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Measurements and modeling of mid- and high-Z coronal plasmas from laser-irradiated planar foils JEFFREY FEIN, MATT TRANTHAM, University of Michigan, YECHIEL FRANK, EREZ RAICHER, MOSHE FRAENKEL, Soreq Research Center, Israel, JAMES P. HOLLOWAY, PAUL KEITER, DOV SHVARTS, R. PAUL DRAKE, University of Michigan — Plasmas generated from mid- to high-Z elements with intense (10^{15} W/cm^2) lasers have applications as x-ray drive for indirect-drive fusion, as means to mitigate laser-plasma instabilities in direct-drive fusion, and as bright sources of x-rays for imaging dense plasmas. However, modeling of these plasmas is difficult due to the wide range of densities and temperatures present, and the resulting wide range of physical processes that determine their energetics. Measurements of electron density profiles from irradiated planar foils show a shortening gradient length scale when increasing the foil material Z. We present analytical models and Rad-Hydro simulations to assess the role of Z-dependent processes, such as distributed laser absorption and nLTE atomic physics [see Y. Frank et al., Phys. Rev. E 92, 053111 (2015)] in determining the observed profiles.* * Supported through the NNSA-DS and SC-OFES Joint Program in HED Laboratory Plasmas, by grant number DE-NA0002956, the NLUF grant number DE-NA0002719, by the DTRA, grant number DTRA-1-10-0077 and by the NSF Graduate Research Fellowship.

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