prepared by cyclic thermal deposition in one vacuum deposition cycle with chalcogenide thickness of 13 nm and Se –10 nm. The total number of nanolayers was 200.
Optical transmission was measured in 450-900 nm optical range in order to determine refractive index, thickness and optical band-gap energy of As_2S_3:Yb and Se layers and As_2S_3:Yb– Se nanomultilayers. Diffraction gratings were recorded by two laser beams (λ=532nm) with synchronous diffraction efficiency measurement at 650 nm wavelength.

Process of surface relief formation depended on the polarization of recording light beams. Diffraction efficiency in transmission of recorded gratings was ~ 25% in absolute value. AFM measurements have shown high quality of the recorded gratings relief.

Composition- and electrical field-dependent surface relief recording in amorphous chalcogenide layers and structures

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Optical recording processes, formation of amplitude-phase optical and even geometrical reliefs in amorphous chalcogenide layers are rather well known. In spite of established compositional, illumination, temperature dependences the influence of electrical parameters, applied electric fields on these processes is not so much analyzed

The goal of the present work was the development, selection of light sensitive chalcogenide layers and heterostructures made of As(Ge, Bi)-S(Se,Te) glass compositions and their application for optical, holographic recording in one step, direct processes, which are sensitive to the electric fields and conductivity of the chalcogenide layer.

It is shown, that small changes of As and Cl concentration in Se cause changes in direction and value of light-induced mass-transport processes. These effects can be observed in special heterostructures as well. New functionalities, operated recording processes can be realized this way, enabling the creation of special photonic, sensor structures.

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