

Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Measurements of sound velocities in zinc and titanium alloy by optical method ALEXEY KOVALEV, MIKHAIL ZHERNOKLETOV, ALEXANDER MEZHEVOV, SERGEY KIRSHANOV, MIKHAIL NOVIKOV, LILIA KANYNOVA, RUSSIAN FEDERAL NUCLEAR CENTER - VNIIEF TEAM

— Information on sound velocity, which characterizes substance behavior under conditions of shock compression followed by release, is required for formulation of substance EOS. Therefore, basing on measurement of sound velocities, it is possible to reveal phase transitions of substance along shock adiabat, including its melting. Interaction of Ti with majority of elements, on the one hand, causes significant difficulties when producing pure titanium. But, on the other hand, it gives opportunity to produce many alloys with various properties. Titanium alloy VT-20 is classified as a pseudo α -alloy. Alongside with titanium and its alloys, zinc also is of common application as a structural material. Results are presented on measurement of sound velocities in shock-compressed zinc and alloy VT-20. The measurements were performed by rarefaction overtake method with use of indicator liquids. Basing on results of tests, boundaries of melting of zinc at its shock adiabat were revealed. The obtained experimental data were compared to available data from the other authors.

Alexey Kovalev

Date submitted: 11 Feb 2011

Electronic form version 1.4