

Abstract Submitted
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Characterization of the Lam 9100TCP plasma through atomic argon spectral lines VLADIMIR MILOSAVLJEVIĆ¹, ALBERT R. ELLINGBOE, Dublin City University, Ireland — Argon as one of most frequently used gas in RF discharge. Determination of plasma parameters through analysis of argon emission would be a powerful tool. Four argon lines have been measured from two different transitions. From the 4s–4p transition the 750.387 nm and 751.561 nm spectral lines are recorded and also from 4p–4d transition the 687.129 nm and 751.041 nm Ar I spectral lines are recorded. These four Ar I spectral lines each belong to the different multiplets and therefore have the different upper energy level. The difference of upper energy levels among these argon spectral lines is greater than 1.5 eV. Also, the 751.041 nm spectral line of Ar I have an upper energy level very close to ionized limit for atomic argon. Data is collected for a range of operator contribution in an Ar–O₂–C₄F₈ gas mixture discharge, by high resolution spectrometers Carl Zeiss PGS–2 with 60 pm instrumental width. The emission strengths and profile shapes are found do be dependent on RF power settings, gas mixture and pressure. Correlation of plasma internal state will be presented.

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