Abstract Submitted
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Structural manifestations of aging in Se-rich glasses[1] S. DASH, S. RAVINDREN, P. CHEN, P. BOOLCHAND, Univ of Cincinnati — We examine weakly cross-linked GexSe100-x (0%<x<7%) binary glasses in modulated DSC and Raman scattering experiments. Homogeneity of melts was carefully verified using FT-Raman line profiling. Upon aging at RT for 4 months, we find the width of the glass transition W(x) steadily decreasing from 10C at 7% Ge to 2C for pure Se. The 5-fold reduction of W(x) with a decrease of Ge content is accompanied by a 2-fold increase in the non-reversing enthalpy. Rejuvenation of the aged glasses changes W(x) from 15C at 7% Ge to 7C for pure Se. Tg is found to decrease upon rejuvenation with the difference (Tg(aged)–Tg(rejuv)) showing a maximum near 3% Ge and vanishing for pure Se and 6% of Ge, which are topological thresholds. These results in Se-rich glasses are consistent with aging induced decoupling of Se8 crowns and growth of extended range structural correlations between polymeric Sen chains due to lone pair interactions. At higher x, near 8-10% of Ge, eutectic effects are manifested.

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