INTERACTION CHARACTER IN THE Tl₂Te₃-Cr₃Te₄ SYSTEM

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A character of formation of new phases in Tl-Cr-Te system is investigated. The Cr₃Te₄ compound is formed in the Cr-Te system. This compound melts congruently at the 1292°C and has polymorphous phase transition at the 635±3°C. The Tl₂Te₃ compound is formed at the 238°C on peritectic reaction and has polymorphous phase transition at the 200°C.

Samples of the Tl₂Te₃-Cr₃Te₄ system are synthesized from high-purity elements at the 1200°C. Investigations are conducted using a number of physico-chemical analysis techniques: differential-thermal, X-ray and micro-structural analyses, and measuring of micro-hardness.

The phase diagram of the Tl₂Te₃-Cr₃Te₄ system is non-quasibinary (fig.) However, samples of this system, annealing at the 200°C during the long time, are two-phase. In the system a solid solution area, based on Cr₃Te₄ is detected. Dissolution boundary is 4 mole% of Tl₂Te₃ at the room temperature. A solubility area width when temperature increases. For example, the boundary of α-solid solution is ~30 mole% of Tl₂Te₃, and the boundary of β-solid solution is ~47 mole% of Tl₂Te₃ at the 575°C. A transition α⇔β forms maximum at the ~75 mole% of Cr₃Te₄.

Fig. Phase Equilibria in Tl₂Te₃-Cr₃Te₄ System