



Applied Materials Advances Sub-90nm Contacts with New ALD Tungsten Technology; iSprint ALD/CVD Centura System Brings Unmatched Capability for Current, Future Manufacturing

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SANTA CLARA, Calif., Jul 14, 2003 (BUSINESS WIRE) -- Applied Materials, Inc. introduces its new iSprint(TM) Centura(R) system, the industry's only integrated 300mm ALD/CVD* system for sub-90nm tungsten contact production applications. With an output of more than 65 wafers per hour, a four-chamber iSprint Centura system provides a 50 percent greater throughput per floorspace than its nearest competitor, with up to 40 percent lower consumable and operating costs. The system's ALD chamber delivers an ultra-thin, less than 50A (angstrom) nucleation layer, reducing contact resistance by up to 15 percent compared to CVD technologies to enable faster, higher yielding devices.

"All advanced chips, including copper-based devices, rely on tungsten contacts to connect the transistor and interconnect layers, but current technology reaches its limit at the 90nm device node," said Dr. Fusen Chen, Vice President and General Manager of Applied Materials' Copper, PVD and Integrated Systems Product Business Group. "With its unique ability to create an ultra-thin, yet virtually perfect nucleation surface deep inside the contact holes, our ALD technology, combined with our CVD tungsten fill process, extends tungsten contacts to the 90nm generation and far beyond, while at the same time reducing operating costs."

Dr. M.S. Liang, Senior Director of R&D and Director of Advanced Module Technology Division of Taiwan Semiconductor Manufacturing Company (TSMC), said, "Applied Materials' ALD technology through its iSprint tungsten system provides another important solution for manufacturing advanced semiconductor devices, and we value this as a great opportunity for TSMC to consider it in our future chip manufacturing."

In addition to its world-class ALD technology, the iSprint system features a high-pressure CVD tungsten bulk fill process, optimized for void-free, high performance plugs and subsequent CMP (chemical mechanical polishing). The iSprint system complements Applied Materials' Endura(R) iLB (integrated liner/barrier) system for titanium/ titanium nitride liner and barrier metal deposition to provide customers with a contact metallization solution for current and future device designs.

Applied Materials' 300mm iSprint technology is development tool of record or in qualification for 90nm and 65nm devices at multiple customer sites around the world. The company's 200mm iSprint ALD/CVD processes are in pilot production for 90nm devices, while additional 200mm systems are being qualified for 90nm in the U.S., Asia and Europe. In addition to the iSprint system, Applied Materials' ALD portfolio includes the Endura(R) iCuB/S(TM) system, the industry's only product that integrates ALD TaN and CVD copper for barrier/seed applications.

According to market researcher Dataquest, the market for CVD tungsten systems was estimated at \$95 million in 2002 and is projected to rise to \$218 million by 2005.

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 www.appliedmaterials.com.

*ALD - Atomic Layer Deposition; CVD - Chemical Vapor Deposition

SOURCE: Applied Materials, Inc.

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