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**Development of light source using micro hollow cathode plasma for monitoring absolute densities of metal atoms in magnetron sputtering**  
TAKAYUKI OHTA, YOSHIHIRO TACHIBANA, MASAFUMI ITO, Wakayama University, SEIGO TAKASHIMA, Nagoya University, YASUHIRO HIGASHIJIMA, NU System Co., Ltd., HIROYUKI KANO, NU EcoEngineering Co., Ltd., SHOJI DEN, Katagiri Engineering Co., Ltd., MASARU HORI, Nagoya University — The quantitative analysis of metal atoms is important for understanding the chemistry and controlling the conditions in sputtering process. The light source, which emits multi-atomic lines simultaneously, is required for diagnostics of behaviors of many kind of metallic atom at the same time. In this study, a multi-micro hollow cathode lamp for simultaneous monitoring of multi-metal atoms in sputtering process was developed. The emissions of Cu, Zn, Fe, and Mo for analysis were simultaneously obtained from 4 hollows. The Cu and Mo densities in the magnetron sputtering were measured using absorption spectroscopy employing the multi-micro hollow cathode lamp. Those densities were measured to be from  $10^9$  to  $10^{10}$   $\text{cm}^{-3}$  in the RF power range from 0 to 100 W at a pressure of 5 Pa. The simultaneous measurement of the atomic densities in the sputtering plasma has been performed.

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