

Abstract Submitted
for the GEC11 Meeting of
The American Physical Society

Plasma-surface interactions in the control of plasma distribution functions: α -C:H surfaces impacted by Ar/H₂ plasmas DAVID GRAVES, NING NING, University of California, Berkeley, NICK FOX-LYON, University of Maryland, GOTTLIEB OEHRLEIN, University of California, Berkeley, DOE PLASMA SCIENCE CENTER COLLABORATION — The purpose of the study is to establish the role of surface processes in influencing and controlling characteristic plasma distributions functions during the erosion of thin α -C:H films. The dominant effect following Ar⁺ impacts on a α -C:H film is near-surface H depletion, which results in a carbon rich near-surface-region (modified layer). The modified layer thickness increases with increasing ion energy; predicted thickness is in agreement with measurements. Energetic H₂⁺ impacts resulted in H insertion and hydrocarbon cluster erosion. Near-surface film structure and composition result from competition between these processes. The effect of H⁺ impacts and possible synergetic effect of ions, additional neutrals and VUV photons will be discussed. In addition, the species ejected into the plasma following ion and neutral impacts will alter the plasma distribution functions; these effects will be highlighted as well.

David Graves
University of California, Berkeley

Date submitted: 21 Jul 2011

Electronic form version 1.4