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Ultrafast Shock Interrogation of Polycrystalline RDX SAMUEL D. PARK, Sandia National Laboratories, MICHAEL R. ARMSTRONG, Lawrence Livermore National Laboratory, IAN T. KOHL, Sandia National Laboratories, JOSEPH M. ZAUG, Lawrence Livermore National Laboratory, ROBERT KNEPPER, ALEXANDER S. TAPPAN, Sandia National Laboratories, SORIN BASTEA, Lawrence Livermore National Laboratory, JEFFREY J. KAY, Sandia National Laboratories — Understanding shock initiation of energetic materials requires the ability to diagnose the state of materials on the picosecond time scale of shock compression. Ultrafast shock interrogation (USI) probes the thermodynamic state of the material on this time scale using linearly chirped ultrafast pulses and spectral interferometry. We present the first USI measurements on polycrystalline RDX and compare them to previously reported gas gun results on single crystal RDX. New features are observed in shock compression of polycrystalline RDX that are not present in the previously reported single crystal data; these features and their implications will be discussed.

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