

Abstract Submitted  
for the GEC15 Meeting of  
The American Physical Society

**Properties of large area weakly magnetized inductively coupled plasma measured by cutoff probe and tuned single Langmuir probe** EUI-JEONG SON, YONG-SOO YOUN, DONG-HYUN KIM, HAE JUNE LEE, HO-JUN LEE, Pusan National University — Applicability of cutoff probe in weakly magnetized plasmas was investigated using Drude model and electromagnetic field simulation. It was shown that the cutoff probe method can safely be used for weakly magnetized high density plasma sources. Cutoff probe system with two port network analyzer has been prepared and applied to measure electron density distributions in large area, 13.56MHz driven weakly magnetized inductively coupled plasma source. The results shown that, by applying uniform magnetic field of 12 Gauss to 5 mTorr Ar plasma, peak electron density is increased by a factor of 3 compared with non-magnetized plasma. However, radial density profile becomes more center-high and non-uniform. As the rf power increases the radial uniformity is improved. Electron temperature decreases at the chamber center and increases at the edge when the plasma is magnetized. Resulting radial temperature distribution becomes U-shape. These electron temperature profiles are well agree with self-consistent fluid simulation results. On the other hand, simulation predicted that the radial electron density distribution has M-shape, which is not agreed with experimental results. The origin of the discrepancy between simulation and experimental results are not clear.

Eui-Jeong Son  
Pusan Natl Univ

Date submitted: 19 Jun 2015

Electronic form version 1.4