

Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Strength measurement using Diamond Anvil Cell under Static pressure JAE-HYUN KLEPEIS, HYUNCHAE CYNN, WILLIAM EVANS, ROBERT RUDD, LIN YANG, LUKE HSIUNG, CMMD, PLS, LLNL, CHANGYONG PARK, OLGA SHEBANOVA, CURTIS KENNEY-BENSON, STANISLAV SINOGEIKIN, HP-CAT, APS, ANL — The pressure-dependence of the quasi-static yield strength of polycrystalline samples has been measured in the diamond anvil cell at high pressure (up to 80 GPa) and room temperature using an implementation of a non-hydrostatic technique used by Meade and Jeanloz [J. Geophys. Res. 93, 3261 (1988)]. Vanadium and Tantalum-Tungsten alloys are studied, including vanadium in the pressure range of a recently reported high-pressure phase. We introduce the use of *in situ* synchrotron X-ray determination of the sample thickness and pressure. In addition we use a step-wise analysis approach to obtain the pressure-dependent strength under the Tresca yield criterion. The results are compared with those by the previous technique of Meade and Jeanloz. This work performed under the auspices of the US DOE by LLNL under Contract DE-AC52-07NA27344. HPCAT use is supported by DOE-BES, DOENNSA, NSF, and the W.M. Keck Foundation. APS is supported by DOE-BES, under Contract No. DE-AC02-06CH11357.

Jae-Hyun Klepeis
CMMD, PLS, Lawrence Livermore National Laboratory

Date submitted: 02 Feb 2011

Electronic form version 1.4