Dual-track system speeds production

SOKUDO

Sokudo, a Japanese manufacturer of equipment for coating and developing photoresists on wafers, has released what it claims is the world's first dual-track system for parallel simultaneous processing.

Featuring dual-flow wafer processing, the company's Sokudo Duo dramatically boosts throughput to 250–300 wafers per hour (depending on system configuration), and substantially reduces system footprint.

The system also gives a higher reliability for wafer handling robotics as it allows reduced wafer transfer speeds without compromising wafer throughput.

The dual-flow concept makes it possible to run each wafer process line independently. Maintenance can be performed while the system is running production, greatly reducing system downtime. The overall lithography cell productivity is optimized by keeping the coat/develop process running so that expensive photolithography exposure scanner time is not wasted.

The system enables immersion lithography double-patterning processing and features new wafer cleaning solutions to provide the best leading-edge lithography on-wafer results, with high yield.

www.sokudo.com

Immersion light source promises stability

Cymer has developed the world's first field-selectable 60–90 W immersion light source — the XLR 600ix — according to the company. The source was integrated into a Nikon scanner in 2008, and successfully installed at the facilities of a large Asian chipmaker. The company says that this milestone represents the first immersion light source of this kind to be installed at a major chipmaker.

The XLR 600ix provides various improvements over the firm's XLR 500ix source, including a 1.5-fold improvement in wavelength and bandwidth stability, and a twofold improvement in dose stability.

The system comes equipped with Gas Lifetime eXtension technology, which reduces light source downtime during gas exchanges by a factor of 20, while improving performance stability.

www.cymer.com

Molecular photoresist developed for extreme ultraviolet lithography

Toshiba Corporation has developed a high-resolution photoresist for the future application of extreme ultraviolet lithography, and proved its viability with 20-nm-scale process technology.

When semiconductor circuit patterns scale down to the 20-nm-scale generation, current photoresists will no longer resolve circuit patterns precisely. This is principally because conventional photoresists consist of polymer compounds, and although such compounds are easy to spin-cast on wafers, the size of their molecules and entangling of their molecular chains limit resolution. To overcome this, Toshiba has developed a photoresist with smaller molecular compounds. The resist is based on a derivative of truxene, a low-molecular-weight material that is finer and more durable than currently used polymer materials.

The company applied this resist to the positive tone process, and has now succeeded in applying it to the more demanding task of the negative tone process, forming a test pattern in the 20-nm-scale generation.

Toshiba says it plans to further improve the performance of the molecular resist and apply it to the fabrication of chips in the 20-nm-scale generation.

www.toshiba.com

Mask inspection system designed for dry and immersion nodes

Applied Materials has developed the Aera2, a mask inspection system that introduces unique capabilities for qualifying the full range of masks used for dry and immersion technology nodes and for monitoring critical dimension variation in mask production.

Designed to emulate a scanner, Aera2 clearly identifies signals from defects of all types and locations; these signals in turn correlate closely with the effects that each defect would create on the wafer. Defects are therefore automatically classified as printing or non-printing (relative to a given print threshold value), and the aerial image reveals the ones most likely to print. By giving a prediction of printability, Aera2 offers a capability absent in standard high-resolution inspection systems and cuts inspection time to 1 h. All mask technologies can be inspected because aerial imaging inherently accounts for mask-related phenomena associated with the range of resolution enhancement techniques used in advanced nodes.

Aera2 can generate maps of critical dimension trends with a resolution of approximately 1 nm, and can therefore detect problems in the manufacturing process. Mapping takes place at the same time as inspection and can be performed simultaneously for multiple feature sizes.

www.appliedmaterials.com

Electrodeless source stimulates high-volume manufacturing

ENERGETIQ TECHNOLOGY

Energetiq Technology's EQ-10HR is an extreme ultraviolet (EUV) light source that operates at a high pulse rate of 10 kHz to simulate the requirements of high-volume manufacturing (HVM) for EUV lithography.

Energetiq's patented Electrodeless Z-Pinch technology inductively couples the current to the discharge plasma, making the plasma extremely stable and controllable. The plasma is confined away from source components, reducing debris and allowing long operating lifetime and low cost of ownership.

"We are very excited to bring about a reliable, cost-effective solution for producing EUV light in HVM testing," said Debbie Gustafson, Energetiq's vice president of sales and service. "Our electrodeless technology is proven to produce EUV light that is ideal for infrastructure development for EUV lithography, as demonstrated by the large number of Energetiq EQ-10 EUV systems installed in processing tools around the world. With the introduction of the higher repetition rate EQ-10HR, we can further enable the advancement of EUV as the next HVM lithography technique."

www.energetiq.com

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