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X-ray Characteristics of Mixed Noble Gas Puff Irradiated with the Titan Laser at LLNL[1] K.A. SCHULTZ, V.L KANTSYREV, V.V SHLYAPTSEVA, I.K. SHRESTHA, E.E. PETKOV, A.S. SAFRONOVA, J.J. MOSCHELLA, M.C. COOPER, University of Nevada, Reno, G.E. KEMP, K.B. FOURNIER, Lawrence Livermore National Laboratory — Typical x-ray sources created by the interaction of a laser pulse with solid targets produce debris that can damage sensitive equipment. Therefore, we investigated a debris-free source of x-ray radiation. A pulsed gas puff containing a mixture of monomers and clusters was irradiated with the frequency doubled (527nm) short pulse (<700fs) Titan laser housed in the Jupiter Laser Facility at LLNL. Two different gas mixtures were used as a target for the laser radiation: a double mixture of Kr and Ar gases and a triple mixture of Xe, Kr, and Ar. X-ray yields measured using filtered Si-diodes and absolutely calibrated PCDs are presented as a function of gas puff composition as well as delay time between the puff initiation and incidence of the laser pulse. Additionally, laser energy transmitted through the gas puff is measured to determine coupling efficiency. X-ray pinhole images of the plasma were captured in different spectral regions to estimate the size of the x-ray radiation source.

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