

Abstract Submitted  
for the GEC13 Meeting of  
The American Physical Society

**Reduction of Aspect Ratio Dependency in Silicon Trench Etch<sup>1</sup>**

ROBERT BATES, University of Texas at Dallas — The etch rate of deep features in silicon, such as trenches and vias, can vary significantly with the changing aspect ratio (AR) of the feature. This work focused on using a continuous plasma process utilizing a gas mixture of SF<sub>6</sub>-C<sub>4</sub>F<sub>8</sub>-Ar to produce trenches of varying widths and depths. Optical and electrical diagnostics of percent flow, total flow and RF bias on trench profiles were investigated. Experiments were also performed to show that the etch rate of low AR features can be reduced through the deposition of a passivation layer and thereby allow larger AR features to “catch up”. It is also possible to invert the ARDE in certain circumstances.

<sup>1</sup>Financial Support: TI/SRC Award # 2261.001

Robert Bates  
University of Texas at Dallas

Date submitted: 14 Jun 2013

Electronic form version 1.4