Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Multiphase Equations of State for Structural Materials at High Pressures[1] KONSTANTIN V. KHISHCHENKO, JIHT RAS, Moscow, Russia — Equations of state for materials over a wide range of pressures and temperatures are needed for numerical simulations of processes in shock-compressed media. Accuracy of calculation results is determined mainly by adequacy of equation of state of a medium. In this work, a new multiphase equation-of-state model is proposed with taking into account the polymorphic phase transformations, melting, evaporation and ionization. Thermodynamic calculations are carried out for metals, alkali halides, and polymer materials in a broad region of the phase diagram. Obtained results are presented in comparison with available data of experiments at high dynamic pressures in shock and release waves.

[1]This work is supported by RFBR, grant 11-08-01225

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Date submitted: 22 Feb 2013 Electronic form version 1.4