Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

A hybrid simulation of radio frequency biased inductively coupled Cl2 discharges LEI TONG, YU-RU ZHANG, YUAN-HONG SONG, YOU-NIAN WANG, Dalian University of Technology — In a biased inductively coupled plasma (ICP) discharges, the sheath behavior has an important influence on the bulk plasma properties. Therefore, a hybrid model, which consist of a global model coupled bi-directionally with a fluid sheath model is employed to investigate the biased ICP discharges in electronegative Cl2 gases. The plasma parameters in the bulk region, such as the density of electron and various ions, as well as the electron temperature are calculated by the global model and they are input into the sheath model as boundary conditions. The sheath behavior is described by a sheath model, and the power absorption from the bias source and the sheath voltage drop are delivered to the global model. When the convergence is achieves, an ion Monte-Carlo collision model is executed. The influence of coil power, pressure and bias voltage waveform on the bulk, as well as on the ion energy and angular distributions for both Cl+ and Cl2+ ions on the bias electrode are investigated.

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Date submitted: 03 Jun 2019 Electronic form version 1.4