Abstract Submitted
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Phase resolved optical emission spectroscopy on a dual frequency capacitively coupled rf discharge[1] TIMO GANS, JULIAN SCHULZE, UWE CZARNETZKI, Institute for Plasma and Atomic Physics, Ruhr-University Bochum, Germany, MILES M. TURNER, National Centre for Plasma Science and Technology, Dublin City University, Ireland — Dual frequency capacitively coupled rf discharges are frequently used in technological applications. The principle of these discharges is to allow separate control of the ion energy and ion flux impinging on the substrate surface. The ion flux is mainly controlled by the high frequency component while the ion energy is predominantly determined by the low frequency voltage. We present experimental investigations on a confined industrial discharge (Exelan, Lam Research Inc.) operated with two frequencies, 1.94 MHz and 27.12 MHz, applied simultaneously to one electrode. Phase resolved optical emission spectroscopy (PROES), resolving both the high and low rf frequencies, gives insight into the electron impact excitation dynamics. Measurements reveal a strong coupling of both frequencies. The discharge is well confined resulting in similar excitation mechanisms in front of the powered and grounded electrodes.

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