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Photostructural Response of Spin Coated and Thermally Evaporated Chalcogenide Thin Films JUSTIN COOK, Austin Peay State University, STANISLAV SLANG, MIROSLAV VLCEK, University of Pardubice, HIMANSHU JAIN, Lehigh University, ANDRIY KOVALSKIY, Austin Peay State University — The structures of spin coated thin films are investigated and compared to thermally evaporated samples using Raman microscopy and high resolution X-ray Photoelectron Spectroscopy (XPS) methods. It is found that spin coated films are far less photosensitive under illumination of UV and visible light than thermally deposited layers. This combination of IR transparency and low photosensitivity to visible light is especially useful for nonlinear IR optical applications. To quantify this photosensitivity, thin films were exposed to various bandgap and super-bandgap wavelengths of light and the structures of as deposited and exposed thin films are investigated. We have found that arsenic-amine complexes form in solution and some organics remain in the glass even after annealing. Results also show saturation of solvent evaporation during annealing after only a short annealing period.

Justin Cook
Austin Peay State University

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