



Applied Materials Leads the Industry in Delivering Copper Chip Technology; More Than 700 Applied Materials' Systems Installed Worldwide To Build Copper Interconnects

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SANTA CLARA, Calif., Feb 24, 2003 (BUSINESS WIRE) -- Applied Materials, Inc. reports that it has more than 700 systems for manufacturing copper chips installed at customers' fabs worldwide. This substantial number of systems, which includes metal and dielectric deposition, etch, CMP* and inspection technologies, verifies Applied Materials' leadership in delivering copper technology to the semiconductor industry. Driving the demand for these advanced process technologies are new integrated digital applications such as PDA and camera-enabled cellphones, Internet routers and wireless "Wi-Fi" networks that allow the convergence of computing, communication and entertainment.

"Over the past five years, we have focused much of our product development on providing production-worthy copper systems that our customers can use to quickly implement copper technology and ramp to volume production. This early and ongoing effort has created a clear leadership position for us in copper interconnect technology," noted Dr. Ashok Sinha, senior vice president of Applied Materials, Silicon Processing Systems and Process Modules. "Customers have selected many of these systems as production tool of record for 130nm and 90nm manufacturing and as development tool of record for 65nm and below generations.

"In addition to providing individual process equipment, Applied Materials' integrated systems are bringing new advanced technologies to copper fabrication, such as our Endura(R) iCuB/S(TM) system, which is a unique combination of ALD* with PVD* for depositing the critical barrier and seed layers for 65nm-generation devices. Beyond that, our multi-system integrated process modules for copper offer a plug-and-play solution, assisting customers globally to accelerate their entry into copper technology," said Dr. Sinha.

According to Dean Freeman, principal analyst at Gartner Dataquest, "The Copper Damascene segment is one of the few areas in the semiconductor equipment sector that will see significant growth over the next few years. The combined segments of electrochemical deposition, low k deposition, CMP, dielectric etch and barrier/seed deposition is expected to grow with a CAGR of greater than 17 percent from 2001-2007."

To fully support customers' move to copper, Applied Materials' Maydan Process Module Technology Center provides a fab-like environment where customers can evaluate a complete copper interconnect process flow. The company's in-depth expertise in process control and process integration, combined with its unparalleled defect knowledge base, can help chipmakers quickly ramp their fabs to production yield.

Copper chipmakers have purchased a range of Applied Materials systems for manufacturing interconnects. The Endura(R) Electra Cu(R) Barrier/Seed system, which uses PVD technology for the barrier and seed layers, is used by every major manufacturer producing copper chips. The Cu ECP (electrochemical plating) system is used for bulk copper deposition, while the Producer(R) CVD* system offers several generations of low k dielectric deposition technologies, from fluorinated silicate glass (FSG) to the most advanced Black Diamond(TM) and BLOk(TM) films.

Customers have selected Applied Materials' eMax(TM) EnTek(TM) system because of its ability to etch dielectric layers, particularly in copper dual damascene structures. Key innovations in the Mirra Mesa(TM) and Reflexion(R) CMP systems, such as the unique Titan Profiler(TM) polishing head, provide superior topographic control, enabling multiple interconnect layers. For metrology and inspection of copper structures, customers rely on the NanoSEM(TM) 3D system for CD-SEM*, the SEMVision(TM) G2 defect review system and the CompassPro(TM) wafer inspection system.

Since copper chips have up to 8 or more interconnect levels, most of these systems are used multiple times to manufacture the device.

Applied Materials (Nasdaq:AMAT), the largest supplier of products and services to the global semiconductor industry, is one of the world's leading information infrastructure providers. Applied Materials enables Information for Everyone(TM) by helping semiconductor manufacturers produce more powerful, portable and affordable chips. Applied Materials' Web site is <http://www.appliedmaterials.com>.

*CMP = chemical mechanical polishing *CVD = chemical vapor deposition *CD-SEM = critical dimension scanning electron microscope

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