Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Ultrafast shock wave coherent dissociation and spectroscopy of materials DANA DLOTT, ZHAOHUI WANG, ALEXEI LAGUTCHEV, JEFFREY CARTER, DAVID CAHILL, University of Illinois at Urbana-Champaign — This research is focused on understanding what happens at the level of individual molecules, when a solid is broken into two pieces creating a nascent interface. Ordinarily breaking a material involves nucleation or crack formation, so that at a given instant every atom at the interface acts differently. In order to get at detailed mechanisms it is desirable to have every atom doing exactly the same thing, in other words to cause the material to dissociate coherently. In this talk we will discuss methods for creating coherence in the dissociation process using femtosecond laser-driven tensile shocks, and methods for probing the molecular structures and energy dissipation processes in atomic layers immediately adjacent to the interface, using nonlinear and coherent optical spectroscopies. This material is based upon work supported by the U.S. Department of Energy, Division of Materials Sciences under Award No. DEFG02-91ER45439, through the Frederick Seitz Materials Research Laboratory at the University of Illinois at Urbana-Champaign.

Dana Dlott
University of Illinois at Urbana-Champaign

Date submitted: 20 Feb 2007 Electronic form version 1.4