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The role of secondary electron emission in capacitive rf plasmas at low pressure[1] BIRK BERGER, BTU Cottbus-Senftenberg, Germany; Ruhr-University Bochum, Germany, JULIAN SCHULZE, PETER AWAKOWICZ, Ruhr-University Bochum, Germany, THOMAS MUSSENBROCK, BTU Cottbus-Senftenberg, Germany, ARANKA DERZSI, BENEDEK HORVÁTH, ZOLTÁN DONKÓ, Wigner Research Centre for Physics, Hungary — The correct choice of the ion induced secondary electron emission coefficient, γ, is of high importance to obtain realistic results by PIC/MCC-simulations of capacitive rf plasmas. In most studies, this coefficient is set to $\gamma = 0.1$ without taking into account the energy of the incident particles, the electrode material, and the surface conditions. Recently, studies showed that using a more realistic, energy dependent γ-coefficient strongly influences the outcome of computational investigations at high pressure. In CCPs used for sputtering a much lower pressure of approx. 1Pa is used. In this regime, the plasma-surface interaction can lead to a change of the surface conditions, e.g. by target poisoning. This can result in process drifts. This effect is usually linked to the change of γ but it is not understood how γ affects the plasma at such low pressures, where the multiplication of secondary electrons within the sheath is negligible. This work investigates the effect of different γ-coefficients on the discharge by PIC/MCC-simulations at low pressures in argon. It is found that the confinement of γ-electrons by multiple reflections at the sheaths strongly influences the ionization rate.

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