Air Products Continues to Advance Its PDEMS(TM) ILD Process

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Development Work Shows Extendibility Beyond 32nm

LEHIGH VALLEY, Pa., Dec. 5 /PRNewswire-FirstCall/ -- Air Products (NYSE: APD), the leading worldwide supplier of low k materials, announced today it continues to further develop and extend its PDEMS(TM) interlayer dielectric (ILD) process. The PDEMS ILD process is already being implemented at 45nm and continues to prove to be extendible beyond 32nm.

"Air Products' work with the PDEMS ILD process provides our customers with a proven technology to reach their roadmap targets on schedule," said Corning Painter, vice president of Electronics for Air Products. "Our continued development efforts are aligned with our customers' efforts as they advance to the next technology node."

As materials are being decided for 45nm and below geometries, porous low k materials are proven solutions for further advancing integrated circuit (IC) performance. The 45nm technology node is the first to see the adoption of porous low k materials with k ~ 2.5. Once thought to be achieved only by employing spin-on-processes, plasma enhanced chemical vapor deposition (PECVD) has been proven to be the leading technology adopted for use in the production of porous low k materials.

The PDEMS(TM) ILD Process, developed by Air Products, is a breakthrough process for making a porous low k material by PECVD. As claimed in US Patent numbers 6,583,048 and 6,846,515, the organosilicate structure of the film is created using diethoxymethylsilane (DEMS(TM) ILD Precursor), referred to as a "structure former." Pores are imparted to the film by a pore forming "porogen" produced from a hydrocarbon-based precursor that co-deposits with the DEMS structure former during the growth of the film. Pores are created by removing the porogen using various post-treatment processes.

The unique benefit of the PDEMS ILD process is the tunability of the dielectric constant from k2.7 to below 2.0 by optimizing the chemical formulation and process conditions. Recent advancements in the PDEMS ILD process has demonstrated k <2.0 while maintaining the mechanical strengths of previous generation porous organosilicate glass materials.

Air Products expertise in low k development continues to focus on integration support in the areas of chamber clean, UV cure optimization, dielectric restoration, pore sealing, and advancements in reactive ion etch (RIE) and ash technology. Through Air Products' ACT(R) product line, the company has developed compatible wet clean and strippers for successful integration of PDEMS ILD process.

Air Products (NYSE: APD) serves customers in industrial, energy, technology and healthcare markets worldwide with a unique portfolio of atmospheric gases, process and specialty gases, performance materials, and equipment and services. Founded in 1940, Air Products has built leading positions in key growth markets such as semiconductor materials, refinery hydrogen, home healthcare services, natural gas liquefaction, and advanced coatings and adhesives. The company is recognized for its innovative culture, operational excellence and commitment to safety and the environment. Air Products has annual revenues of $10 billion, operations in over 40 countries, and 22,000 employees around the globe. For more information, visit http://www.airproducts.com.

***NOTE: This release may contain forward-looking statements. Actual results could vary materially, due to changes in current expectations.

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