Abstract Submitted
for the GEC11 Meeting of
The American Physical Society

Resistance and capacitance measurements of the films deposited on a planar Langmuir probe VLADIMIR SAMARA, Imec, MOHAND BROURI, Lam Research Corp., JEAN-FRANCOIS DE MARNEFFE, ALEXEY P. MILENIN, WERNER BOULLART, Imec — The beneficial use of DC-pulsing instead of RF for biasing a capacitively coupled planar Langmuir probe mounted in industrial CCP etcher is demonstrated. The ion flux is determined from the discharging of a DC-biased capacitor for Ar, O_2, and C_2H_4-based plasmas taking into account the RC constant of the films grown on the probe. A comparison is made between the clean probe after Ar sputter-cleaning and the probe coated with a polymer film. A new fitting procedure is proposed including both the capacitance and resistance of the film. The experimental validation is done with a C_2H_4-based polymer film, which resistance and capacitance are measured. Finally, it is shown that, together with the measurement of intrinsic plasma parameters like T_e and ion flux, one can monitor deposition on the chamber walls that can possibly be extrapolated to the etched wafer.

Vladimir Samara
Imec

Date submitted: 15 Jul 2011 Electronic form version 1.4