

PHASE EQUILIBRIA IN THE Ti-RICH ALLOYS OF THE Ti-Ge-B SYSTEM

T. Velikanova, A. Bondar, D. Borisov, L. Artyukh, O. Bilous, N. Tsyganenko

I.N. Frantsevich Institute for Problems of Materials Science, 03680 Kiev 142, Ukraine

The Ti-Ge-B phase diagram is studied in the Ti-Ti₅Ge₃-TiB₂ composition range. The solidus and liquidus projections, reaction scheme and vertical section at 7.5 at. % B are presented. The unreported earlier ternary phase Ti₆Ge₂B of Ni₆Si₂B-structure type with the lattice parameters $a=685.2 \pm 0.1$, $c=339.8 \pm 0.2$ is found.

The ternary borogermanide is formed by peritectic reaction $L + TiB + Ti_5Ge_3 \leftrightarrow Ti_6Ge_2B$ at 1465 °C. It takes part in the invariant four-phase eutectic equilibrium $L \leftrightarrow \beta Ti + Ti_5G_3 + Ti_6Ge_2B$ at 1330 °C close to the Ti-Ge boundary. The two-phase (Ti,Ge) + TiB and three-phase (Ti,Ge) + TiB + Ti₆Ge₂B eutectics are considered to be perspective for *in-situ* composites development.