Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Kinetic Transition Pathway of Pressure-Driven Structural Transformations: The Case of Magnesium Oxide BRENDA MCLELLAN, SHUAI ZHANG, Laboratory for Laser Energetics, U. of Rochester — Magnesium oxide is an important window material in dynamic shock experiments, a pressure standard in diamond-anvil cell experiments, and a fundamental planet-forming mineral. Elucidating the mechanism of its phase transition under high pressure is important for high-energy-density sciences, planetary sciences, as well as for materials sciences. Significant progress in theoretical and experimental research has been made to determine the equilibrium phase boundary of this transition. We are determining/predicting transient structures and their compression-rate dependence by combining geometrical analysis, empirical models, and quantum computations. These findings are important for deciphering kinetic and thermodynamic origins of solid-state phase transitions at extreme conditions. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

Brenda McLellan
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 26 Jun 2020 Electronic form version 1.4