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Influence of temperature upon the a-w transition in titanium GALINA S. BEZRUCHKO, SERGEY V. RAZORENOV , Institute of Problems of Chemical Physics of Russian Academy of Sciences (IPCP RAS), GENNADY I. KANEL, VLADIMIR E. FORTOV, Institute for High Energy Densities of Russian Academy of Sciences (IHED RAS), INSTITUTE OF PROBLEMS OF CHEMICAL PHYSICS OF RUSSIAN ACADEMY OF SCIENCES (IPCP RAS) COLLABORATION, INSTITUTE FOR HIGH ENERGY DENSITIES OF RUSSIAN ACADEMY OF SCIENCES (IHED RAS) COLLABORATION — The $\alpha \rightarrow \omega$ polymorphic transition in shock-compressed high-purity Ti was studied at normal and elevated temperatures. In the experiments, the velocity histories of the sample free surface or interface between the sample and LiF window were recorded. The shock-wave loads were created by impact of Al flyer plates at the impact velocities of 650 m/s and 1200 m/s. The effect of polymorphic transformations was observed at both peak stresses. The parameters of inflection point in the compression wave profile are not constant and strongly depend on the peak stress and the wave propagation distance that indicates great influence of the kinetics of transformation on the wave dynamics. The transition occurs much faster at $\sim$400 $^\circ$C than at the $\sim$10 $^\circ$C. As a result of the kinetic effects, apparent pressure of start of the transition at high impact velocity decreases with heating, whereas at low impact velocity it increases in agreement with the phase diagram. No evidences of reverse $\omega \rightarrow \alpha$ transition were recorded.

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