Properties of New Solid Solutions of Systems GeSe$_2$-CdTe, GeSe$_2$-HgTe and GeSe$_2$-HgS

MirSalim Asadov C, S
Institute of Chemical Problems, National Academy of Sciences of Azerbaijan, Baku, Azerbaijan

It was established that phase equilibrium in systems GeSe$_2$-CdTe, GeSe$_2$-HgTe, GeSe$_2$-HgS, GeSe$_2$-CdS are characterized by formation of the limited solid solutions on the basis of components GeSe$_2$ and A$_2$B$_6$ and of fourfold intermediate phases such as A$_2$GeSe$_2$Te$_2$. In these systems intermediate phases of structure A$_2$GeSe$_2$Te$_2$ are formed at temperatures 750 K (Hg$_2$GeSe$_2$Te$_2$; tetragonal; $a = 7.50$; $c = 36.48$ Å), 920 K(Cd$_2$GeSe$_2$Te$_2$; hexagonal; $a = 5.69$; $c = 11.32$ Å), 980 K (Hg$_2$GeSe$_2$S$_2$; hexagonal; $a = 7.20$; $c = 36.64$ Å), accordingly. In the system GeSe$_2$–HgS, at 1135 K, an intermediate phase Hg$_4$GeSe$_2$S$_4$ (monoclinic; $a = 12.38$; $b = 7.14$; $c = 12.40$ Å) is formed also. All found out fourfold compound to fuse incongruent. Dependences of properties of solutions on structure have been determined. Samples temper at high temperatures (on 5–10 K temperatures eutectic are lower).