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Advancement in Infrared Optics Through the Exploration of Solution Derived Arsenic Selenide (As2Se3) Thin Films ANNABELLA ORSINI, Ursinus College — There are great opportunities for advancement in the realm of infrared optics through chalcogenide glasses (ChGs). There are a vast number of applications these glasses are involved in. For instance, ChGs are vital in search and rescue operations, firefighting efforts, medical imaging, and even satellites. At the moment, there are some issues with the stability and cost of ChGs. Bulk ChGs can be brittle and fragile, so we will explore the significance of using thin films instead. Our research takes a multidisciplinary approach to ChGs involving physics, chemistry, optics, and materials science. Our focus will be creating thin films that will be more applicable and effective than previously used bulk versions. To be specific, we will use Arsenic selenide (As2Se3) and ethanolamine to create these thin films through both spin-coating and dip-coating processes. The films will then be tested on their stability and transmission capabilities into the infrared. Our use of As2Se3 is a process that has not been as deeply explored in comparison to other materials. Therefore, this research will also lay out a framework for a laboratory process when working with the Arsenic selenide material.

Annabella Orsini
Ursinus College

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