



## Applied Materials Unveils Breakthrough Technology for Building 3D Transistors

March 16, 2011

- **Unique plasma doping solution targeted for 22nm and beyond logic and memory chips**
- **Replaces ion beam implantation for conformal doping of complex 3D structures**
- **Innovative system opens new market for Applied**

SANTA CLARA, Calif., March 16, 2011 - Applied Materials, Inc. today unveiled its new [Applied Centura® Conforma™](#) system, which features breakthrough Conformal Plasma Doping ([CPD™](#)) technology to enable the fabrication of advanced 3D structures in next-generation logic and memory chips. The Conforma system uniquely combines high-dose, low energy [doping](#) technology with in-situ clean capability in a single vacuum chamber to deliver uniform, high throughput doping on both planar and 3D structures. Also vital to good device performance is the system's use of a pure, additive-free doping chemistry that preserves the underlying device structures - a critical feature not found in any other plasma doping system.

"Our plasma doping technology capitalizes on Applied's expertise in RF engineering, [CVD](#) chamber design and extensive process knowledge," said Sundar Ramamurthy, vice president and general manager of the Front End Products business unit at Applied Materials. "Our Conforma technology has already been embraced by many of our customers. They have systems running in both pilot and high-volume manufacturing, and we're also working with customers and research entities on pioneering R&D programs using our proprietary technology."

Doping is a fundamental chipmaking process that modifies the electrical properties of a material by incorporating impurities into its crystal lattice structure. The process is traditionally performed by bombarding the wafer with a beam of dopant ions moving at high speed. However, this straight line bombardment process cannot provide uniform doping of advanced three-dimensional structures. More importantly, the fast-moving ions can damage the ultra-thin semiconductor layers in cutting-edge chips.

Applied's Conforma technology solves these challenges by providing a gentle, low-energy process that enables uniform, conformal doping over complex 3D chip structures. The Centura Conforma is the only plasma doping system that can combine integrated plasma pre-clean and [RTP anneal](#) on the same vacuum platform - to allow integrated process sequences and to assure that the processed wafers are free of potentially harmful residues.

Some of the advanced devices enabled by the new Conforma system include [finFET](#) logic, vertical gate [DRAM](#) and vertical NAND [flash](#) memory arrays. For more technical details on Applied's breakthrough Conforma technology, visit <http://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](http://www.appliedmaterials.com).

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