Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Radiation Transport through cylindrical foams with heated walls[1]

KEVIN BAKER, STEVE MACLAREN, JOSHUA KALLMAN, KEN HEINZ, WARREN HSING, Lawrence Livermore National Laboratory — Radiation transport through low density SiO2 foams has been experimentally studied on the Omega laser. In particular these experiments examined the effects on radiation transport when the boundaries of the SiO2 foam are heated such that energy loss to the boundaries is minimized. The initial density of the SiO2 foams was determined by taking an x-ray radiograph of the foams using a monochromatic Henke source at multiple x-ray energies. The radiation drive used to both study the transport in the SiO2 foam as well as to heat the higher density CRF wall was generated in a laser-heated gold hohlraum using ∼7.5 kJ of the laser energy. The time-dependent spatial profile of the heat wave breaking out of the SiO2 foam was detected with an x-ray streak camera coupled with a soft x-ray transmission grating. The Omega DANTE diagnostic measured the radiation drive in the hohlraum and the Omega VISAR diagnostic monitored the spatial temperature gradient in the foam section of the hohlraum.

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Kevin Baker
Lawrence Livermore National Laboratory

Date submitted: 12 Jul 2012 Electronic form version 1.4