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**Development of ultracompact absolute density measurement system for atomic radicals and simultaneous measurement technique of H, N, O radicals employing the system** SEIGO TAKASHIMA, Dept. of Electrical Engineering and Computer Science, Nagoya Univ., HIROYUKI KANO, NU Eco-Engineering, MASARU HORI, Dept. of Electrical Engineering and Computer Science, Nagoya Univ. — Atomic radicals such as hydrogen (H), Nitrogen (N), and oxygen (O) play important roles in reactive process plasmas. In previous study, we have developed a measurement system of absolute densities of H, N, O atoms in process plasmas employing the vacuum ultraviolet absorption spectroscopy (VUVAS) with an atmospheric pressure microdischarge hollow cathode lamp (MHCL). Using this system, the measurements of absolute densities have been carried out and hereby the behaviors of these atomic radicals in various process plasmas have been clarified. However, in this system, when the measurements were carried out in the high density plasmas, the pipes of about 30 mm in diameter had to be introduced into the plasma in order to prevent the saturation of the absorption intensity. Moreover, three atomic radicals were not able to be measured simultaneously. In this study, we have developed the ultracompact measurement system of mm size and simultaneous measurement technique of H, N, O atoms.

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