

Viscosity of TeO₂-based glasses

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Glasses based on tellurium oxide are of particular interest due mainly to their relatively low melting temperatures, high refractive index and high third-order non-linear susceptibility [1]. Because of their exceptional properties tellurite glasses are promising materials for a broad range of technological applications. To our knowledge, there are limited studies on the viscosity of tellurite glasses. In this work, we present results of a viscosity study of binary and ternary TeO₂-based glasses including the systems: ZnO-TeO₂ as a function of ZnO content and R_{2/3}O-ZnO-TeO₂ (R=B, Al) where ZnO is replaced by B₂O₃ or Al₂O₃. All glasses were prepared by melting in Pt crucibles, the structure of glasses was characterized by Raman and infrared spectroscopy and was correlated with the viscosity-temperature behavior of the investigated glasses.

[1] R.A.H. El-Mallawany, in Tellurite Glasses Handbook, Physical Properties and Data (CRC Press LLC, Boca Raton, Florida, 2002).

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