Long Term Aging of As\textsubscript{x}Se\textsubscript{1-x} glasses and the Intermediate Phase\textsuperscript{1}

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— The reversibility window in As\textsubscript{x}Se\textsubscript{1-x} glasses was reported\textsuperscript{2} 8 years ago to reside in the 28% < x < 37% range. We have re-examined those samples in m-DSC and Raman scattering. Both the 8 year old hermetically sealed samples in Al holders (set A) and samples from the same batch preparation but stored in plastic vials (set B) at laboratory ambient environment were studied. The reversibility window in samples of set A, after 8 years of aging, is found to be intact. In set B, analysis of the T\textsubscript{g} endotherm becomes difficult because of a precursor exotherm that appears in the 32% < x < 60% range, and steadily increases with x. In addition, in both set of samples, one observes a sub T\textsubscript{g} endotherm upon aging in the 90 °C < T < 120 °C range. These m-DSC results supported by Raman scattering suggest that the exotherm is due to light induced nanocrystallization (nc) of As\textsubscript{8}Se\textsubscript{4} fragments (an extrinsic effect), while the sub-T\textsubscript{g} feature is due to nc fragments of trigonal Se formed upon long term aging (an intrinsic effect). These findings will be compared to a recent report.\textsuperscript{3}

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