

CAMT Seminar

“Introduction to Lam Research Corp. and Challenges of High-Aspect-Ratio Etching”

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Date: 20 November, 2019 (Wed) 13:30-14:30

Location: Main Conference Room (1st floor), Bldg. A12
Center for Atomic and Molecular Technologies (CAMT)
(A12 棟 1 階会議室)

Abstract:

Lam Research Corporation is a global innovation leader in Semiconductor Process Equipment, with >10,000 employees worldwide, >\$10B annual revenue, and ~\$1.2B annual R&D investment. Lam products address many wafer processing applications, including electrochemical deposition, thermal CVD, plasma CVD, ALD, plasma etch, and strip. Lam is the market leader in atomic-level processes critical to semiconductor scaling and manufacturing, including Atomic Layer Etching.

Fabrication of leading-edge semiconductor memory devices requires etching of high aspect ratio (HAR) features, where the depth of the etched feature is more than 40x the width of the feature. One important example is found for 3D NAND devices, which use cylindrical HAR holes as a mold to deposit device films. Effectively creating these features is one of the great achievements of modern plasma etch processing. Etching HAR holes into dielectric films is challenging due to several common issues: excessive loss of the etching mask, hole-to-hole variability, reduced etching rates at HAR, and deviations from the ideal cylindrical shape including non-vertical sidewalls (bowing, tapering, twisting) and non-circular bottoms. Methods of addressing these issues will be discussed.

(Host: Satoshi Hamaguchi Ext:7913)