# Lam Research Unveils Industry's Most Advanced Conductor Etch Technology to Date

## Akara® Solves Key Scaling Challenges for Chipmakers, with Unique Plasma Control Capabilities and a Suite of Proprietary New Technologies; Extends 20 years of Conductor Etch Leadership

FREMONT, Calif., Feb. 19, 2025 /PRNewswire/ -- Lam Research Corp. (Nasdaq: LRCX) today introduced Akara®, a breakthrough innovation in plasma etch and the most advanced conductor etch tool available. Akara delivers novel plasma processing technologies that enable the unmatched etch precision and performance needed for 3D chipmaking. Akara joins Lam's differentiated product portfolio that empowers chipmakers to overcome the industry's hardest scaling challenges.

"Building on more than 20 years of continuous conductor etch innovation, our groundbreaking new Akara etcher leverages Lam's proprietary DirectDrive® technology to deliver the controlled creation of atomic-scale features with plasma responses that are 100x faster," said Sesha Varadarajan, senior vice president of the Global Products Group at Lam Research. "Akara is a generational leap forward in conductor etch capabilities for shaping small, complex structures for the 3D era of chips."

Akara extends decades of Lam leadership in conductor etch. This includes multiple generations of the company's highly successful Kiyo® conductor etch tool, which was introduced in 2004 and now has more than 30,000 chambers in production.

Akara enables the scaling of gate-all-around (GAA) transistors and $6F^2$ DRAM and 3D NAND devices, and is extendible for $4F^2$ DRAM, complementary field effect transistors, and 3D DRAM. These devices require challenging critical etch steps and precise Extreme Ultraviolet (EUV) lithography patterning to form complex 3D structures. Angstrom-level precision is required to create small features with progressively higher aspect ratios — beyond the current capabilities of mainstream plasma etch technologies.

"As global demand for semiconductors continues to grow, innovative technology solutions from our partners are required to enable new, more powerful device architectures," said Dr. Y.J. Mii, executive vice president and co-chief operating officer at TSMC. "Critical plasma etch capabilities will be an integral part of solving the many production challenges these new devices pose."

Akara leverages proprietary etch solutions invented by Lam to tackle these issues.

- DirectDrive, the industry's first solid-state plasma source, generates plasma with 100x faster responsiveness than previous sources, resulting in fewer EUV patterning defects.
- TEMPO plasma pulsing, a unique capability to control plasma species, provides new levels of etch selectivity and microloading performance.
- SNAP is a leading-edge ion energy control system that shapes etch profiles with atomic precision.

Designed for high-volume production with maximum process yield, Akara optimizes wafer output with millisecond response times. Sophisticated etch uniformity controls ensure wafer-to-wafer repeatability. Integrated on Lam's high-productivity Sense.i® platform, Akara leverages Equipment Intelligence® solutions for automated maintenance to reduce overall equipment upkeep. Together, these features enable chipmakers to drive greater value from their manufacturing equipment.

Akara has been selected by leading device manufacturers as production tool of record for multiple, advanced planar DRAM and foundry GAA applications. Its value has been validated by these customers with repeat orders and a rapidly growing installed base.

Today's introductions of Akara and the separately announced ALTUS® Halo, the world's first molybdenum atomic layer deposition tool in production, further demonstrate Lam's focus on delivering innovations needed to ensure chipmakers are ready for upcoming semiconductor inflections.

**Additional Media Resources**

- Visit the Lam Newsroom for related images.
- Read the Lam blog.
- Learn more about Akara.

**About Lam Research**

Lam Research Corporation is a global supplier of innovative wafer fabrication equipment and services to the semiconductor industry. Lam's equipment and services allow customers to build smaller and better performing devices. In fact, today, nearly every advanced chip is built with Lam technology. We combine superior systems engineering, technology leadership, and a strong values-based culture, with an unwavering commitment to our customers. Lam Research (Nasdaq: LRCX) is a FORTUNE 500® company headquartered in Fremont, Calif., with operations around the globe. Learn more atwww.lamresearch.com.

***Caution Regarding Forward-Looking Statements***
Statements made in this press release that are not of historical fact are forward-looking statements and are subject to the safe harbor provisions created by the Private Securities Litigation Reform Act of 1995. Such forward-looking statements relate to but are not limited to: industry and market trends and expectations; customer adoption and usage of Lam products; and product performance, including technical and cost benefits. Some factors that may affect these forward-looking statements include: the actions of our customers and competitors may be inconsistent with our expectations; business, political and/or regulatory conditions in the consumer electronics industry, the semiconductor industry and the overall economy may deteriorate or change; trade regulations, export controls, trade disputes, and other geopolitical tensions may inhibit our ability to sell our products; supply chain cost increases and other inflationary pressures have impacted and may continue to impact our profitability; supply chain disruptions or manufacturing capacity constraints may limit our ability to manufacture and sell our products; and natural and human-caused disasters, disease outbreaks, war, terrorism, political or governmental unrest or instability, or other events beyond our control may impact our operations and revenue in affected areas; as well as the other risks and uncertainties that are described in the documents filed or furnished by us with the Securities and Exchange Commission, including specifically the Risk Factors described in our annual report on Form 10-K for the fiscal year ended June 30, 2024 and our quarterly report on Form 10-Q for the fiscal quarter endedDecember 29, 2024. These uncertainties and changes could materially affect the forward-looking statements and cause actual results to vary from expectations in a material way. The Company undertakes no obligation to update the information or statements made in this release.

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