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Intense XUV radiation driven explosions of Xe clusters B. MURPHY, K. HOFFMANN, A. BELOLIPETSKI, A. BERNSTEIN, J. KETO, T. DITMIRE, The University of Texas at Austin, I. ARTYUKOV, Lebedev Physical Institute — We have investigated the explosions of large xenon clusters subject to irradiation by high intensity extreme ultraviolet (XUV) light with wavelength near 38 nm. To do this we generated high order harmonics by focusing the output of the 20 TW, 40 fs, 800nm wavelength THOR laser into a jet of argon gas. To select a single harmonic we then employed a Sc/Si short focal length multilayer mirror optimized for the 21st harmonic at 38.1 nm at near normal incidence. This harmonic is focused onto a jet of xenon gas. We characterized the XUV focal spot by scanning a knife edge across an XUV photodiode and determined that our peak XUV intensity was 2x10^{10} Wcm^{-2}. Fast ion time-of-flight spectra reveal high ion charge states well above single photon ionization thresholds. These ions exhibit low kinetic energies consistent with hydrodynamic cluster expansion rather than Coulomb explosion. We also measured the electron spectra from these Xe cluster explosions and have observed moderate energy electrons ejected from the clusters.

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