Contribution ID: **125** Type: **Oral Communication**

When NMP meets ICF target

Wednesday, 9 July 2014 11:00 (20 minutes)

The Inertial Confinement Fusion (ICF) program is investigating the conditions to achieve controlled thermonuclear fusion. ICF target fabrication quality is as vital as driving laser to ensure that energy deposition from the lasers results in uniform compression. Therefore Targets must be characterized for size, concentricity, surface roughness and distribution of dopant concentration, layer thickness and fuel pressure as well. An ideal analysis method would be able to obtain such information simultaneously and non-destructively.
Nuclear Microprobe (NMP) could be the one. Typical ICF targets are spheres less than a millimeter in diameter, several tenth micrometers in thickness. With the ability to focus MeV ion beams down to micron spot sizes, NMP with particle-induced X-ray Emission (PIXE), Rutherford backscattering (RBS), Scanning Transmission ion microscopy (STIM) and Elastic Recoil Detection Analysis (ERDA) enables us to image the shape, density and depth profile, to map trace elements like S, Br, Au, Cu, etc. of target, and Hydrogen isotopes in the target. Due to the importance of ICF program, precision and accuracy should be extremely carefully considered. Nevertheless the technique of NMP is a powerful method, which is proving to be very useful in the field of ICF target characterization.

Primary author: Prof. SHEN, Hao (Institute of Modern Physics Fudan University, Shanghai, PR China)

Presenter: Prof. SHEN, Hao (Institute of Modern Physics Fudan University, Shanghai, PR China)

Session Classification: Session 5 - Nuclear Microprobe Applications: Material Science