SOME POLYTHEMAL SECTIONS OF PHASE DIAGRAM OF THE Tl-Te-I SYSTEM

Imir Aliyev, Ilham Babanly, Dunya Babanly, Yashar Yolchuyev

Azerbaijan National Academy of Sciences, Institute of Chemical Problems, Baku

Tl-Te-I system was earlier investigated [1] only on quasibinary section TlI-Tl2Te, on which a ternary compound Tl5Te2I, formed on synthetic reaction at the 775K, was detected From X-ray diffraction of the Tl5Te2I powder it is established, that this compound crystallizes in tetragonal structure of Tl5Te3 type (I4/mcm Space Group) and has a following lattice parameters: a=8.89; c=13.03Å; z=4.

Phase equilibria in the Tl-Te-I system is investigated by us on following polythermal sections: TlI-Te (I), TlI-Tl2Te3 (II), TlI-TlITe (III), TlITe-Tl5Te2I (IV) and Tl5Te3 -Tl5Te2I (V). A number of relevant phase diagrams are established. Researches are carried out using DTA and X-ray analysis technique.

Section (I) is quasibinary and forms phase diagram with eutectic (705 K) and monotectic (713 K) equilibria.

Sections (II)-(IV) are non-quasibinary and have wide area of immiscibility of liquid phases. However, all these sections are stable below solidus temperature. Alloys of (II)-(IV) consist of two-phase mixtures of initial compounds. In system (IV) a limited area of solid solutions based on Tl5Te2I is formed.

Character of chemical interaction in system (V) has a unique feature: regardless to presence of immiscibility area, in this system a continuous series of solid solutions with Tl5Te3 structure is formed.

The complex of the obtained data has allowed constructing the solid-phase equilibria diagram for Tl-Te-I system in TlI-Tl2Te-I composition area.

Reference