Abstract Submitted
for the GEC17 Meeting of
The American Physical Society

How boundary conditions affect the plasma properties in CCRF discharges? ANBANG SUN, Xi'an Jiaotong University, MARKUS BECKER, DETLEF LOFFHAGEN, INP-Greifswald — PIC/MCC methods are commonly used for the simulation of CCRF discharges. Various boundary conditions (BCs) have been used to describe the interaction of particles with the electrode surfaces. However, well-founded explanations and investigations of the influence of those BCs are very rare. In the present contribution, our 1d3v PIC/MCC code is applied to analyze the quantitative impact of electron BCs on the properties of CCRF discharges. It is shown that for the lowest gas pressure considered, the secondary electron emission (SEE) coefficient and the electron reflection coefficient have a similar impact on the plasma parameters. With increasing gas pressure, the discharge switches from alpha to gamma mode and the emission of secondary electrons becomes the dominant boundary effect. At the highest pressure of 80 Pa, the SEE strongly affects the plasma parameters while the electron reflection coefficient has almost no effect.
*The work was supported by EU PlasmaShape project (no 316216), by State Key Laboratory of Electrical Insulation and Power Equipment (no EIPE17311) of Xi'an Jiaotong University and by the German Research Foundation within CRC TRR24.

Anbang Sun
Xi'an Jiaotong University

Date submitted: 30 May 2017 Electronic form version 1.4