Abstract Submitted
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Consequences of the superstrong nature of chalcogenide glass-forming liquids at select compositions[1] KAPILA GUNASEKERA, SIDDHESH BHOSLE, PUNIT BOOLCHAND, University of Cincinnati, MATTHIEU MICOULAUT, University of Paris VI — Growth of homogeneous melts of stoichiometric compositions of chalcogenides is facilitated by underlying crystalline phases. Such is not the case for non-stoichiometric melt compositions in which, for example, variation of fragility (m) from complex specific heat measurements show global minimum [1] at an extremely low value (m=14.8(0.5)) in the 21.5% <x <23% range of Ge in homogenized Ge_xSe_{100-x}melts. This has unwittingly led to variability of results in physical properties of *non-stoichiometric* melts/glasses due to their heterogeneity. By directly mapping melt stoichiometry variation along a quartz tube as a function of reaction time of starting materials at a fixed temperature $T>T_g$ over days, we have observed a slowdown [1] of melt-homogenization by the super-strong melt compositions, 21.5% <x <23%. This range, furthermore, appears to be correlated to the one observed between the ?exible and stressed rigid phase in network glasses.

[1] K.Gunasekera et al. , J.Chem Phys. 139, 164511 (2013).

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