

Abstract Submitted
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Spatio-temporal analysis of electron power absorption in low pressure CCPs operated in O₂ MATE VASS, Institute for Solid State Physics and Optics, Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary, SEBASTIAN WILCZEK, JULIAN SCHULZE¹, Department of Electrical Engineering and Information Science, Ruhr-University Bochum, Germany, TREVOR LAFLEUR, PlasmaPotentialPhysics Consulting and Research, Canberra, Australia, ZOLTAN DONKO, Institute for Solid State Physics and Optics, Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary, RALF PETER BRINKMANN, Department of Electrical Engineering and Information Science, Ruhr-University Bochum, Germany — The power absorption in electronegative CCPs at low pressures indicates complex electron dynamics that are still not fully understood. Therefore we present a spatio-temporally resolved analysis of electron power absorption in low pressure oxygen CCPs based on the first two moments of the Boltzmann-equation [1]. The spatio-temporal results are obtained self-consistently from 1d3v Particle-In-Cell / Monte Carlo Collision simulations. In contrast to typical theoretical models of electron heating, we observe significant ohmic heating and an attenuation of ambipolar heating at low pressures due to the strong electronegativity of the discharge.

[1] Schulze J, Donkó Z, Lafleur T, Wilczek S, Brinkmann R P 2018 *Plasma Sources Sci. Technol.* **27**(5) 055010

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