

Abstract Submitted
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Vacuum ultraviolet absorption spectroscopy using self-absorption effect in light source SHO SHIMIZU, Meijo University — Vacuum ultraviolet absorption spectroscopy (VUVAS) using a plasma light source is useful for measuring the absolute density of atomic radicals in plasmas. For the VUVAS, background absorption due to molecules is serious issue. In this study, the possibility for the measurement of background absorption using a self-absorption has been investigated. A mixture of H₂ and He was introduced into the micro-discharge hollow cathode lamp (MHCL) to obtain an emission of H atoms at Lyman α line, and then the light was introduced into a H₂ inductively coupled plasma (ICP). The absorption intensities of the light due to H atom in the H₂ ICP were measured as a function of H₂ partial pressure in the MHCL. With the increase in the H₂ partial pressure, the absorption intensity decreased from 17 to 6 percent. This is probably due to the effect of self-absorption by H atoms inside the MHCL. With the increase in the self-absorption, the peak intensity of H atom spectrum emitted from the MHCL decreases, while light in the spectrum edge region, which is less absorbed by H atoms, remains virtually unchanged. Using this light as a probe light, the background absorption in the target plasma could be estimated.

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