

Abstract Submitted  
for the GEC16 Meeting of  
The American Physical Society

**Temporal evolution of as-developed line and space photoresist profiles during etch.** BARTON LANE, PETER VENTZEK, Tokyo Electron America, ALOK RANJAN, VINAYAK RASTOGI, TEL Technology Center, America, LLC, JUN YOSHIKAWA, Tokyo Electron Miyagi, LLC — We discuss here the etching of the as-developed photoresist pattern of lines and spaces. By examining time partition studies of the etching process, we show that the evolution of a photoresist profile has several distinct phases. These are caused by the material properties of the as-developed photoresist polymer, the change in these material properties due to the plasma interaction with the photoresist and to geometric effects caused by the interaction of faceting profiles and finite line widths. By exploiting sheath bending to direct ions into the sidewall of the lines we examine the etch characteristics of the photoresist side walls. Further by comparing wide to narrow lines, and nested to iso lines, we deconvolve the effects of line geometry and the material properties of the photoresist. For these studies pure argon and mixed argon/fluorocarbon chemistries are used.

Barton Lane  
Tokyo Electron America

Date submitted: 10 Jun 2016

Electronic form version 1.4