

**MEASUREMENT OF EXTREME ULTRAVIOLET
(EUV) AND THE ELECTRON TEMPERATURE FOR
RELATIVE ELECTRON DENSITY RATIO USING
STARK BROADENING OF THE COAXIAL FOCUSED
PLASMA**

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The research fields of soft X-rays and extreme ultraviolet (EUV) were used in a wide variety of EUV lithography techniques for semiconductor chip manufacture and soft X-ray microscopy. We have generated Ar plasma in dense plasma focus device with coaxial electrodes and investigated an emitted visible and EUV light for electro-optical plasma diagnostics. We have applied an input voltage 4.5 kV to the capacitor bank of 1.53 μF and the diode chamber has been filled with Ar gas. EUV light have measured with EUV photodiode and X-ray film with pinhole. If we assumed that the focused plasma regions satisfy the local thermodynamic equilibrium (LTE) conditions, the electron temperature and density of the coaxial plasma focus could be obtained by Stark broadening of optical emission spectroscopy (OES). The electron densities of several emission lines for Ar II can be measured by Stark broadening for spectrum profile. The electron temperature can be estimated by the Boltzmann plot method using this relative densities ratio.

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