Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Simulations of DC planar magnetron discharges using CFD-ACE+ ANANTH BHOJ, KUNAL JAIN, MUSTAFA MEGAHED, ESI US R&D Inc — Among the various kinds of plasma reactors, DC magnetron discharges are a class of reactors that utilize dc electric fields and strong magnetic fields to confine or otherwise manipulate the discharge properties and consequent details of sputtering to suit processing needs. In this work, the plasma modeling platform, CFD-ACE+, was used to simulate DC discharges in the presence of strong magnetic fields, not accounting for sputtering effects. CFD-ACE+ consists of several coupled physics modules and the partial list of those used here solve for volumetric and surface reactions, heat transfer, electromagnetics and species transport. Anisotropic electron transport in the presence of strong magnetic fields is included in the model. An axisymmetric DC discharge with a grounded anode and powered cathode and static magnetic field (also axisymmetric) was investigated. The effect of magnetization and secondary electron emission on plasma density and sheath thickness are discussed. The variation of species fluxes, energy and angular distributions at the cathode are examined.

Ananth Bhoj
ESI US R&D Inc

Date submitted: 14 Jun 2013 Electronic form version 1.4