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Al Backlighter Characterization at the Omega Laser[1] JIM COBBLE, TOM TIERNEY, JOE ABDALLAH, Los Alamos National Laboratory — We have characterized He- and H-like Al emission for various laser illuminations at the Omega laser with the goal of optimizing the ability to backlight low-atomic-number (low-Z) materials such as beryllium for fusion ignition studies. The conversion efficiency to Lyman α at 1.73 keV has been determined for 1, 2, 4, and 7 laser beams, i.e., as a function of laser energy/power. Data is recorded by a time-integrating spectrometer and a streaked x-ray spectrograph and reveals that the line/continuum ratio improves when the laser turns off. The Al plasma is diagnosed by line ratios and line profiles to determine the temperature and density. Results are compared to 1-D hydrodynamic calculations and to detailed theoretical atomic physics models. Evidence points to the increasing plasma opacity as the laser flux is increased.

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