Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Monochromatic x-ray backlight imaging for high energy density experiments with lasers TAKASHI FUJIWARA, MINORU TANABE, SHINSUKE FUJIOKA, HIROAKI NISHIMURA, Institute of Laser Engineering, Osaka University, TAKASHI ENDO, NORIMASA OZAKI, YUICHI INUBUSHI, RYOSUKE KODAMA, Graduate School of Engineering, Osaka University, HIDEO NAGATOMO, HIROYUKI SHIRAGA, HIROSHI AZECHI, KUNIOKI MIMA, Institute of Laser Engineering, Osaka University — X-ray backlighting is one of key techniques to observe rapidly evolving density profiles of hot dense matters created with high power laser, such as imploded core plasma in inertial confinement fusion and shock compressed matter in equation of state research. The heated matters themselves emit brilliant continuum x-ray radiation that superimposes on an x-ray backlight image, degrading the observation accuracy. A monochromatic x-ray backlighting technique has been developed to solve and substantially improves image quality. A spherically bent crystal imager was coupled to an x-ray framing camera to obtain spatially and temporally resolved monochromatic images. Spatial resolution and temporal resolution of the imaging system were measured to be 13 μm and 100 ps, respectively. It was confirmed experimentally that x-ray self-emission of the plasma is negligibly small compared to that taken with conventional method. Details of the experimental results and analysis will be discussed.

Takashi Fujiwara
Institute of Laser Engineering, Osaka University

Date submitted: 17 Jul 2008 Electronic form version 1.4