Lam Research Introduces VECTOR® TEOS 3D to Address Critical Advanced Packaging Challenges in Chipmaking

Inter-Die Gapfill Tool Expands Industry-Leading Portfolio of Solutions for 3D Integration and Chiplet Technologies; Paves Way for New, AI-Accelerating Architectures

FREMONT, Calif., Sept. 9, 2025 /PRNewswire/ -- Lam Research Corp. (Nasdaq: LRCX) today unveiled VECTOR® TEOS 3D, a breakthrough deposition tool engineered specifically for the advanced packaging of next-generation chips required for artificial intelligence (AI) and high-performance computing (HPC) applications. TEOS 3D is purpose-built to solve critical challenges in 3D stacking and high-density heterogeneous integration. It provides ultra-thick, uniform, inter-die gapfill, leveraging a proprietary bowed wafer handling approach, innovations in dielectric deposition, and enhanced monitoring by Lam Equipment Intelligence® technology. TEOS 3D is installed at leading logic and memory fabs around the world.

"VECTOR TEOS 3D deposits the industry's thickest, void-free, inter-die gapfill films, customized to meet the challenging requirements of advanced die stacking integration schemes, even on ultra-stressed, high-bow wafers," said Sesha Varadarajan, senior vice president of the Global Products Group at Lam Research. "It's another powerful addition to our best-in-class advanced packaging portfolio, which delivers the differentiated, atomic-level innovations chipmakers need to scale beyond Moore's Law and into the AI era."

Addresses Manufacturing Pain Points
The explosive growth of AI is driving the need for new devices that can support increasingly data-intensive workloads. Chipmakers are turning to 3D advanced packaging to integrate multiple dies into chiplet architectures to enable AI compute. By bringing memory and processing closer together to optimize electrical pathways, chiplet designs can improve processing speed, and pack more power into smaller form factors. However, as chiplets scale taller and become more complex, they present a range of new manufacturing hurdles, from stress during processing that can distort or bow a wafer's shape, to cracks and voids in films that cause defects and lower yield.

TEOS 3D conquers a range of critical advanced packaging production challenges, excelling at handling bulky, high-bow wafers precisely and reliably. With nanoscale precision, it deposits specialized dielectric films of up to 60 microns thick between dies, with scalability to deposit films greater than 100 microns. The films provide essential structural, thermal and mechanical support to prevent common packaging failures such as delamination. TEOS 3D also features Lam's novel clamping technology and an optimal pedestal design that provides exceptional stability when processing thick wafers, enabling uniform film deposition even when dealing with extreme wafer bow.

Other highlights include:

- **The first solution for single-pass processing** of crack-free films more than 30 microns thick, significantly enhancing yield and process time.
- **Unique quad station module (QSM) architecture to boost productivity:** Lam's proven QSM architecture features four distinct stations to enable parallel processing and reduce bottlenecks. The modular design helps deliver nearly 70%[1] faster throughput and up to 20% improvement in cost of ownership compared to Lam's previous generation of gapfill solutions.
- **Lam Equipment Intelligence® technology for process repeatability:** Built into TEOS 3D, Equipment Intelligence solutions boost equipment performance and reliability, and drive yield improvement by using smart technology to monitor processes, fix issues faster, and automate routine tasks.
- **Enhanced energy efficiency:** Integrated high-efficiency RF generators and ECO Mode peripheral control reduce energy consumption while improving process precision.

Joins an Industry-Leading Suite of Advanced Packaging Solutions
Leveraging the company's 15 years of leadership in advanced packaging and decades of expertise in dielectric films, TEOS 3D

builds on Lam's existing VECTOR® Core and TEOS product families, representing continuous innovation in materials and processes for integrated packaging. It is part of a comprehensive product portfolio of industry-leading solutions that addresses critical challenges and drives innovation and productivity across the advanced packaging workflow.

Media Resources

- Visit the Lam Newsroom for related images.
- Read the Lam blog.
- Learn more about VECTOR® TEOS 3D.

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.

1 – Based on internal testing; 68%.

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 of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements relate to, but are not limited to: industry trends, demands, expectations and requirements; the requirements of our customers; and the capabilities and performance of our products. Some factors that may affect these forward-looking statements include: business, economic, political and/or regulatory conditions in the consumer electronics industry, the semiconductor industry and the overall economy may deteriorate or change; the actions of our customers and competitors may be inconsistent with our expectations; trade regulations, export controls, tariffs, trade disputes, and other geopolitical tensions may inhibit our ability to sell our products; supply chain cost increases, tariffs 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 29, 2025. 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 press release.

Company Contacts:
Allison L. Parker
Media Relations
(510) 572-9324
publicrelations@lamresearch.com

Ram Ganesh
Investor Relations
(510) 572-1615
investor.relations@lamresearch.com

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