



Applied Materials Announces Atomic-Level Film Treatment to Reduce Chip Power Consumption

November 29, 2011

- **Innovative film treatment improves chip wiring insulation to enable longer battery life for mobile devices**
- **Advances low k technology for scaling logic chips to 22nm node and beyond**
- **Increases mechanical strength of chip for higher packaging yield**
- **Executive presentation now available on www.becauseinnovationmatters.com**

SANTA CLARA, Calif., November 29, 2011 - Applied Materials, Inc. today announced a breakthrough technology for reducing power consumption in semiconductor chips with its new [Applied Producer® Onyx™](#) film treatment system. By optimizing the molecular structure of the [low k](#) films that insulate the miles of wiring, or [interconnects](#), on each chip, the Producer Onyx system enables customers to continue their relentless drive to fabricate faster, more power-efficient logic devices as they scale to 22nm and below.

"The interconnect represents approximately one-third of the total power consumed by a chip and reducing this power is essential to achieving higher performance and longer battery life in advanced logic devices," said Bill McClintock, vice president and general manager of Applied's Dielectric Systems and Modules business unit. "With the Onyx system, we're offering a unique treatment capability that delivers the most power-efficient interconnects in the industry, while increasing mechanical strength, making the chip robust to better withstand the challenge of emerging [3-D packaging](#) applications. Multiple Producer Onyx systems are already in pilot production for advanced logic device manufacturing."

With each successive technology node, interconnect wires get closer to one another, increasing the potential for [parasitic capacitance](#), or [crosstalk](#), between adjacent lines - which wastes power and restricts switching speed. Reducing capacitance, by lowering the k-value of the insulating material that separates and supports these structures, is a key component in ensuring continued improvement in performance and battery life.

Applied's proprietary Onyx technology drives carbon and silicon into the porous [dielectric](#) film to reinforce the insulating material at the atomic level. The treatment decreases the [k-value](#) by up to 20%, delivering a significant reduction in chip power consumption. In addition, the process increases the stiffness of the dielectric, enabling it to withstand the stress of hundreds of subsequent processes and packaging steps. For more information on the Applied Producer Onyx film treatment system, visit www.appliedmaterials.com/technologies/library/producer-onyx.

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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Contact:

[Connie Duncan](#) (editorial/media) 408.563.6209

[Michael Sullivan](#) (financial community) 408.986.7977

[The breakthrough Applied Producer Onyx film treatment system](#)

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