Abstract Submitted
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Investigation of fast electron-induced Kα x-rays in laser-produced blow-off plasma HIROSHI SAWADA, University of Nevada Reno, M.S. WEI, GA, S. CHAWLA, A. MORACE, UCSD, K. AKLI, OSU, T. YABUUCHI, N. NAKANII, Osaka University, M.H. KEY, P.K. PATEL, H.S. MCLEAN, LLNL, R.B. STEPHENS, GA, F.N. BEG, UCSD — Interaction of a high-power, short-pulse laser exceeding the peak intensity of 10 18 W/cm^2 with solid targets is an efficient source of characteristic x-ray. We have quantitatively studied the Kα x-ray production in laser-produced expanding plasma. Using two-beam TITAN laser at LLNL, a multilayered target was irradiated by the long pulse laser to create blow plasma and by the short pulse laser to generate fast electrons at the delay of 0, 1, 6 and 8 ns. The Kα yields and monochromatic images were recorded with a Bragg crystal spectrometer and spherical crystal imager. The results show a decrease of the total Kα yields by a factor of 8 from the refluxing to non-refluxing conditions. The size of the Kα spot was unchanged at any delays. There is good agreement between the experimental data and modeling using hydrodynamic and hybrid-PIC codes in the Kα yields. Results will be presented at the meeting. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and DE-FG-02-05ER54834 (ACE).

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