Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Sub-microsecond graphite-diamond transformation at normal and elevated temperatures ANDREY S. SAVINYKH, Institute of Problems of Chemical Physics of RAS, Chernogolovka, Russia, GENNADY I. KANEL, Joint Institute for High Temperatures of RAS, Moscow, Russia, SERGEY V. RAZORENOV, GALINA S. BEZRUCHKO, IPCP RAS, KONSTANTIN V. KHISHCHENKO, JIHT RAS — The graphite-diamond transformation was studied under conditions of shock compression at initial temperatures 293 K and 750 K. The samples of two kinds of pressed natural graphite contained 5% or 27% of rhombohedral phase and had the three-dimensional order degree parameters 0.85 and 08, respectively. In the experiments, the VISAR particle velocity histories were recorded at the interface between a graphite sample and a LiF window. Results of measurements at normal and elevated temperatures were analyzed using wide-range equations of state of graphite, LiF and aluminum. It has been shown by calibrating experiments the LiF correction of the VISAR velocity-per-fringe constant does not noticeably changes with heating in this temperature range. In this way it has been found the transition pressure decreases with heating in this temperature range from 18.9 to 16.9 GPa and from 20.3 to 18.3 GPa for graphites with 5% and 27% of rhombohedral phase, respectively.

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Date submitted: 11 Feb 2009 Electronic form version 1.4