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Chemical alloying induced collapse of reversibility windows in ternary As-S-I glasses* FEI WANG, Department of EE, California Polytechnic State University, P. BOOLCHAND, Department of ECECS, University of Cincinnati — Thermally reversing windows represent glass compositions across which glass transitions are thermally reversing in character. These windows have been observed in several chalcogenide glasses, and are identified[1] with self-organized phases of glassy networks. Upon alloying halogen (iodine) in base chalcogenide glasses (Ge-Se, Ge-S), the reversibility windows collapse[2] about the mean-field rigidity transition. We attempt to understand this behavior better. We have now synthesized ternary glass compositions of the type, $(AsI_3)_x(As_{0.30}S_{0.70})_{1-x}$ and $(AsI_3)_y$ $(As_2S_3)_{1-y}$ over wide composition ranges of x and y, and have examined them systematically in Raman scattering and MDSC experiments. Along with earlier results[3] on binary As_zS_{1-z} glasses, the present results permit mapping the reversibility window over the glass forming range of the present As-S-I ternary. The results show the window region to be of nearly triangular shape, with a base extending in the $0.20 < z < 0.27$ range and a vertex located near $y = 0.28$. A possible interpretation of the results will be presented. * Supported by NSF grant DMR-04 -56472 1. P.Boolchand et al.Phil. Mag 85,3823 (2005). 2. Y. Wang et al. Phys. Rev. Lett. 87, 18, 5503 (2001) 3. D.G. Georgiev, Ph.D. Thesis , Univ. of Cincinnati (2003) unpublished

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