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**An Assessment of Diamond Anvil Cell Measurements of Material Flow Strength** RYAN VIGNES, RICH BECKER, JEFF FLORANDO, HYUN-CHAE CYNN, MUKUL KUMAR, Lawrence Livermore National Laboratory — Diamond anvil cell experiments have been used to determine plastic flow strength in ductile metals at high pressure. To gain insight into the experiments and assess how accurately the material's strength at pressure can be determined, finite element simulations of DAC experiments have been performed. In the analyses, constitutive responses were assumed for the diamonds and vanadium test specimen; within the constitutive models, pressure sensitivity of strength was an input parameter. The quantities measured during experiments were extracted from the simulations and analyzed in an identical manner as the experiments to obtain the pressure sensitivity. The computed pressure sensitivity was then compared with the prescribed, input pressure sensitivity, allowing the accuracy and sensitivities of the experimental technique to be evaluated. Recommendations are made to improve accuracy of strength determinations. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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