Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Realistic secondary electron emission coefficients in direct current superposed RF capacitively coupled plasmas.[1] JING-YU SUN, QUAN-ZHI ZHANG, Dalian University of Technology, DE-QI WEN, Michigan State University, YONG-XIN LIU, YOU-NIAN WANG, Dalian University of Technology — The secondary electrons (SEs) induced by plasma particles can modify the intensity of plasma cooling, and in turn, strongly affect the discharge characteristics. Therefore, it is necessary to apply an accurately model for the description of the interactions between the plasma particles and the surfaces in simulations. The effects of realistic model for the electron-surface interactions combined with the energy-dependent secondary electron yields (SEYs) due to heavy particles (i.e. ions and fast neutrals) impact the 'dirty' (e.g., oxidized metal) surfaces is investigated by means of PIC/MCC method in direct current (DC) superposed ratio frequency discharges in argon. The results are compared to those obtained by using a simplified model, which a constant probability for the elastic reflection of electrons and a constant emission yield of ion-induced SEs are assumed. At high DC voltages, the realistic SEYs is found to have a significant effect on the plasma density and the electron dynamics.

[1]This work is financially supported by the National Natural Science Foundation of China (NSFC) (Grant No. 11335004 and 11722541).

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Date submitted: 31 May 2019 Electronic form version 1.4