Niobium Advances Fully Homomorphic Encryption Accelerator ASIC Toward Production

Partnership with SEMIFIVE and Samsung Foundry marks key milestone in bringing encrypted computation into real-world cloud and AI infrastructure

DAYTON, OH, UNITED STATES, February 20, 2026 /EINPresswire.com/ -- Niobium, a leader in hardware acceleration for fully homomorphic encryption (FHE), today announced a milestone in the development of its ASIC accelerator platform, as the company moves toward manufacturing readiness and early commercial deployment. Niobium has partnered with SEMIFIVE and Samsung Foundry to develop what is expected to be the world's first commercially viable FHE accelerator, designed to enable encrypted computation at speeds practical for real-world cloud and AI infrastructure.

> Encrypted computation will become inevitable. Once enterprises can compute directly on encrypted data at fast enough speeds, processing sensitive information in the clear will no longer be acceptable."
>
> *Kevin Yoder, CEO of Niobium*

"Encrypted computation will become inevitable," said Kevin Yoder, CEO of Niobium. "Once enterprises can compute directly on encrypted data at fast enough speeds, processing sensitive information in the clear will no longer be acceptable. With SEMIFIVE and Samsung Foundry, we're translating years of R&D into production-ready silicon for encrypted cloud and AI environments. This represents the next step in our transition from prototype systems to accelerators suitable for customer deployments."

Niobium's FHE Accelerator platform will be developed with SEMIFIVE, a leader in platform-based custom silicon solutions and a Design Solution Partner within Samsung Foundry's SAFE™ ecosystem. It will also be manufactured using Samsung Foundry's mass-production proven 8nm process. The collaboration represents the next stage of manufacturing preparation as Niobium advances toward deployment with hyperscalers and AI infrastructure providers.

FHE enables data analysis and computation while encrypted, without ever exposing data in

plaintext, creating a new foundation for private AI, encrypted cloud services, and long-term protection against emerging post-quantum threats.

“Niobium is at the forefront of encrypted computation, and their FHE accelerator platform represents one of the most important emerging architectures in privacy-first computing,” said Brandon Cho, CEO and co-founder of SEMIFIVE. “We are pleased to support Niobium in translating this cutting-edge FHE innovation into manufacturable silicon through SEMIFIVE’s proven SoC development and platform execution.”

“Encrypted computation will play an increasingly critical role in the future of AI and cloud systems,” said Taejoong Song, vice president and head of Foundry Technology Planning at Samsung Electronics. “Through Samsung Foundry’s advanced process technology and SAFE™ ecosystem of partners, we are proud to support Niobium and SEMIFIVE as they bring next-generation private computing silicon to global markets.”

Together SEMIFIVE’s SoC development capabilities, Samsung Foundry’s manufacturing scale, and Niobium’s expertise in encrypted computation and cryptography are advancing a new class of secure infrastructure and helping to make fully encrypted computation practical and to make data exposure obsolete.

About Niobium
Niobium is building the first dedicated hardware platform designed to advance fully homomorphic encryption (FHE) into commercial applications. FHE keeps data encrypted even during computation, mathematically guaranteeing privacy. Niobium is headquartered in Dayton, Ohio, with offices in Portland, Oregon, and San Francisco, California. More information is available at https://niobiummicrosystems.com/

About SEMIFIVE
SEMIFIVE Inc. (KOSDAQ: 490470) is a pioneer of platform based SoC design, working with customers to implement innovative ideas into custom silicon in the most efficient way. Our SoC platforms offer a powerful springboard for new chip designs and leverage configurable domain-specific architectures and pre-validated key IP pools. We offer comprehensive spec-to-system capabilities with end-to-end solutions so that custom SoCs can be realized faster, with reduced cost and risks for key applications such as data center or AI-enabled IoT. With a strong partnership with Samsung Foundry as a leading SAFE™ DSP partner, as well as the larger ecosystem, SEMIFIVE provides a one-stop shop solution for any SoC design needs. For more information, please visit www.semifive.com.

Alexandra Crabb
Niobium
+1 401-318-2229
email us here