

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Nonlocal Dynamics of Secondary Electrons in Low Pressure Capacitively Coupled Plasmas KATHARINA NOESGES, Ruhr University, Bochum, Germany, ARANKA DERZSI¹, BENEDEK HORVATH, Wigner Research Centre for Physics, Budapest, Hungary, THOMAS MUSSENBROCK, Brandenburg University of Technology, Cottbus, Germany, RALF PETER BRINKMANN, JULIAN SCHULZE², SEBASTIAN WILCZEK, Ruhr University, Bochum, Germany — The generation of secondary electrons in low pressure capacitively coupled radio frequency discharges is one part of the plasma surface interaction which strongly affects the electron dynamics. However, secondary electrons, in particular electron induced secondary electron emission (eiSEE), are frequently neglected in theory and simulations. Especially at high sheath voltages, previous work [1] has shown that eiSEEs contribute to the ionization process and can significantly increase the plasma density. The generation of eiSEE generally depends on the dynamics of ion induced secondary electron emission (iiSEE) due to their very high energies. Therefore, it is important to consider the dynamics of the different electrons (eiSEE and iiSEE) separately. With this separation, the electron power gain as well as the generation of each species can be understood on a nanosecond timescale. In this work, different parameters (gap size, pressures) are varied by means of PIC/MCC simulations and the impact of iiSEE and eiSEE on the discharge is investigated by using a realistic implementation of surface coefficients.

B. Horváth et al. 2017 *Plasma Sources Sci. Technol.* **26** 124001

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Date submitted: 13 Jun 2018

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