



Applied Materials Reveals Breakthrough RTP Technology for the 20nm Era

June 29, 2011

- **Revolutionary design positions Applied at the forefront of RTP for multiple generations**
- **Only RTP system to overcome yield-limiting hot spots in the chip, enabling the production of more high-performance devices per wafer**
- **Live webcast today at 10 a.m. PDT at www.becauseinnovationmatters.com**

SANTA CLARA, Calif., June 29, 2011 - Applied Materials, Inc. today advanced the state of the art in nanoscale transistor fabrication with the launch of its Applied Vantage[®] Vulcan[™] rapid thermal processing (RTP) system. The system leapfrogs current RTP technology to bring a new level of precision and control to the anneal process, enabling chipmakers to reduce variability and boost production yields of their most highly-valued, highest-performing devices.

For manufacturers to achieve the highest chip yields, transistors with the same design should perform identically in all areas of the wafer. This is becoming a major challenge at the 20nm era (28nm and below) since transistors are smaller and more sensitive to temperature variations while many logic chips are also larger in size, making uniformity across the die increasingly difficult. Direct radiant heating can cause variations in temperature, or "hot spots," on a patterned wafer - leading to significant variations in the electrical performance of the transistors - and resulting in many low-end chips on the wafer.

Applied's Vantage Vulcan system overcomes these yield-limiting temperature variations by applying heat to the unpatterned backside of the wafer to deliver an unprecedented level of temperature uniformity. Using the company's proven honeycomb lamp array, the system can control within-die temperature to less than 3°C - even while the wafer temperature is aggressively ramping at more than 200°C per second.

"The Vantage Vulcan system represents a significant technology extension for the industry's roadmap and sets a new benchmark in eliminating sources of temperature variability," said Sundar Ramamurthy, vice president and general manager of Applied Materials' Front End Products business unit. "We've listened to the needs of our customers and developed a solution that addresses one of their most daunting challenges. Leading chip manufacturers are already recognizing the device benefits of our new Vantage Vulcan system."

In addition to being the first RTP system to heat the wafer entirely from the backside, the Vantage Vulcan system's unique closed-loop control can dynamically control wafer temperature as it ramps from almost room temperature to 1,300°C. This breakthrough capability enables any device wafer, including wafers with challenging reflective surfaces, to be processed without recipe modification - a critical benefit for the high-mix, fast-changing environment of foundries - while also simplifying the integration of new materials and new transistor architectures.

Applied's expertise in temperature control has made the company both a pioneer and market leader in RTP technology. Applied has more than 1,000 RTP systems installed at customers worldwide, making Applied's RTP technology the industry's choice for manufacturing nearly every advanced microchip in the last decade.

Applied Materials will host a live webcast today at 10:00 a.m. PDT to discuss this breakthrough technology. To hear the webcast and access video, photographs and other materials concerning this product, visit www.becauseinnovationmatters.com.

Applied Materials, Inc. (Nasdaq:AMAT) is the global leader in providing innovative equipment, services and software to enable the manufacture of advanced semiconductor, flat panel display and solar photovoltaic products. Our technologies help make innovations like smartphones, flat screen TVs and solar panels more affordable and accessible to consumers and businesses around the world. At Applied Materials, we turn today's innovations into the industries of tomorrow. Learn more at www.appliedmaterials.com.

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[The breakthrough Applied Vantage Vulcan RTP system](#)

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