CHARACTER OF INTERACTION IN SYSTEMS Sb$_2$Se$_3$-CeSe AND Bi$_2$Se$_3$-CeSe.

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Introduction
The character of interaction of components of threefold system Ce-Sb (Bi)-Se the cuts Sb$_2$Se$_3$ (Bi$_2$Se$_3$)-CeSe are investigated.

Method
Threefold alloys received basically of elements at complete melting of Sb$_2$Se$_3$ (Bi$_2$Se$_3$) and CeSe designed stoichiometrically in evacuated up to 0,13 Pa quartz ampoules at 900-1100°C. A mode of synthesis selected proceeding from physico-chemical properties of elementary components, binary connections (Sb$_2$Se$_3$, Bi$_2$Se$_3$ and CeSe) and preliminary given JJA of threefold alloys.

For achievement of an equilibrium status for alloys carried out homogenized has been annealed temperature. Research carried out by complex methods of the physico-chemical analyses.

Conclusions
On the basis of the received results have constructed the diagram of a status of cuts Sb$_2$Se$_3$ (Bi$_2$Se$_3$) and CeSe.

A cut Sb$_2$Se$_3$-CeSe quasibinary of a type. Is established, that the interaction Sb$_2$Se$_3$ and CeSe carries complex character. In system at a molecular parity of initial binary components 1:4 the new threefold connection of structure Ce$_4$Sb$_2$Se$_7$ on перегектической of reaction is formed at 1025K:

L + CeSe $\leftrightarrow$ Ce$_4$Sb$_2$Se$_7$

The connection Ce$_4$Sb$_2$Se$_7$ with an a-firm solution on a basis Sb$_2$Se$_3$ forms eutectic containing 35 mol.% CeSe, which melting at 800 To. The connection Ce$_4$Sb$_2$Se$_7$ exists in two polymeric updating-high-temperature $\beta$-forms and low temperature $\alpha$-to the form. Cut Bi$_2$Se$_3$-CeSe also quasibinary , eutectic of a type. As against system Sb$_2$Se$_3$- Se$_3$-CeSe in this system the connection of structure Ce$_4$Bi$_2$Se$_7$ is formed in solid phase peritectic of reaction at 600K:

$\alpha$ + CeSe $\leftrightarrow$ Ce$_4$Bi$_2$Se$_7$

In system the stratifying takes place in the field of concentration of 70-90mol. % CeSe. Temperature monothectic of a horizontal 1250 To. Solubility CeSe in Bi$_2$Se$_3$ at 300K makes 5 mol.%.

Reference