O]10}100-z{AgI}z with z=5, 8, 10, 13 and 15 mol% were fabricated by rapid quenching technique. Pulse echo technique was employed to detect the longitudinal and shear ultrasonic velocities generated by 5 MHz transducer room temperature. Elastic properties, Poisson's ratio, micro hardness, softening temperature and Debye temperature calculated from the measured density and ultrasonic velocity were observed to decrease monotonously with the increase of AgI content. This shows that the presence of AgI inside the glass network creates a loose packing structure of the glass network and hence reduces the rigidity and the strength of the glass system.

Keyword: Glasses; Tellurite glasses; Ultrasonic measurements; Elastic properties