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**Optical probe for space resolved measurement of atom densities in reactive plasmas** SHUNJI TAKAHASHI, SEIGO TAKASHIMA, Nagoya Univ., KOJI YAMAKAWA, SHOJI DEN, Katagiri Engineering, HIROYUKI KANO, NU Eco-Engineering, MASARU HORI, Nagoya Univ. — Atomic radicals such as H, N, O, and C play important roles in process plasmas. We have developed a compact measurement system of these atom densities in the reactive plasmas using a vacuum ultraviolet absorption spectroscopy (VUVAS) with a microdischarge hollow cathode lamp (MHCL). However, the two opposite ports are basically necessary to measure the densities using the system. Moreover, it is difficult to measure the spatial distribution of the densities. In this study, the monitoring probe for the atomic radicals has been developed. The probe installed to the plasma was 2.7 mm in diameter. The port for the measurements was one. It enables us to measure the spatial distribution of the atom densities by moving the probe along the chamber radius. Using the probe, the spatial distribution of the H atom densities in the remote H<sub>2</sub> plasmas was successfully measured at the pressure of 1.33 Pa, the RF power of 300 W. The densities decreased drastically from  $1.2 \times 10^{12} \text{ cm}^{-3}$  to  $4.4 \times 10^{11} \text{ cm}^{-3}$  near the chamber wall.

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