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Langmuir probe perturbation in plasma distribution measurement in an inductively coupled plasma SUNGHO JANG, JINSUNG KIM, KYEONGHYO LEE, CHINWOOK CHUNG — A single Langmuir probe system [SLP2000^{TM}, Plasmart, INC] was used for the measurement of radial density. The probe was located at 4cm below a dielectric window and the measurement was carried at 25mTorr at various rf powers (13.56MHz). It was found that symmetric radial density distribution becomes asymmetric as rf power increases. To investigate the cause of this asymmetric density distribution, a wise probe^{TM}(P&A Solutions) that can measure plasma densities and the electron temperatures in real-time was installed on the chamber wall. At high rf powers, as the probe body goes in, the plasma density measured by the wise probe is decreased. This indicates that whole plasma density is affected by the probe intrusion. It appears that the Langmuir probe passes through the skin layer and the probe body impedes electron heating process in the skin layer. The probe measurement method to avoid this perturbation is presented.

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