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Photoresponse of Thermally-Deposited and Spin-coated As_2S_3 Chalcogenide Glass Thin Films[1] JOSHUA ALLEN[2], CAMERON JOHNSON[3], LEO SATURDAY[4], CATHLEANN THOMAS[5], JUSTIN OELGOETZ, ANDRIY KOVALSKIY, Austin Peay State University, GLASS RESEARCH TEAM —
Chalcogenide glass thin films are known as promising materials for optical recording, photonics and other applications which require substantial photoinduced optical effects in UV-VIS region. However, some applications such as non-linear optical elements in the IR region of spectrum prefer thin film materials with stable optical properties in the visible range. Spin-coating technology for fabrication of As_2S_3 thin layers stable to the influence of visible light in wide intensity range was developed. The photoinduced effects in thermally deposited and spin-coated films were compared. It was shown that the position of the absorption edge of spin-coated samples does not change up to the intensities of LED light close to 160 mW/cm^2. Raman studies of photoinduced structural transformations in both thermally deposited and spin-coated layer were studied. Structural stability of glass matrix for the spin-coated layers was confirmed. Computational model of the photostructural transformations is presented for the thermally deposited films.

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