

Abstract Submitted  
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**Observation of Cu-K $\alpha$  emission in imploded core plasma by direct irradiation of ultra intense laser light** HIDEAKI HABARA, TOMOYUKI IWAWAKI, TOSHINORI YABUUCHI, KAZUO TANAKA, Graduate School of Engineering, Osaka University, YASUNOBU ARIKAWA, SHINSUKE FUJIOKA, HIROYUKI SHIRAGA, Institute of Laser Engineering, Osaka University, ANLE LEI, Shanghai Institute of Laser Plasma, China, MINGSHENG WEI, RICHARD STEPHENS, General Atomics, FARHAT BEG, HITOSHI SAWADA, University of California, San Diego — Direct irradiation of ultra intense laser light on the implosion plasma is one of attractive options of fast ignition. In our previous research, a stable single channel formation in a 1-directional expanded plasma up to several times critical density has been demonstrated [1]. However in the spherical implosion plasma, there are the possibilities for refraction or hosing of laser light during sub-mm propagation. Even if the laser propagates forthrightly, it is not clear that enough number of fast electrons can be generated toward the core. For this purpose, Cu-doped shell target is used to observe inside the imploded plasma via Cu-K $\alpha$  emission due to its high transmittance in coronal plasma surrounding the core. A ultra intense laser (UIL) light is irradiated on the imploded plasma at the maximum compression by changing the focused position in respect to the center of the core, corresponding to the critical density ( $N_c$ ),  $N_c/4$  and  $N_c/10$  positions. Enhancement of Cu-K $\alpha$  emission is successfully observed at the core when UIL is focused on  $N_c$ . The results are compared with PIC simulations.

[1] A.L. Lei, et al., Phys. Plasmas 16, 056307 (2009).

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