



Applied Materials Releases Industry's Most Advanced Strain Engineering Technology to Boost 45nm Transistor Speed

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SANTA CLARA, Calif.--(BUSINESS WIRE)--May 15, 2007--Applied Materials, Inc. today announced the Applied Producer(R) Celera(TM) PECVD(1), a significant advancement in strain engineering technology that achieves the stress levels required for manufacturing faster transistors in 45nm and beyond devices. By integrating Applied's proprietary Nanocure(TM) UV(1) cure technology with an enhanced nitride deposition chamber, the system increases film tensile stress by more than 30%, to industry-leading levels of 1.7GPa, with extendibility to exceed 2.0GPa. The same deposition chamber can deposit films with compressive stresses up to 3.5GPa for greater than 85% improvement in drive current when used with SiGe recessed source/drain structures.

Key to the Producer Celera system is its integrated multi-step deposition and cure process that achieves the industry's highest PECVD tensile stresses in NMOS devices. The entire process is performed in situ, without exposure to air, maximizing device reliability and performance.

"The Producer is the first system to integrate strain-inducing nitride deposition with a UV cure process on the same platform," said Dr. Farhad Moghadam, senior vice president and general manager of Applied Materials' Thin Films Group. "This is a critical differentiator, since it breaks the barrier to increasing chip performance for NMOS devices where the addition of tensile strain has significant benefits. This unique configuration has already been qualified for production at multiple customer sites worldwide."

Multiple strain engineering films are typically used in advanced devices to increase the transistor drive current and thus optimize their speed and power performance. Strain films, combined with new high k/metal gate technologies, will extend chip scaling beyond the 45nm node and enable the continuation of Moore's Law.

Applied leads the industry in providing strain engineering solutions with an extensive portfolio of world-class technologies. When combined with the Producer Celera system's nitride layers and stress memorization techniques, the additive strain benefits of these technologies deliver even higher drive currents and faster, lower power transistors. The Applied Producer HARP delivers strain-inducing tensile films in the STI(1) and PMD(1) regions. The Applied Centura(R) RP Epi for SiGe recessed source/drain delivers greater than 60% drive current improvement in a robust 100% selective process. In addition to benefits in logic devices, strain engineering helps reduce leakage and improves retention time in non-volatile memory devices. For more information, visit: http://www.appliedmaterials.com/products/producer_stress_nitride_4.html. (Due to its length, this URL may need to be copied/pasted into your Internet browser's address field. Remove the extra space if one exists.)

Applied Materials, Inc. (Nasdaq: AMAT) is the global leader in Nanomanufacturing Technology(TM) solutions with a broad portfolio of innovative equipment, service and software products for the fabrication of semiconductor chips, flat panels, solar photovoltaic cells, flexible electronics and energy efficient glass. At Applied Materials, we apply Nanomanufacturing Technology to improve the way people live. Learn more at www.appliedmaterials.com.

(1) PECVD=plasma enhanced CVD; UV=ultraviolet; STI=shallow trench isolation; PMD=pre-metal dielectric

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