

Abstract Submitted  
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**Molecular structure of virgin and  $T_g$  cycled  $(\text{Ag}_2\text{Se})_x (\text{AsSe})_{1-x}$  bulk glasses**<sup>1</sup> JACOB WACHTMAN, PING CHEN, P. BOOCHAND, University of Cincinnati — AsSe, the base glass ( $x = 0$ ) in the titled ternary, is an interesting example of a chalcogenide that is partially de-mixed into  $\text{As}_4\text{Se}_4$  molecules segregated from a connected AsSe network, with the latter determining glass network properties. Raman scattering reveals sharp modes of the Realgar molecules that are superimposed on broad modes coming from of the backbone. Upon  $T_g$  cycling virgin samples (as quenched melts), the concentration of de-mixed  $\text{As}_4\text{Se}_4$  molecules decreases, suggesting that thermally induced polymerization occurs; molecules break up to form part of the connective tissue. Modulated DSC experiments reveal a broad exotherm near 140 °C in virgin samples, which becomes nearly extinct in  $T_g$  cycled samples. The exotherm may represent Realgar molecules nano-crystallizing as the temperature approaches  $T_g$ . Compositional trends in thermal parameters such as  $T_g(x)$ ,  $\Delta C_p(x)$ , and the  $\Delta H_{nr}(x)$  as a function of  $\text{Ag}_2\text{Se}$  content 'x' of the glasses will be reported.

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