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Optimization of X-ray Radiography System for Characterizing Micro-scale Targets MOLLY FLYNN, MARIONO LOWENSTERN, PAUL KEITER, HEATH LEFEVRE, MARTIN DI STEFANO, GUY WILSON, DONNA MARION, R. DRAKE, University of Michigan — Characterization of a target before it is shot is crucial for understanding the results obtained in high energy density experiments. We are developing a radiography system using a steady-state Manson x-ray source to better characterize these experimental targets. Due to the micro-scale of these targets, any non-uniformity in the density of target materials – such as low-density carbon foams or plastics - could have adverse effects on experimental results. These inconsistencies are not necessarily diagnosable through other methods and thus require x-ray imaging for a more accurate analysis. We initially characterized the capabilities of our radiography system using metals of known x-ray opacity and geometric features and later expanded our subjects to include individual common target materials as well as fully fabricated targets. We present findings from a series of exposures varying flux, pinhole size, exposure time, and anode material, with the goal of optimizing resolution and magnification. This work is funded by the NNSA-DS and SC-OFES Joint Program in High-Energy-Density Laboratory Plasmas, grant number DE-FG52-09NA29548.

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