
High Pressure behaviour of v-SiO₂ : Brillouin and polarized Raman study

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Abstract

High-pressure Brillouin [1] and polarized Raman spectra [2] of vitreous silica are measured up to 8 GPa in diamond-anvil cell at room temperature. On one hand, Brillouin frequencies show that the well-known anomalous maximum in the pressure dependence of the compressibility is suppressed by He incorporation into the silica network. This shows that the elastic anomaly relates to the collapse of the largest interstitial voids in the structure. On the other hand, the combined use of either a nonpenetrating pressurizing medium-argon-or a penetrating one-helium and Neon, allows one to separate density from stress effects on the Raman frequencies.

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