



Applied Materials Demonstrates Breakthrough 50nm Defect Detection in High Aspect Ratio Chip Structures for International SEMATECH

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SANTA CLARA, Calif.--(BUSINESS WIRE)--Sept. 27, 2000-- Detection of Yield-Limiting Defects in High Aspect Ratio Structures Resolves Key Hurdles for the Semiconductor Roadmap

In a High Aspect Ratio Inspection (HARI) defect evaluation with industry consortium International SEMATECH, Applied Materials, Inc. demonstrated the capability to detect such critical defects as 50 nanometer (nm) residue in 7:1 high aspect ratio via structures. Five critical defect categories, identified by International SEMATECH as yield-limiting for the volume production of sub-180nm (gate length) devices, were detected using Applied Materials' multi-perspective laser scanning technology.

Dr. Rinn Cleavelin, International SEMATECH's chief operating officer, said, "With 100nm device geometries on the technology horizon of the semiconductor roadmap, it is critical for us to determine the effectiveness of optical techniques in finding new defect types associated with high aspect ratio features. In our evaluation of Applied Materials' most advanced defect detection technology, it met all the evaluation objectives and demonstrated the capability to accurately and consistently detect these types of defects in high aspect ratio structures at the 180nm technology node."

For the HARI defect evaluation, International SEMATECH designed the test wafers and developed a special manufacturing process. The induced anomalies included defects and residue at the bottom of a single via, and missing and partially closed single vias. Using enhanced optical technology based on laser scan and multi-perspective light collection configuration for the experiments, Applied Materials was able to consistently identify via defects in high aspect ratios of up to 7:1 as well as critical defects in gate and metal structures. Already, much of this learning has been incorporated into Applied Materials' new production-ready Compass(TM) wafer inspection system.

"This evaluation has been a vigorous and invaluable learning experience for us and supports Applied Materials' commitment to develop leading-edge wafer inspection technology," said Gino Addiego, president of Applied Materials' Process Diagnostics and Control Group. "We are proud to demonstrate the ability to address one of the most difficult inspection challenges confronting the industry and will use the new knowledge to drive forward our inspection and integrated processing strategies."

By leveraging its advanced inspection technologies and extensive experience, Applied Materials was able to quickly complete the HARI evaluation. "Teaming with International SEMATECH on collaborative efforts extends our combined understanding of technical and manufacturing issues, enabling more rapid development and deployment of advanced technologies," added Addiego.

International SEMATECH is a non-profit research and development consortium of semiconductor manufacturing companies, including AMD, Conexant, Hewlett-Packard, Hyundai, Infineon Technologies, Intel, IBM, Lucent Technologies, Motorola, Philips, STMicroelectronics, TSMC, and Texas Instruments. Additional information is available at www.sematech.org.

Applied Materials (NASDAQ: AMAT) is a leader of the Information Age and the world's largest supplier of products and services to the global semiconductor industry. Applied Materials' web site is <http://www.appliedmaterials.com>.

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