

Abstract Submitted
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Slow homogenization of binary As-S melts and vibrational evidence of As Quasi-Tetrahedral Units in glasses. SOUMENDU CHAKRAVARTY, SHREERAM DASH, RALPH CHBEIR, PING CHEN, PUNIT BOOLCHAND, Univ of Cincinnati — FT-Raman profiling experiments on binary As-S melts are undertaken to establish the kinetics of homogenization of 1gram batch sizes using As_2S_3 and dry S as starting materials. These data reveal that melts take typically 3 weeks of reaction at 700C to homogenize. Such slow kinetics of melt homogenization were noted earlier in Ge – S binary and reflect the super-strong¹ character (fragility index $m < 20$) of melts in the Intermediate Phase¹ composition range. An important consequence of these homogenization experiments is that the Raman active 537 cm^{-1} mode predicted² for the stretch vibration of S=As of Quasi Tetrahedral S=As($\text{S}_{1/2}$)₃ units is now observed in homogeneous glasses. Compositional trends of the mode scattering strengths, fragility index and the non – reversing enthalpy of relaxation at T_g in these homogeneous glasses will be presented.

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