



ASM International in Volume Production with ALD High-k Process for 45-nm Technology

BILTHOVEN, THE NETHERLANDS, DECEMBER 10, 2007 -- ASM America, Inc., a subsidiary of ASM International N.V. (NASDAQ: ASMI and Euronext Amsterdam: ASM), today announced that its Pulsar® ALCVD(TM) process module is now in volume production for 45-nm high-k applications using hafnium-based process technologies. ASM has already installed more than 30 Pulsar process modules for pilot and volume production with multiple leading IDM and foundry customers.

To meet the stringent requirements for volume production of CMOS logic devices at the 45-nm technology node, ASM optimized its atomic layer deposition (ALD) processes for hafnium-based dielectric films, including hafnium oxide, and also offers mixed oxides such as hafnium silicate and hafnium zirconium oxide. These dielectrics present a major breakthrough in 45-nm metal gate transistor and capacitor technology, as traditional dielectrics such as silicon dioxide reach their scaling limits. These advanced materials can improve device performance with as much as 10,000 times lower gate leakage current compared to traditional dielectrics, and they meet the film performance specifications for volume production of 45-nm CMOS, including electrical thickness, gate leakage current, channel carrier mobility, and reliability.

"ASM has been a pioneer in ALD technology and is now reaping the benefits of its continued investments in this field by bringing ALD into volume production for 45-nm hafnium based high-k films," said Glen Wilk, Product Manager for Transistor Products at ASM. "To date, we have shipped in total over 80 Pulsar modules for high-k ALD films on logic and memory applications, with leading logic and foundry customers, including several members of the leading logic Alliance."

About Pulsar 3000

Pulsar® 3000 is the atomic layer chemical vapor deposition (ALCVD(TM)) process module used in ASM's Polygon® 300-mm cluster tool for single wafer, thin-film deposition. ALCVD is a surface-limited, layer-by-layer process for the deposition of thin films with atomic layer accuracy.

Each monolayer formed in this sequential process is a result of saturated, surface-controlled reactions. These surface reactions work well at lower temperatures, such as 25 - 350°C, compared with MOCVD, where higher temperatures are often required to cause decomposition of molecules for film deposition to occur. Low-temperature deposition is important, as thermal budgets are continually decreasing for many applications. The surface-controlled growth mechanism of ALCVD therefore provides unparalleled step coverage and dense films, all at low temperatures. The precision achieved with ALCVD allows processing of extremely thin films in a highly controlled way over a wide range of thicknesses, typically from 10 to 1000 Å.

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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