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**Experimental verification of 1d3v PIC/MCC simulations of capacitive RF plasmas operated in argon** DAVID A. SCHULENBERG, IHOR KOROLOV, Ruhr-University Bochum, ZOLTAN DONKO, ARANKA DERZSI, Wigner Research Centre for Physics, Budapest, JULIAN SCHULZE, Ruhr-University Bochum; Dalian University of Technology — Results of one-dimensional particle-in-cell simulations are compared systematically with plasma characteristics measured in a geometrically symmetric single frequency (13.56 MHz) capacitively coupled reactor driven by a sinusoidal voltage waveform in argon. Pressures from 1 Pa to 100 Pa and driving voltage amplitudes of 150 V–350 V are used. We show that the simulations predict the measured spatio-temporal excitation dynamics, the central electron densities, and the ion energy distribution functions at the electrodes well for most of the investigated conditions. Noticeable differences are observed at the lowest pressures, where the experimental results indicate that the plasma density is underestimated in the simulations. The treatment of plasma-surface interactions in the simulation is identified as the reason for this disagreement. We find that increasing the electron reflection coefficient leads to higher densities and a better agreement with the experimental data at low pressures, while the densities at higher pressures remain unchanged.

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