

Abstract Submitted  
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**Spatially resolved measurement of Ar excited species in magnetized inductively coupled plasma using multi-port optical emission spectroscopy**<sup>1</sup> YUN-GI KIM, CHANG-SEUNG HA, MOON-KI HAN, KWON-SANG SEO, DONG-HYUN KIM, HAE JUNE LEE, HO-JUN LEE, Department of Electrical Engineering, Pusan National University, IL GYO KOO, SOOJIN LEE, HYO-SEONG SEONG, Research center, SEMES — Optical emission spectrometry (OES), which is the spectral analysis of the light emanating from plasma, is probably the most widely used method for monitoring and diagnosis of plasma processes. This technique has the advantage of being external to the reactor and vacuum system. However, the OES method is limited to measure spatial distribution of species accurately. In this work, multi-port optical emission spectroscopy system was developed to improve the space-resolved ability. This multi-port OES system consists of Si wafers, optical fibers, prisms and windows. The Si wafers are used for making the same condition while this device is put in the etching or deposition reactor. The emission light from plasma is collected and transferred through the optical fibers. The spatial distribution of Ar excited species is measured using this device in inductively coupled plasma with and without external axial magnetic field. The off-axis density profile of electron, Ar ion and excited species are appeared in weakly magnetized inductively coupled plasma. Also the emission intensity was changed in this experimental condition. Two-dimensional simulation was studied to verify this experimental result.

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