Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Genesis of non- uniformity of plasma fluxes over emissive wall in low-temperature plasmas[1] IRINA SCHWEIGERT, George Washington University, Washington DC, MITCHELL WALKER, Georgia Institute of Technology, Atlanta, MICHAEL KEIDAR, George Washington University, Washington DC —
A spatial non-uniformity of electron and ion fluxes on the treated surfaces in plasma devices can be provoked by various factors, for example, a non-planar topology, difference in the electron emission yield of materials in segmented surface or the presence of an oblique external magnetic field. In these cases, a feedback between plasma fluxes and surface structure (through the non-planar surface sheath) can lead to an essential modification of the surface during plasma device operation. In PIC MCC simulations and in the experiment, the plasma sheath transition near the grooved emissive surface, segmented emissive surface stimulated by an increase of the energy of electron is studied. It is shown that the modulation electron and ion fluxes to the surface increases after the transition. The effect of external oblique magnetic field on plasma structure is studied in PIC MCC simulations. The formation of periodical plasma structure and effect of variation of electron energy and magnetic field strength on this structure is discussed. It is shown that enlarging the inclination of the magnetic field leads to increasing non-uniformity of ion and electron fluxes on the wall.

[1]The authors gratefully acknowledge FA9550-11-1-0160,Program Manager Mitat Birkan for support of this research. One of the authors, IS, was partly supported by RSF 17-19-01375.

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Date submitted: 02 Jun 2019 Electronic form version 1.4