

# **Major Breakthrough in Planarization Technology: Applied Materials Announced Revolutionary 300mm Applied Reflexion LK Ecm**

July 12 2004

---

Applied Materials, Inc. announces a major breakthrough in planarization technology with its revolutionary 300mm Applied Reflexion LK Ecmp(TM) system. Introducing innovative electro-chemical mechanical planarization (Ecmp) capability on Applied's proven Reflexion LK platform, the new system is the industry's first and only CMP tool to provide this high-performance, cost-effective and extendible solution for copper/low k manufacturing at 65nm and beyond.

The Applied Reflexion LK Ecmp system takes full advantage of Applied's three platen approach, integrating the Ecmp process to remove bulk copper at a high rate (greater than 6,000 angstroms/min.) by electric charge, independent of downforce. Ideal for fragile ultra-low k films, the process enables the planarization of the most advanced dual damascene structures with minimal dishing, erosion and defects (less than 0.1/cm<sup>2</sup>). Cost of consumables is significantly reduced, replacing expensive copper slurry with low cost electrolyte chemistry. The remaining thin, uniform, copper film and barrier/liner material is then efficiently removed at very low downforce (less than 1.0 psi) to provide a complete planarization solution.

"Our exciting new CMP system blazes the way to a new era of advanced CMP capability for copper/low k interconnects," said Dr. Ming Xi, general manager of Applied Materials' Planarization and Plating group.

"Beginning at 65nm, successful planarization demands low shear force for delicate low k materials and reduced dishing and erosion. The Applied Reflexion LK Ecmp system achieves all of these challenging goals while improving throughput up to 25 percent and reducing operating cost up to 30 percent compared to conventional copper polishing systems."

According to Gartner Dataquest, the copper CMP market was \$232 million in 2003 and is forecast to grow at a 37% compounded annual growth rate through 2006. To further enhance performance, the Applied Reflexion LK Ecmp system features key process control capabilities, including its proprietary integrated iMap(TM) radial scan technology, which provides incoming film thickness profile information to accurately control bulk copper removal profile and endpoint detection. Enhanced post-CMP cleaning technology, specifically designed to clean low k hydrophobic films, complements the Ecmp process and provides a complete dry-in/dry-out sequence.

Incorporating Ecmp technology on the Reflexion LK platform extends the system's life to at least three technology generations, eliminating the need for tool requalification while reducing cost.

For additional information on the system, please visit [www.appliedmaterials.com/products/ecmp.html](http://www.appliedmaterials.com/products/ecmp.html)

Citation: Major Breakthrough in Planarization Technology: Applied Materials Announced Revolutionary 300mm Applied Reflexion LK Ecm (2004, July 12) retrieved 26 April 2024 from <https://phys.org/news/2004-07-major-breakthrough-planarization-technology-materials.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.