



Applied Materials Announces Advanced Copper CMP Processes; New Process Solutions for the Mirra Mesa CMP System Address Full Spectrum of Copper Design Requirements

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SANTA CLARA, Calif.--(BUSINESS WIRE)--May 17, 2000--Applied Materials, Inc., the leading supplier of CMP (chemical mechanical polishing) systems to the semiconductor industry, today announced two new copper processes for its industry-leading Mirra Mesa(TM) CMP system. Designed to support a full spectrum of dual damascene chip integration schemes used by customers, the new copper CMP solutions will take advantage of the Mirra Mesa system's enhanced process control capability to offer several production-worthy and cost-effective processing options.

"Copper CMP is one of the most critical challenges facing chipmakers," said Chris Smith, vice president and general manager of Applied Materials' CMP product group. "Combining our next-generation copper processes with the Mirra Mesa system's unique multi-platen architecture, advanced polishing head technology and our new FullScan(TM) endpoint technology gives our customers a high-productivity polishing tool for volume copper production."

Applied Materials' new copper CMP solutions include two processes that deliver superior planarity with minimal dishing and erosion. After an initial rapid removal of the copper material, customers can choose either a non-selective or selective process to polish the barrier film, depending on their dual damascene integration strategy. The non-selective process uses a breakthrough, cost-effective approach to removing the barrier film, as well as uncapped dielectric materials such as oxide, FSG (fluorinated silicate glass) and the Black Diamond(TM) film. The selective CMP process is designed to planarize and preserve the top dielectric layers used in capped low (kappa) dielectric applications. Both solutions can simplify the process sequence by eliminating the need for an additional dielectric polishing step and thereby lowering manufacturing costs.

Process control is provided by the Mirra Mesa CMP system's FullScan endpoint technology that precisely identifies the point at which film removal is complete across the wafer. This unique capability, combined with the process sequence, minimizes dishing and erosion of copper wiring structures, creating the flat surface topography needed to create multiple layers of interconnects.

"The Mirra Mesa system's copper process technology has been integrated to work with Applied Materials' Endura(R) Electra Cu(TM) Barrier/Seed and the Electra Cu Integrated ECP systems to provide a fully characterized, seamless process flow. This equipment set gives customers the opportunity to buy a pre-integrated interconnect solution that can help them quickly ramp their fabs for volume copper manufacturing," Smith added.

The system's copper process has been extensively characterized and tested for low defect levels. Process development was performed using Applied Materials' WF-736XS wafer inspection and SEMVision(TM) defect review systems to systematically reduce levels of particles and microscratches early in the development phase. The system's Mesa(TM) integrated post-CMP cleaning station uses megasonic cleaning technology and double-sided brush scrubbing to help resist corrosion and remove particles and slurry residue from both sides of the wafer, including very small recessed features and difficult bevel regions.

According to market research firm Dataquest, the market for CMP systems was estimated to be \$1.02 billion in 1999 and is expected to grow to \$2.5 billion by 2004, making it one of the strongest growing segments of the semiconductor equipment market. In a report released last month from Dataquest, Applied Materials was ranked the global market share leader in CMP for 1999.

The Mirra(R) CMP system recently passed its 500th system milestone, covering a diverse set of applications including dielectric, metal and polysilicon film polishing. More than 35 Mirra systems are already in operation for copper applications at more than 10 customers.

Applied Materials, Inc. is a Fortune 500 global growth company and the world's largest supplier of wafer fabrication systems and services to the global semiconductor industry. Applied Materials is traded on the Nasdaq National Market System under the symbol "AMAT." Applied Materials' web site is www.appliedmaterials.com.

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