



Applied Materials Introduces Critical Ion Implant Technology for Scaling Future Chips

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- **New Applied Varian VIISta® Trident system delivers precise dose and angle control needed for advanced transistor structures**
- **Already tool of record at all major foundries for 20nm technology node**

SANTA CLARA, Calif., June 6, 2012 - Applied Materials, Inc. today announced its new [Applied Varian VIISta® Trident](#) system, the semiconductor industry's most advanced single-wafer, [high-current ion implant system](#). Used to engineer the electrical characteristics of the chip by embedding "dopant" atoms, the new VIISta Trident system is the only [ion implanter](#) proven to achieve the yields necessary for manufacturing high-performance, power-efficient logic chips at the 20nm node.

At the 20nm node, optimizing dopant [activation](#) and suppressing defects in the [extension](#), source/drain [junction](#) and contact regions become significant challenges that impede the scaling of high performance transistors. The unique capability of the VIISta Trident system to precisely tailor dopant concentration and depth profile is critical to optimizing performance, controlling leakage current and reducing variability in advanced devices.

"A typical advanced logic chip requires as many as 60 implant steps, including [co-implant](#) and precision materials modification applications - many of which are critical to device performance. The precision of our VIISta Trident technology is vital to helping our customers achieve profitable yields on their leading-edge designs," said Bob Halliday, vice president and general manager of Applied's Varian business unit. "This benchmark performance strengthens Applied's leadership position in providing our customers with leading-edge [transistor fabrication solutions](#). All major foundries fabricating 20nm chips today are using our VIISta Trident systems as tool of record."

Key to the superior performance of the Trident system is its proprietary dual-magnet ribbon beam architecture for enhanced low energy performance. The system's Energy Purity Module virtually eliminates damaging, high-energy species that can "smear" the critical transistor channel and lead to increased current leakage and degraded performance.

Integrated cryogenic technology enables production implants as low as -100°C, providing superior process control for transistor matching. This is particularly vital for making embedded [SRAM](#) cells for on-chip cache memory, where the six or eight transistors that make up each cell must be precisely matched to enable reliable switching at the low operating voltages required for mobile computing.

To learn more about the technology behind Applied's Varian VIISta Trident system, visit www.appliedmaterials.com/technologies/library/varian-viista-trident.

The Trident system is one of several important technologies being announced by Applied in connection with [SEMICON West 2012](#) - to be held on July 10-12 in San Francisco, Calif. More information can be found at Applied's online booth at <http://www.appliedmaterials.com/becauseinnovationmatters>, which will be updated regularly before and during the show.

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 Applied Varian VIISta Trident ion implantation system](#)

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