Applied Materials Introduces Integrated Metrology on High Productivity Producer CVD System

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Integrated Measurement Capability Enables Customers to Perform Fast Processing With Confidence

Applied Materials, Inc., the world's leading supplier of CVD (chemical vapor deposition) systems to the semiconductor industry, announces another industry breakthrough with the integration of metrology on its Producer(TM) CVD system. The first in a new suite of integrated wafer monitoring options, called Producer QA(TM), the NanoSpec(R) 9000i thin film analyzer enables customers to confidently run their processes at very high throughput rates while closely monitoring the thickness, uniformity and refractive index of single or multiple-layer films deposited on product wafers.

"The addition of film thickness measurement is the first in a planned Producer QA series of integrated metrology and inspection capabilities for the Producer system," noted Kevin Fairbairn, general manager of PECVD products at Applied Materials. "Today, dielectric deposition systems essentially run blind between monitor checks. With the thin film analyzer, customers can have real-time measurement and statistical process control capability for every wafer. Integrated metrology provides improved overall equipment effectiveness by reducing monitor wafers and increasing both system and operator availability."

As the semiconductor industry moves below 0.18 micron geometries, the ability of equipment to provide higher levels of process control becomes more critical for meeting performance and yield objectives. Integrated metrology enables chipmakers to precisely track the characteristics of each film on every wafer rather than sampling wafers only at long specified intervals. Integrated measurement capability is expected to be even more important with 300mm wafers in dramatically reducing or eliminating costly monitor wafers.

The integrated NanoSpec unit features measurement of film thickness, uniformity and refractive index on bare or patterned wafers. The technology, capable of measuring single or multiple-layers, has been demonstrated with up to a five-layer in situ-deposited dual damascene stack comprised of PECVD (plasma enhanced CVD) silicon dioxide, silicon nitride and dielectric anti-reflective coating (DARC) layers.

The Producer's NanoSpec unit is fully programmable to inspect a range of designated wafer types, including specific wafers identified by fab management systems. Measurement data can be easily used to manage yield, improve operator efficiency and quickly detect any process excursions. It also features statistical process control capabilities, aids in more rapid process modeling and diagnosis, and speeds system re-qualification after maintenance.

Introduced in July 1998, the Producer platform can accommodate up to three Twin Chamber(TM) process modules. Wafers are transferred in pairs to each module which contains two identical single-wafer process chambers. Each Twin-Chamber module shares many common subsystems, such as vacuum and gas delivery, while retaining individual power and other process parameters needed for superior process control. The system's broad portfolio of processes covers virtually every kind of blanket dielectric CVD application.

Existing Producer systems can also be retrofitted with integrated metrology capability. The NanoSpec 9000i, a product of Nanometrics, Inc., Sunnyvale, Calif., is exclusive to Applied Materials' CVD systems. The NanoSpec unit has also been successfully integrated on Applied Materials' Mirra(R) Mesa(TM) CMP (chemical mechanical polishing) system to enhance process control and increase productivity.

Applied Materials, Inc. is a Fortune 500 global growth company and the world's largest supplier of wafer fabrication systems and services to the global semiconductor industry. Applied Materials is traded on the Nasdaq National Market System under the symbol "AMAT." Applied Materials' web site is http://www.AppliedMaterials.com.

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