

Abstract Submitted  
for the SES17 Meeting of  
The American Physical Society

**Kinetics Study of Photo-Induced Optical Effects in Solution-based Arsenic Selenide Thin Films**<sup>1</sup> MARIA WHITE, JOSHUA ALLEN, JONATHAN BUNTON, BRYAN GAITHER, MEGAN MCCRACKEN, JUSTIN OELGOETZ, ROMAN GOLOVCHAK, ANDRIY KOVALSKIY, Austin Peay State University — Spin coated chalcogenide thin films have different structural and chemical properties than the films obtained by traditional methods such as thermal evaporation or sputtering. The solution-based method provides lower sensitivity of glass matrix to the influence of bandgap and superbandgap light. This property is very useful for non-linear optical applications based on high transparency of these materials in infrared spectral region.  $\text{As}_{42}\text{Se}_{58}$  spin coated thin films were obtained by chemical dissolution of bulk arsenic selenide glasses in ethylenediamine. The influence of preparation conditions, especially the annealing temperatures at the final stage of thin films synthesis, on in-situ kinetics of photodarkening (bleaching) at various energies and intensities of UV-VIS light was studied. It was found that at certain annealing conditions only transient photoinduced effects can be obtained by eliminating metastable kinetic component.

<sup>1</sup>NSF RUI grant DMR-1409160 at Austin Peay State University, NASA Tennessee Space Grant Consortium, Lehigh University Collaborators Dr. H. Jain and T. Ignatova, and Austin Peay State University Physics Department for this opportunity.

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Date submitted: 16 Oct 2017

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