



Applied Materials Advances Etch Technology to Lower TSV Manufacturing Cost

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- TSV market accelerating to enable higher performance mobile devices
- New, enhanced Silvia etch system breaks a key cost barrier to widespread TSV adoption

TOKYO, Japan, November 30, 2010 - Applied Materials, Inc. today revealed its latest innovations in through-silicon via (TSV) etch technology on its [Applied Centura® Silvia\(TM\) Etch](#) system. A new plasma source boosts the silicon etch rate by over 40% to rapidly create high aspect ratio via structures with smooth, vertical profiles. This benchmark performance enables the Silvia system to bring the cost for via etch below \$10 per wafer for the first time, helping chipmakers bring to market the advanced [3D-IC^{\[1\]}](#) designs that will power future high-performance mobile devices.

"The new Silvia system is an example of Applied's focus on developing technology to bring down the cost of TSV fabrication - which has been a significant barrier to the widespread implementation of this important technology," said Ellie Yieh, vice president and general manager of Applied Material's Etch Business Unit. "The Silvia system's unmatched performance has been enthusiastically received by our customers and will help them bring TSV technology to high-volume manufacturing."

A new ultra-high-density plasma source increases the Silvia system's silicon etch rate by over 40% while maintaining the system's trademark precise profile control and virtually scallop-free sidewalls - which are critical to the subsequent deposition of high-quality liner and fill films. In addition, the remarkable speed and precision of the Silvia system makes it ideal for other cost-sensitive 3D-IC packaging applications such as "via reveal etch" that require rapid, highly uniform removal of bulk silicon from the back side of the wafer.

According to market researcher [Gartner Dataquest](#), Applied Materials is ranked number one in both the TSV etch and wafer-level packaging markets based on worldwide revenue from system shipments in 2009^[2]. Applied has the only complete toolset for all TSV manufacturing flows, covering Etch, CVD^[3], PVD^[4], ECD^[5], wafer surface preparation and CMP^[6]. With its unique ability to validate complete process flows at the company's [Maydan Technology Center](#), Applied can mitigate risk and accelerate learning for its customers, assuring a smooth transition from R&D to volume production. For more information, visit www.appliedmaterials.com/tsv.

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.

^[1] 3D-IC = three-dimensional integrated circuit

^[2] "Market Share: Semiconductor Equipment, Worldwide, 2009" Gartner, Inc. Barbara Van et al., April 5, 2010

^[3] CVD = chemical vapor deposition

^[4] PVD = physical vapor deposition

^[5] ECD = electrochemical deposition

^[6] CMP = chemical-mechanical planarization

Contact:

Betty Newboe (editorial/media) 408.563.0647

Michael Sullivan (financial community) 408.986.7977

HUG#1466760