



Applied Materials and SEMATECH Partner on Advanced Wafer Inspection Technology; Research Program Addresses Critical Need to Inspect High Aspect Ratio Device Structures

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SANTA CLARA, Calif.--(BUSINESS WIRE)--Nov. 12, 1998--Applied Materials, Inc. (Nasdaq/NMS:AMAT) today announced that it is working with SEMATECH on a program to detect sub-100 nanometer defects in very advanced devices featuring aspect ratios (depth/width) of 8:1 and beyond. The goal of this program is to investigate the use of Applied Materials' multi-perspective image acquisition and data processing techniques for detecting defects in next-generation interconnect structures.

"Based on the data Applied Materials is gathering for this program, our objective is to determine the optimal method for detecting and characterizing defects associated with high aspect ratio vias and trenches," said Dr. Rinn Cleavelin, Director of SEMATECH's Front End Processing. "SEMATECH chose to team with Applied Materials on advancing high aspect ratio inspection (HARI) based on theoretical modeling studies and feasibility tests performed on the wafers using multi-channel detection technology. Given the industry's advanced inspection needs, and Applied Materials' capability to successfully implement new technologies, SEMATECH member companies are enthusiastic about the opportunities which could result from this program."

Partially funded by SEMATECH, the HARI project is currently underway at Applied Materials' facility in Israel. The activities include the detection of various yield-limiting defects using light-scattering techniques that are based on advancements made to the company's WF-73X defect reduction technology. Using this system, laser light scattered from the illuminated surface features is simultaneously collected by multiple detectors and fed into a powerful signal processing system for image development. Optical techniques have been the industry's primary approach for detecting defects and provide well-established productivity advantages for wafer inspection.

"The ultimate goal of this program is to provide capabilities which assist the high-volume production yield of highly complex, advanced ICs," said Dan Vilenski, chairman of Applied Materials' Process Diagnostics and Control Product Business Group. "To achieve this, it is important to inspect high aspect ratio features for such killer defects as incomplete etching or residue in the bottom of vias. Working with SEMATECH supports our efforts to develop next-generation solutions by giving us access to some of the most advanced device designs available. In addition, SEMATECH is an influential partner for driving the deployment of a solution to the industry."

As a first step in evaluating and characterizing the effects of anomalies in the various structures, numerical simulations of light scattered from these features are performed using powerful 3-D computer modeling. Validation of the simulations is done through experimental analysis performed in conjunction with the modeling. A key aspect of the program is to investigate various means of optimizing defect capture techniques for HARI.

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>.