EFFECT OF LIGHT POLARIZATION ON HOLOGRAPHIC RECORDING IN GLASY AZOCOMPOUNDS AND CHALCOGENIDES

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Effect of recording and readout light polarization on holographic grating recording in glassy molecular azobenzene films **8a**, **11,16** and glassy chalcogenide a- $As_{40}S_{15}Se_{45}$ films has been experimentally studied at 633 and 532 nm with *s-s, p-p,* CE-1 and CE-2 circular-elliptic (differing by light electric field rotation directions) recording beam polarizations.The polarization changes in the diffraction process were studied as well. Azocompounds exhibited much higher self-diffraction efficiency (SDE) and diffraction efficiency whereas chalcogenides were more sensitive .Their recording efficiency polarization dependences also were different and spectrally-dependent. SDE up to 45% was achieved in **8a** with *p-p* and up to 2.8% in a- $As_{40}S_{15}Se_{45}$ with CE-2 polarized recording beams at 633 nm. Linear *p-p* polarizations were the most efficient at 633 nm whereas CE-1 polarizations were the best at 532 nm in azocompounds .It was found that light polarization changes in the process of diffraction depended on chemical composition, wavelength and exposure time. Vector gratings with SDE up to 25% were recorded in **8a** rotating a linear polarization by 90^0. No light polarization changes were found in chalcogenide films. Coherent self-enhancement of gratings was observed only in azocompounds for *s-p* and both CE polarizations in **8a** at 532 nm, and for *s-p* polarizations at 633 nm. The evidence is found for *trans-cis* photoisomerization holographic recording mechanism at both 532 and 633 nm .

Keywords: light polarization, holographic gratings, azocompounds, chalcogenides
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