P91 - Nuclear Microbeam Analysis of Germanium doped GDP from Thin Film to ICF Target

Friday, 11 July 2014 13:00 (1 hour)

Since the National Ignition Facility (NIF) in America starts to be carryed out in 2010, for the Inertial Confinement Fusion (ICF) target, Germanium doped Glow Discharge Polymer (GDP) have become the preferred target material[1]. The nondestructive measurement of elements content in the ICF target has become a significant work in recent years. The paper presents the compositional and distributional results of the Germanium doped GDP analysis from the thin film to ICF target investigated by the Rutherford Backscattering Spectroscopy (RBS) combined with the Particle induced X-ray emission(PIXE) and the Elastic Recoil Detection Analysis(ERDA). The samples are thin film with 13-15 um thickness and ICF target with 500-2000 um radius. The calibration and geometrical arrangement in the analysis from the thin film to spherical target should be carefully considered in order to acquire the accurate result. In the work, the uniformity of the ball is shown and the ratio of carbon, hydrogen and germanium has been measured. The result of ratio value is in good agreement with the combustion method. Besides, the difference of the composition from thin film to ball is also disscussed. Nuclear microbeam analysis is one of ideal methods to assess the ICF target qualify.

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