SEMATECH, Applied Materials Partner To Advance Copper Deposition Technology

December 3, 1998
SANTA CLARA, Calif.--(BUSINESS WIRE)--Dec. 3, 1998--

Endura Electra Barrier/Seed Cu(tm) System Being Qualified for
Production by SEMATECH Member Companies

Applied Materials, Inc. today announced that SEMATECH has chosen to characterize and qualify its Endura Electra Barrier/Seed Cu system for the production of copper interconnects. Two major chip manufacturers, including Rockwell Semiconductor Systems, will take part in this extensive SEMATECH project. Applied Materials' Endura Electra Barrier/Seed Cu is the industry's leading system for depositing the critical barrier and copper seed layers that enable the fabrication of copper structures for high-speed semiconductor devices.

"SEMATECH is excited at the opportunity of working with our member companies in concert with Applied Materials to demonstrate enabling technology for advanced copper metallization," said Paul Winebarger, director of interconnect at SEMATECH. "This partnership will provide valuable information to both our SEMATECH members and Applied Materials in the development of cost effective barrier and copper seed tooling and processes."

Dr. Fusen Chen, vice president and general manager of Applied Materials' Metal Deposition Product Business Group, Liner/Barrier Division, noted, "Working with SEMATECH allows us to demonstrate the Electra's superior IMP copper technology with the world's major chipmakers. At the same time, these collaborative efforts extend our understanding of critical technical and manufacturing issues, enabling us to provide SEMATECH's members with the most advanced, competitive technologies. We are pleased to be working with SEMATECH on this project and look forward to continuing our relationship as the industry moves ahead on copper interconnect technology."

Based on the Endura platform, the Electra Barrier/Seed Cu system implements Applied Materials' revolutionary IMP(tm) (ion metal plasma) PVD (physical vapor deposition) technology to deliver the thin, conformal liner and barrier layers required to extend copper technology to the high-aspect ratio, sub-0.25 micron dimensions of dual damascene interconnect structures. Barrier and seed layer films are critical because they prevent the migration of copper atoms into other parts of the device and provide a smooth, uniform surface for subsequent copper bulk fill. Applied Materials' IMP technology, used for production of aluminum interconnects since 1996, has exhibited excellent bottom and sidewall coverage in situations with aspect ratios (depth/width) of up to 6:1.

Maureen Brongo, manager of Interconnect Technology at Rockwell Semiconductor Systems, commented, "Cooperation between SEMATECH, Applied Materials and Rockwell Semiconductor Systems on this copper interconnect project is a major step to achieving production-worthy processes. We have been consistently impressed by the integrity of Applied Materials' IMP technology and are pleased that it has been extended to enable copper structures. As a SEMATECH program that expands beyond the focus and resources of an individual company, this project will help speed the industry's shift to this new interconnect material."

Since its introduction in December 1997, Applied Materials' Endura Electra Cu system is being used by 19 of the industry's top chipmakers engaged in copper process development and commercialization. Customers include prominent microprocessor, logic, memory and foundry chipmakers in the U.S., Europe, Japan and Taiwan.

As the leading single supplier of the most complete set of technologies available for interconnect fabrication, Applied Materials has been working extensively with SEMATECH to develop solutions for copper metallization and low k dielectrics. In May 1998, Applied Materials announced work with SEMATECH on the development of copper CMP (chemical mechanical polishing) process technology using Applied Materials' Mirra(R) CMP system. Earlier, SEMATECH announced a program with Applied Materials to develop etching processes for low (kappa) dielectrics, using the company's etch systems.

Based in Austin, SEMATECH is a non-profit research and development consortium of the following U.S. semiconductor manufacturers: AMD, Digital Equipment Corp., Hewlett-Packard Company, Intel Corporation, IBM Corporation, Lucent Technologies, Motorola, National Semiconductor Corporation, Rockwell International Corporation and Texas Instruments Incorporated. Additional information about SEMATECH is available on the Internet at www.sematech.org.

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 http://www.AppliedMaterials.com.