Applied Materials Introduces Technology to Enable Advanced Image Sensors for Smartphones

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- **Emerging backside-illuminated image sensor designs for the latest smartphones and tablets demand ultra-low temperature manufacturing process**
- **New CVD technology permits superior light collection for optimized image capture**
- **Lowers manufacturing cost by significantly increasing device yield**

SANTA CLARA, Calif., December 5, 2011 - Applied Materials, Inc. today announced its new **Applied Producer® Optiva™ CVD** system that enables the manufacture of state-of-the-art, backside-illuminated (BSI) image sensors used in the most advanced smartphones, tablet PCs and high-end cameras. The innovative Producer Optiva system is uniquely capable of depositing low temperature, conformal films that boost the low-light performance of the sensor while improving its durability - a critical benefit that can lower costs by significantly enhancing device yield.

"Emerging BSI image sensor designs present a new opportunity for Applied Materials to provide customers with the technology they need to be successful in this rapidly growing market," said Bill McClintock, vice president and general manager of Applied's Dielectric Systems and Modules business unit. "The Optiva low temperature process runs on our lightning-fast Producer platform, which is great news for chipmakers looking to satisfy the demand for an estimated 300 million BSI image sensors expected to be needed by 2014."

Advanced image sensors are equipped with microlenses positioned directly above the photodiodes to increase the light-gathering ability of each pixel. The Producer Optiva system enhances the performance of the microlens by covering it with a tough, thin, transparent film layer that reduces reflections and scratches, and protects it from the environment. Importantly, the Optiva tool is the first CVD system to enable >95% conformal deposition at temperatures less than 200°C - which is vital for temperature-sensitive polymers and adhesives used in sensor fabrication.

According to market researcher iSuppli, three-quarters of all smartphones will be fitted with BSI sensors in 2014, up from just 14% in 2010 . In addition, many leading manufacturers are looking to increase factory output by moving to 300mm wafers, a move that produces more than twice as many sensors per wafer and gives access to the most advanced chipmaking equipment.

The Applied Producer Optiva CVD system can also be used to deposit conformal insulating liners for through-silicon vias (TSVs) in 3D chip packaging. In this application, low process temperatures are critical to protect the adhesive used to bond the wafer to its temporary carrier. For more information on this product, please visit www.appliedmaterials.com/technologies/library/producer-optiva.

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.

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The New Applied Producer Optiva CVD System