film, the light source (and hence, the wavelength) and the incidence angle at which the resonance occurs.

Influence of Ag, Sb or Ge doping on short-range order of As-S chalcogenide glasses

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Amorphous chalcogenides are important due to their remarkable properties, which make them useful in optoelectronics for infrared elements, for electrical switches, holography and information storage media. Information on the short-range order structure of chalcogenide glasses is particularly valuable for establishing useful correlations between their structural and macroscopic properties. It can help in the optimization of the sensitivity and relief formation processes of composite nanomultilayer structures based on As-S alloys, which are perspective for the direct recording of optical elements [1,2].

In this work X-ray diffraction (XRD) technique is employed to investigate the structural properties amorphous As-S-Sb, As-S-Ag and As-S-Ge chalcogenide glasses. The aim of this study is to perform analysis of parameters of short-range order of the As-S amorphous alloys doped with Ag, Sb and Ge.

The experimental X-ray diffraction profiles are confirmed amorphous nature of studied glasses. Pair distribution function (PDF) for As-S samples doped with Ag (concentration 0%, 4.7 %, and 7.3 at. %), Sb (concentration 3, 5, 20, 25 and 30 at. %) and Ge (concentration 5% and 30 at. %) were calculated. The addition of silver and germanium does not significantly affect the position of first coordination sphere. The positions of the first peak correspond to the value of 2.29 Å and 2.25 Å, position of the second peak to 3.48 Å for glasses doped on Ag and Ge, respectively. The radius of first coordination sphere of As-S-Sb alloys is shifted towards the longer distances: from 2.29 Å to 2.42 Å with the increase of Sb content.

In this study the results of XRD for characterization of As-S glasses doped with Ag, Sb and Ge are presented. It was shown that doping on elements (in our case, Sb) can significantly affect the position of first and second coordination spheres in chalcogenide glasses.

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