

Abstract Submitted
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Flow stress of V, Mo, Ta, and W on nanosecond time scales¹
DAMIAN SWIFT, JAMES HAWRELIAK, BASSEM EL-DASHER, JAMES
MCNANEY, DESPINA MILATHIANAKI, HECTOR LORENZANA, MUKUL
KUMAR, BRUCE REMINGTON, Lawrence Livermore National Laboratory,
THOMAS TIERNEY, Los Alamos National Laboratory — The mechanisms and
kinetics of plastic flow in body-centered cubic materials are of current interest in the
development of fundamental theories of dynamic strength, applicable at high strain
rates such as are found in high explosive and laser loading. We have performed
dynamic loading experiments with the Janus and Trident lasers, using tailored pulse
shapes to induce shock or ramp loading. The response of the sample was investigated
through the surface velocity history, and in some cases with in-situ x-ray diffraction.
The velocity histories exhibited clear elastic waves, from which the flow stress was
deduced and compared with the elastic strain as determined by diffraction. We com-
pare the deduced flow stress with models calibrated to samples millimeters thick,
and to theoretical studies.

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Damian Swift
Lawrence Livermore National Laboratory

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