

# **Extreme ultraviolet (EUV) measurement and Plasma diagnostics of the coaxial focused plasma in accordance with Argon pressure for EUV light source**

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We have generated the Ar plasma in the diode chamber based on the established coaxial electrode type and investigated EUV radiation and the emitted visible light for emission spectroscopy. The optical emission spectrum data have been obtained for the focused plasma in the cylindrical diode chamber under the input voltage of 4.5 kV. We observed the six emission lines of Ar II ; 407.201 nm, 410.391 nm, 422.816 nm, 426.653 nm, 427.752 nm and 488.0 nm. The downstream electron temperature and focused electron density have been measured by the Boltzmann plot and Stark broadening, respectively, from assumption of local thermodynamic equilibrium (LTE). The pressure of Ar gas in diode chamber has been changed by the 4, 6, 8, 10 and 20 mTorr. Also we have investigated the temporal behavior in the case of electron temperature measurement. Our results show that EUV source power is approximately calculated the value 3.3 W with EUV photodiode and the maximum electron temperature is 2.7 eV in Ar pressure of 8 mTorr and electron density is  $1.73 \times 10^{17} \text{ cm}^{-3}$  for the coaxial plasma focus with cylindrical electrode.