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Density and translational temperature of Pb atom in the multi-Micro Hollow Cathode Lamp measured by diode laser absorption spectroscopy MARI INOUE, TAKAYUKI OHTA, NAOKI TAKOTA, Wakayama University, MASAFUMI ITO, Meijo University, HIROYUKI KANO, NU Eco Engineering Co., LTD., KOJI YAMAKAWA, Katagiri Engineering Co., LTD., MASARU HORI, Nagoya University — In various processes, especially in sputtering process using metal composite target, it is important to measure multi metallic atoms simultaneously for understanding and controlling the behavior of metallic atoms in gas phase. We have investigated the multi-Micro Hollow Cathode Lamp (multi-MHCL) based on the micro hollow cathode discharge for a light source of absorption spectroscopy to monitor the densities of multi metallic atoms simultaneously and quantitatively. In this study, we have measured the density and translational temperature of Pb atom in the multi-MHCL with diode laser absorption spectroscopy. The multi-MHCL was operated under 40 mA and 390 V. Diode laser was scanned around the absorption wavelength of 405.78 nm. The Pb atom density in the multi-MHCL was measured to be 10^{11} cm^{-3} at He pressure range of 0.005-0.0075 MPa. The translational temperature was estimated to be from 950 to 1010 K from FWHM of the absorption profile. The density and translational temperature of Pb atom were increased with decreasing the pressure.

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