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Same-Shot X-Ray Thomson Scattering and Streaked Imaging of Radiative Shock Experiments at Omega[1] C.M. HUNTINGTON, C.K. KRAULAND, C.C. KURANZ, R.P. DRAKE, AOSS, University of Michigan, J.P. KNAUER, LLE, University of Rochester, S.H. GLENZER, Lawrence Livermore Nationl Laboratory — A shock system undergoing radiative cooling is able to form a collapsed layer behind the shock that is significantly denser than the simple strong shock limit would predict. Using a Be pusher to drive a shock in excess of 100 km/s in a xenon-filled shock tube creates such a dense layer, which is preceded down the tube by a radiation-heated precursor region and followed by a downstream layer of expanding Be. In experiments on the OMEGA Laser, streaked x-ray radiography and x-ray Thomson scattering diagnostics were employed. We detail how this diagnostic combination allows for several measurements of the different regions of this system. For each region, x-ray Thomson scattering may provide information on electron temperature, while streaked radiography yields shock velocity and acceleration. These measurements complement previous radiative shock experiments and suggest future directions.

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