Contribution ID: **116** Type: **Poster presentation**

Investigation of Laser Ablation Plasma from Thin Graphite Target

Monday, 16 October 2017 18:45 (15 minutes)

We have tried to reveal a mechanism of laser ablation plasma generation through the developing Laser Ion Source (LIS) and confirmed that charge state distribution is forcefully affected by the laser target thickness. A LIS generates pulsed highly charged ion beams by irradiating solid material targets with high intensity pulsed laser. In the past, we examined the effect of laser target thickness on the induced plasma properties. Three different graphite sheets, 254, 70 and 25 um, were prepared and carbon beam currents were compared. We found that only 25 um target emit different ablation plasma. Although there was no distinguishable difference on highly charged states ion currents, the beam comprising only lower charge state ions from 25um graphite target was obviously weaker than that from other thicker targets. This implies that the plume of laser ablation plasma consists of highly charged C ions is generated in the region near the surface of the material and secondary plasma plume which contains lower charge state C ions is created from the deeper layers of the target. Also, the investigation of vacuum at the irradiation chamber gave us information of the laser plasma formation, since vacuum is affected mainly by un-ionized vapors from more deeper part of the target. In this presentation, we will report the latest results of the experiment using thinner range of the target thickness and more detailed plasma formation mechanism and the findings will be discussed.

Primary author: SAITO, Yoshito (the Graduate University for Advanced Studies)

Co-authors: Dr KANESUE, Takeshi (Brookhaven National Laboratory); OKAMURA, Masahiro (Brookhaven National Laboratory); Dr IKEDA, Shunsuke (Brookhaven National Laboratory)

Presenter: SAITO, Yoshito (the Graduate University for Advanced Studies)

Session Classification: Poster Session 1

Track Classification: Fundamental processes