

Abstract Submitted  
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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<sup>1</sup> with self-organized phases of glassy networks. Upon alloying halogen (iodine) in base chalcogenide glasses (Ge-Se, Ge-S), the reversibility windows collapse<sup>2</sup> 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<sup>3</sup> 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 of Cincinnati (2003) unpublished

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