

Abstract Submitted
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DC Self Bias Trends in Dual Frequency PECVD Deposition Systems D.L. KEIL, E. AUGUSTYNIAK, C. LEESER, F. GALLI, Novellus Systems, Inc. — Capacitively coupled plasma (CCP) etch systems commonly report the DC auto or self bias developed as a consequence of capacitively coupling RF to the plasma. Frequently, these systems employ wafer pedestals comprised of electrostatic chucks which must monitor the self bias as part of their normal operation. DC self bias is often found to correlate with various etch process behaviors or system states. It is less common, however, to find CCP deposition systems that report DC self bias. This work reports results of a study of DC self bias trends due to chamber pressure, chamber conditioning and aging, and changes in wafer pedestal hardware. In particular, chamber film accumulation is found to correlate to certain DC bias trends. The applicability of these results for process tracking and system monitoring is discussed. Additionally, the DC self bias response to deliberate perturbations to the RF system are examined. These perturbations include those not normally encountered during commercial deposition such as ‘bleeding’ current to ground.

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