



Contribution ID: 40

Type: Poster

High Intensity Negative Oxygen Ion Beam Production

A compact radio frequency (RF) driven ion source has been developed to produce negative oxygen ion beams for secondary ion mass spectrometry (SIMS) application. The RF ion source operates in inductively coupled plasma (ICP) mode and RF power is coupled into discharge chamber by a capacitive auto-matching network. A 3.5 turns water-cooled planar antenna made of 4 mm copper tube is used to generate plasma. A maximum ion beam 113.2 μA is obtained through a $\text{\O}1$ mm extraction aperture. O_2^- proportion in the extracted beam is always more than 35% and it shows a strong dependence on the RF injection power. The energy spread and lateral distribution of extracted ion beam are measured by a retarding field energy analyzer and a knife-edge sweeping device respectively. The primary experimental results show that the ion beam is Gaussian distribution in the transverse direction, and the full width at half maximum (FWHM) energy spread is about 13.3 eV when the ion beam energy is 10 keV.

E-mail for contact person

jinqianyu@impcas.ac.cn

Funding Information

Primary authors: JIN, QianYu; ZHOU, Yang; ZHAI, YaoJie; SUN, LiangTing; LIU, YuGuo; ZHAO, Hong-Wei

Presenter: JIN, QianYu

Session Classification: Poster Session 1

Track Classification: Negative ion sources