

ASM International Brings High-k Plasma Enhanced ALD to High Volume Manufacturing

BILTHOVEN, THE NETHERLANDS, December 5, 2006 – ASM Japan K.K., a subsidiary of ASM International N.V. (NASDAQ: ASMI and Euronext Amsterdam: ASM), today introduced its Stellar™ 3000 multi-chamber, single-wafer plasma enhanced atomic layer deposition (PEALD) tool designed for high volume IC manufacturing of high-k dielectric films for capacitors. ASM also announced it has already shipped Stellar 3000 systems to strategic customers.

Stellar represents the industry's first single-wafer PEALD high-k tool suited for 300mm high volume manufacturing, offering throughputs of up to 40 wafers per hour for a typical process. It targets PEALD processes for high-k dielectric films for DRAM capacitors and metal-insulator-metal (MIM) capacitors used in embedded DRAM devices and advanced RF analog products. As capacitor areas decrease with each technology node DRAM makers are forced to deploy high-k films via ALD.

“It has been suggested that DRAM manufacturers' requirements for higher throughput could not be achieved with single-wafer ALD processes,” stated Norio Saitoh, ASM ALD Business Unit Manager responsible for the Stellar product line. “By bringing our proven single-wafer PEALD film performance to a multi-chamber platform in the Stellar, ASM ensures that productivity is no longer sacrificed for quality and the low cost of ownership requirements of high volume capacitor production are met.”

“The ALD equipment market is reaching its prime. An increasing number of ALD applications are now moving from R&D to production environments,” said Risto Puhakka, President, VLSI Research, Inc. “This is driving growth in the ALD equipment market from \$173M in 2006 to more than \$300M by 2009. For the ALD market to continue its growth path, it is critical that ALD equipment suppliers such as ASM bring production worthy tools to market that offer both CoO reduction and technology improvements.”

PEALD offers considerable benefits for capacitors at the 90, 65, 45 and 32 nm process nodes, including ALD processing at low temperatures (<300 °C), which is important for eDRAM and other capacitors integrated into back-end process steps. PEALD deposits high-k films with higher density, lower leakage and higher breakdown voltage, compared to MOCVD. The tool can run all key high-k dielectric applications, extending machine lifetime for varied processes and multiple process generations.

Stellar is a low cost, high throughput ALD system combining a small footprint (3.5 m²) with a high speed simultaneous dual wafer exchange design. Stellar is highly reliable, integrating two PEALD reactors that have been proven on ASM's ALD cluster tools. A process module slide-out system proves Stellar is designed for easy maintenance and minimal downtime in manufacturing.

The compact 2-chamber system offers at least a 50 percent reduction in clean room space, compared to traditional 300mm cluster style ALD or MOCVD tools. It offers high speed parallel processing with two PEALD reactors that enable direct plasma on wafer with a minimized reactor volume for 300 mm processing. A 200 mm version is also available.

About ASM

ASM International N.V. and its subsidiaries design and manufacture equipment and materials used to produce semiconductor devices. The company provides production solutions for wafer processing (Front-end segment) as well as assembly and packaging (Back-end segment) through facilities in the United States, Europe, Japan and Asia. ASM International's common stock trades on NASDAQ (symbol ASMI) and the Euronext Amsterdam Stock Exchange (symbol ASM). For more information, visit ASMI's web site at www.asm.com.

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Contacts:

Mary Jo Dieckhaus
Investor Relations
+1 212-986-2900

MaryJo.Dieckhaus@asm.com

Willem Vermeulen
Director Central Marketing
+31 (0)30 229 8411

Willem.Vermeulen@asm.com