



## **Lucent Technologies and Applied Materials Cooperate on Single-Wafer Front-End Process Technology**

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SANTA CLARA, Calif.--(BUSINESS WIRE)--May 2, 2000--

Goal is to Potentially Reduce Fab Cycle Time by Replacing Long

Furnace Steps with Single-Wafer Processes

Applied Materials, Inc. announced today a joint development arrangement with Lucent Technologies (NYSE: LU) to evaluate Applied Materials' single-wafer front-end technology for potential use in Lucent's next-generation process flow.

Applied Materials' single-wafer front-end process technologies include rapid thermal annealing, the growth of oxide thin films, and the deposition of silicon nitride and polysilicon thin films. Lucent will evaluate process quality and reproducibility, manufacturing cycle time, throughput, and total cost of ownership for potential application in Lucent's next-generation chip technology.

According to Dr. Gregg S. Higashi, Lucent Technologies' technical manager of Front-End Process Development, who initiated this project, "Reducing fab cycle time is a key element of Lucent's business strategy. Replacing long furnace process steps with short single-wafer processes is an obvious place to start. We estimate that we will be able to ship wafers days earlier by using single-wafer processing. This could put our products into our customers' hands sooner while also reducing inventory."

"Single-wafer technology is especially important to foundries and to ASIC suppliers like Lucent who need to reduce development and production cycles to keep up with today's increasing demand for new generations of chips," said Dr. Chris Gronet, vice president and general manager of Applied Materials' Transistor Gate and Substrate Product Groups. "We expect this concept to become more critical as furnaces continue to cause bottlenecks in the process flow."

Lucent will initially evaluate several key single-wafer thermal process steps in their pilot line using the following Applied Materials systems and chambers: RTP ISSG (in situ steam generation) technology for gate dielectric, shallow trench isolation (STI) liner, pad, and other oxide films; the RTP Centura(R) for implant and STI anneals; the SiNgen(TM) single-wafer LPCVD nitride chamber for spacer and pad nitride applications; and the company's integrated Poly and gate oxidation process chambers for polysilicon deposition of the transistor gate.

In addition to potential economic efficiencies at the fab level, single-wafer thermal processing offers key technical advantages over batch furnaces for several critical process steps. For example, Applied Materials' SiNgen LPCVD silicon nitride system is designed to enable chipmakers to improve the performance and yield of their devices by reducing the thermal exposure of the wafer. The company's RTP ISSG oxidation technology has shown potential for improved device reliability and reduced leakage current of gate oxides.

"Applied Materials is the only company that can offer customers a full set of single-wafer thermal processing tools for this wide range of applications," noted Dr. Gronet.

Lucent Technologies, headquartered in Murray Hill, N.J., USA, designs and delivers the systems, software, silicon and services for next-generation communications networks for service providers and enterprises. Backed by the research and development of Bell Labs, Lucent focuses on high-growth areas such as optical and wireless networks; Internet infrastructure; communications software; communications semiconductors and optoelectronics; Web-based enterprise solutions that link private and public networks; and professional network design and consulting services. For more information on Lucent Technologies, visit its web site at <http://www.lucent.com>.

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 [www.appliedmaterials.com](http://www.appliedmaterials.com).

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