Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

Shock-Compressed Methane to 400 GPa G. TABAK, T. R. BOEHLY, G. W. COLLINS, L. CRANDALL, B. J. HENDERSON, J. R. RYGG, M. ZAGHOO, Laboratory for Laser Energetics, University of Rochester, USA, M. MILLOT, S. ALI, P. M. CELLIERS, J. H. EGGERT, D. E. FRATANDUONO, S. HAMEL, A. LAZICKI, D. C. SWIFT, Lawrence Livermore National Laboratory, USA, S. BRYGOO, P. LOUBEYRE, CEA, France, R. KODAMA, K. MIYANISHI, T. OGAWA, N. OZAKI, T. SANO, Osaka University, Japan, R. JEANLOZ, University of California, Berkeley, USA, D. G. HICKS, Swinburne University of Technology, Australia — Methane plays an important role in planetary physics and is a major constituent of giant planet atmospheres. Methane is predicted to have an intricate phase diagram at high pressures, including the conditions inside planet interiors.[1−3] We present shock-compression data to 400 GPa for methane. The methane samples were precompressed in a diamond-anvil cell to access a broader range of extreme conditions. Data are referenced to a quartz standard. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856, the University of Rochester, and the New York State Energy Research and Development Authority.

[1] M. Ross, Nature **292**, 435 (1981).
[2] M. Ross and F. Rogers, Phys. Rev. B **74**, 024103 (2006).
[3] G. Gao *et al.*, J. Chem. Phys. **133**, 144508 (2010).

Grigoriy Tabak
Laboratory for Laser Energetics, University of Rochester, USA

Date submitted: 28 Feb 2019 Electronic form version 1.4