Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Demonstration of combined radiography and x-ray scattering measurements of shocked foam PATRICK BELANCOURT, University of Michigan, WOLFGANG THEOBALD, Laboratory for Laser Energetics, U. of Rochester, PAUL KEITER, University of Michigan, TIMOTHY COLLINS, MARK BONINO, SEAN REGAN, Laboratory for Laser Energetics, U. of Rochester, PAWEL KOZLOWSKI, University of Oxford, PAUL DRAKE, University of Michigan — High-energy-density physics experiments often use foams due to their low, tunable densities and being machinable. Simulating these experiments can be difficult due to the equation of state being largely unknown for shocked foams. This talk will focus on an experiments dedicated to measuring the temperature, ionization and density of shocked foams from simultaneous x-ray Thomson scattering and radiography measurements. The foam used in this experiment is carbonized resorcinol formaldehyde foam with an initial density of 0.1 g/cc. One OMEGA EP beam drives a shock into the foam, while the remaining three beams irradiate a nickel foil coated with titanium to create the x-ray backlighter.. The primary diagnostic for this platform, the imaging x-ray Thomson spectrometer (IXTS), spectrally resolves the scattered x-ray beam while imaging in one spatial dimension. The IXTS is ideally suited to measure plasma conditions upstream, downstream and at the shock front in the foam. Preliminary results from this experiment will be shown. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944, the University of Rochester, and the New York State Energy Research and Development Authority.

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Date submitted: 20 Jul 2016 Electronic form version 1.4