Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Sputter processes in capacitively coupled multi frequency discharges STEFAN BIENHOLZ, EGMONT SEMMLER, PETER AWAKOWICZ, AEPT, INSTITUTE FOR PLASMA TECHNOLOGY TEAM — In material processing applications capacitively coupled plasmas have been of great importance over several years. For plasma deposition processes single frequency capacitively coupled discharges only play a minor role due to rather low deposition rates. In contrast a higher electron density, hence a higher ion flux can be achieved in magnetron coaters, which accordingly leads to significantly higher deposition rates. However, disadvantages such as limited target exploitation or restricted usage of non-conductive or magnetic targets are still present. In this contribution we propose a multi frequency driven capacitive discharge to combine the major advantages of both processes with respect to large scale applications. Whereas high electron densities and therefore a high ion flux can be achieved by using very high frequencies (VHF = 60-90 MHz), an additional lower frequency (HF = 1-14 MHz) gives a certain control over the ion bombarding energy. However complex frequency coupling limits the separated tunability.

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Date submitted: 10 Jun 2009 Electronic form version 1.4