

Almere, the Netherlands
September 22, 2026

ASM launches breakthrough Flowable Carbon technology for the next era of semiconductor scaling

ASM, a materials discovery company and global leader in semiconductor wafer processing equipment, building on its leadership in atomic layer deposition and epitaxy, launches its XP8® Vertos™ Flowable Carbon, the market's first plasma-enhanced chemical vapor deposition (PECVD) flowable carbon film. This innovation combines gap fill and planarization in a single PECVD process, reducing process complexity, improving topography control, and enabling 3D scaling. With initial deployment in high-volume manufacturing and applicability across both logic and memory devices, this next-generation patterning technology positions ASM to address a broader set of future patterning challenges as semiconductor scaling continues.

For more than two decades, chipmakers have relied on conventional carbon films not designed for the demands of modern 3D device architectures, which are reaching their limits in gap fill performance, topography control, and patterning fidelity. Vertos™ Flowable Carbon consolidates those critical patterning steps into a single platform, simplifying integration and reducing the number of process cycles required to achieve topography control.

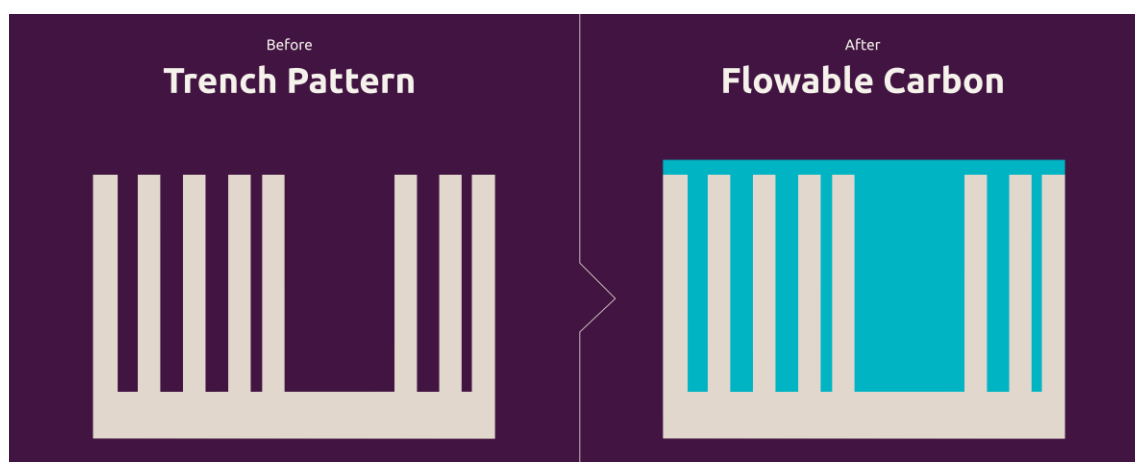
As logic and memory scaling advances into complex 3D architectures, integration schemes that depend on multi-step fill, planarization, and patterning sequences increase risks to both yield and throughput.

"The industry's ability to continue scaling increasingly complex devices depends as much on materials innovation as it does on architecture and design. Vertos™ Flowable Carbon demonstrates how ASM continues to translate materials discovery into manufacturing solutions that solve tomorrow's integration challenges," said Hichem M'Saad, Chief Executive Officer. "Every chip that ships with this technology represents faster, more efficient AI performance for the people and industries that depend on it."

The semiconductor market is projected to reach \$1.5 trillion in 2026 according to the Semiconductor Industry Association. Driven by the AI hypercycle and accelerating compute demand, chipmakers are scaling devices into increasingly complex 3D architectures, creating the need for new materials and process approaches to sustain performance gains. Materials innovation is now as critical as architectural design in enabling that progress. Vertos™ Flowable Carbon addresses that need, providing a purpose-built patterning solution for the complexity of next-generation devices.

"Conventional carbon films deposit material that conforms to the feature shape, which means topography problems propagate upward and require additional process steps to correct. Vertos™

Flowable Carbon changes that entirely. The material flows into the feature, fills from the bottom up, and self-planarizes, delivering a flat, uniform surface ready for the next patterning step," said Tyler Sample, Vice President PECVD Key Product Unit Head. "The combination of engineered flowability, thermal stability, and area selective properties in a single PECVD platform is something the market has not seen before, and it opens a clear path forward for device architectures that existing carbon film technology cannot support."



Flowable Carbon delivers a flat, uniform surface ready for the next patterning step.

Vertos™ Flowable Carbon is a novel PECVD process that fills even the most complex high-aspect-ratio features without voids or seams and self-planarizes across the wafer. The process operates within an all-in-one PECVD system, eliminating the need for downstream chemical mechanical planarization or etch-back steps, reducing both cost and defect risk in manufacturing. Unique film properties include improved planarization across substrates with diverse pattern density, increased thermal stability, and area selective deposition characteristics. This combination makes Vertos™ Flowable Carbon a scalable approach to patterning across current and future technology nodes.

For more information on ASM XP8® Vertos™ Flowable Carbon, visit [ASM Flowable Carbon](#).

About ASM

ASM International N.V., headquartered in Almere, the Netherlands, and its subsidiaries design and manufacture equipment and process solutions to produce semiconductor devices for wafer processing, and have facilities in the United States, Europe, and Asia. ASM's common stock trades on the Euronext Amsterdam Stock Exchange (symbol: ASM). For more information, visit ASM's website at www.asm.com.

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