

Abstract Submitted
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Measurement of atomic hydrogen density in the plasma boundary region of inductively coupled plasma by VUV absorption spectroscopy
DEOG GYUN CHO, A-YOUNG MOON, YONGSUNG YOU, DAL HYEON RYU, SE YOUN MOON, Chonbuk Natl Univ — Plasma parameters can be analyzed by applying a VUV absorption spectroscopic method to the plasma through VUV light generated by He/H₂ discharge. The VUV light source can provide a variable for measuring the atomic density of hydrogen based on the absorption spectroscopy. The VUV light source based on a hollow cathode discharge was used for an intense emission of 121.56 nm (Lyman- α) line. For accurate measurement of the hydrogen density, the self-absorption-applied vacuum ultraviolet absorption spectroscopy (VUVAS) was employed to Ar/H₂ inductively coupled plasmas (ICP). The absolute density of hydrogen atoms was investigated for various Ar/H₂ gas ratio in the ICP. In this way, the absorption of the hydrogen is about 35 % at 50 mTorr and 100 W in inductively coupled plasmas (ICP). The hydrogen density was varied from 10^{13} $^{-3}$ to 10^{14} $^{-3}$ with respect to gas ratios with regard to absorption.

Deog Gyun Cho
Chonbuk Natl Univ

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