Abstract Submitted
for the GEC20 Meeting of
The American Physical Society

Particle-in-cell simulation of dual frequency capacitively coupled plasma with pulsed DC biasing at low pressure PENG TIAN, JASON KENNEY, SHAHID RAUF, Applied Materials — Pulsed capacitively coupled plasma (CCP) is being widely used in industry over the last decade due to its capability to control ion energy and fluxes, particularly in etching processes such as high aspect ratio (HAR) etching or atomic layer etching. Among those, radio-frequency (RF) pulsing is one of the most common schemes that's being used and studied extensively, in which a pulse-enveloped sinusoidal wave is used as power source. Direct current (DC) pulsing is an attractive option for biasing due to reduced electron heating and better control over ion energy. In this study, a 1D particle-in-cell (PIC) plasma model is used to study the kinetics of a RF Ar plasma at 1 – 10's mTorr, with pulsed DC bias at 100's kHz pulsing frequency and a very high frequency RF source. Results for IED and bulk plasma characteristics will be discussed over a range of pressures, duty cycles, and pulsing frequencies.

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Date submitted: 17 Jun 2020 Electronic form version 1.4