

Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Experimental Research on High Pressure Phase Transitions of Mo and Ta¹ LING-CANG CAI, XIU-LU ZHANG, ZHONG-LI LIU, ZHAO-YI ZENG, JIAN-BO HU — Molybdenum (Mo) and Tantalum (Ta) are two of the elements forming the basis of the ultrahigh pressure scale. There are enormous discrepancies in melting curves of Mo and Ta between laser-heated diamond-anvil cell (DAC) and shock wave (SW) methods. In this work, the associated high pressure phase transitions of Mo and Ta were investigated experimentally. For Mo, several melting temperature data in the pressure range 136-390 GPa were obtained by shock wave experiments. The measured melting temperature at lowest pressure is still much higher than that of DAC experiments. Further more, by measurements of sound velocities of Ta in reverse- impact shock wave experiments, a discontinuity of longitudinal sound velocity against shock pressure at about 60 GPa was observed, which may be concluded that a solid-solid phase transition exists.

¹This research is supported by the National Natural Science Foundation of China under Grant No. 10776029 and the Science and Technology Development Foundation of Chinese Academy of Engineering Physics under Grant No. 2010A0101001

Ling-cang Cai

Date submitted: 17 Feb 2011

Electronic form version 1.4