# MELTING CURVE OF TITANIUM. THERMODYNAMIC DATA CONSISTENCY ASSESSMENT

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The work continues to study the properties of Ti, carried out in the JIHT of the Russian Academy of sciences [1], extending them to the melting line at a pressure of up to 90 GPa. To date, the melting point is known $T_m^0 = 1944 \pm 3\ K$, corresponding to the bcc phase, and the heat of fusion with an error of 5%; reliable data on the volume change are absent.For the first time, experimental data on the melting curve in the interval 15-80 GPa were obtained in 2001 [2] by the diamond anvil cell. Extrapolating them to a pressure of 1 atm, the authors obtained an anomalously low value of the melting curve slope $\sim$ 7 K/GPa, not characteristic of refractory metals. After 14 years [3] these measurements were repeated using the same technique. This time the melting point was controlled by the loss of crystallinity of the sample.

Here, data processing [3] was performed, consistent with the estimate of the volume change at the melting point. Inaccuracy in its definition from the data on the density of both phases forced us to resort to the analysis of the dependence of the volume jump on the melting entropy for 3d elements, from Ti to Ni. For Ti, an estimate is obtained $\Delta V_m = 0.257 \pm 0.026$ cm$^3$/mole, which gave the initial slope of the melting curve $(dT_m/dp)_{p\to 0} = 35 \pm 5$ K/GPa [4]. Note that without the data [3] the conclusion about almost invariable steepness of the melting line in the whole interval would follow. This conclusion is obtained in [5], where the Ti phasee diagram is constructed without using the results of [3].

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