

Abstract Submitted  
for the GEC08 Meeting of  
The American Physical Society

**Interaction Analysis of Multi-frequency RF powers in Dual Coil Inductively Coupled Plasma Etcher** HEEYEOP CHAE, HAEGYOO CHANG, Department of Chemical Engineering, Sungkyunkwan University, Suwon, 440-746, Korea, KUN JOO PARK, ROBERT KIM, DMS Co., Ltd., Suwon, 445-810, Korea — In commercial plasma etching systems, more than one radio-frequency (RF) frequency powers are introduced to increase the controllability of the degree of dissociation, ion density, ion energy, uniformity and so on. In this work, the interaction within multiple RF frequency was analyzed in a dual coil inductively coupled plasma system. 2MHz and 27MHz dual RF powers were introduced to the bottom electrode and 13.56MHz RF power was introduced to the dual coil on the top of the plasma chamber. Plasma density was determined by noninvasive plasma probe and ion energy was determined by measuring voltage waveform. The blanket silicon dioxide film was etched by Ar plasmas and photoresist film was etched by O<sub>2</sub> plasmas. Based on the physical and chemical analysis of blanket film analysis, the interaction of multi-frequency RF powers was analyzed in various process regimes.

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Date submitted: 13 Jun 2008

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