

Abstract Submitted
for the GEC05 Meeting of
The American Physical Society

Dynamics of striations formed in a hollow anode covered by a dielectric layer V.N. KHUEDIK, Plasma Dynamics Corp., MI, A. SHVYDKY, C.E. THEODOSIOU, University of Toledo, OH — The dynamics of the charging of a cylindrical hollow anode (covered with a dielectric layer) by an electron current is studied via 3-dimensional Particle-in-cell/Monte-Carlo kinetic simulations. For the first time, it is shown that this process is accompanied by the successive formation of striations in the plasma created by the electron impact ionization of the background noble gas. The dynamics of the formation of striations can be quite different depending on the gas pressure, the cylinder radius, the thickness of the dielectric layer, and the magnitude of the current from the emitter. A number of specially designed numerical experiments are performed to further explore the nature of this phenomenon. An experimental set-up where this type of striations should be observed is suggested.

A. Shvydky
University of Toledo, OH

Date submitted: 14 Jun 2005

Electronic form version 1.4