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Diamond Quanta turns lab-grown diamonds into tech's new standard

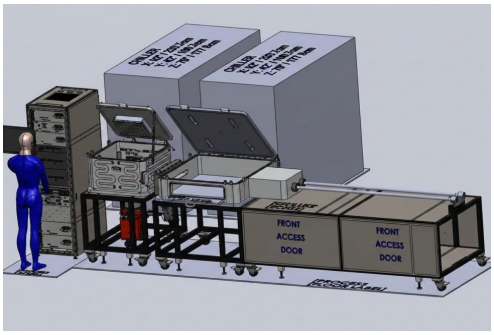
For decades, traditional hardware materials have underpinned the global tech economy, but today's fastest-growing industries are hitting a hard physical limit. Whether dealing with extreme heat bottlenecks in artificial intelligence infrastructure, optical distortion in advanced sensors, or the everyday scratching of smartphone cover glass, legacy materials simply cannot keep pace with modern demands. Innovation is increasingly constrained by these material limitations.

To break through these barriers, industries have long eyed diamond as the ultimate upgrade because of its exceptional thermal, optical, and durability properties. However, diamond technologies have historically been trapped in research laboratory settings due to extreme processing costs and manufacturing disruption.

Diamond Quanta team demonstrates its proprietary Adamantine Platform at Consumer Electronics Show. (Photo provided by Diamond Quanta)

The startup Diamond Quanta aims to change all of that with its proprietary Adamantine Platform™, a scalable, engineered-diamond interface platform. Based in Mountain View, California, the company is using this platform to develop diamond interface technologies optimized for integration within existing semiconductor manufacturing workflows. Because the platform is built for compatibility, it allows high-volume factories to leverage the properties of diamond across multiple verticals—ranging from highly durable smartphone glass and rugged sensors to high-power semiconductor wafers and advanced chiplet interposers.

By integrating within existing production workflows, the platform is designed to improve performance, reduce qualification risk, and support longer device lifetimes while unlocking next-generation performance. As a result, manufacturers can improve thermal, optical, and integration performance across next-generation systems, as well as physical durability across consumer electronics, advanced optical networks, and quantum systems. This is Diamond Quanta's mission—to make diamond as accessible, practical, and easy to use as silicon.



Diamond Quanta process. (Photo provided by Diamond Quanta)

AN ENABLING PLATFORM: FROM DEEP TECH BREAKTHROUGH TO INDUSTRY MOVEMENT

From the outset, Diamond Quanta prioritized manufacturability to deliberately avoid the common deep-tech trap of creating a laboratory breakthrough that proves difficult to commercialize.

While competing material alternatives require factories to absorb costly equipment and supply-chain overhauls, Diamond Quanta has designed its platform integration path around existing infrastructure. Operating under an intellectual property-led, fab-light business model, the company plans to scale its commercial footprint through strategic

joint evaluation programs, OEM qualification, and scalable licensing partnerships. The company's commercialization strategy progresses from joint testing and evaluation through development programs, technology licensing, and strategic manufacturing partnerships.

This collaborative approach received profound scientific validation in June 2026, when the company announced peer-reviewed results published in the journal *Carbon Trends*. Conducted alongside scientists from the Lawrence Livermore National Laboratory, the study demonstrated that Diamond Quanta's specialized laser treatment can reduce defects and relax strain fields associated with microscopic structural flaws and internal atomic stresses trapped inside lab-grown diamonds. Crucially, the process repairs these defects deep within the material without damaging the diamond itself. By solving a decades-old reliability problem that historically limited the commercial adoption of diamond tech, this breakthrough helps address an important technical barrier to broader commercial adoption.

"Independent peer-reviewed validation plays an important role in reducing commercialization risk for emerging materials platforms," explains Michael Pierantozzi, co-founder and COO/BD of Diamond Quanta. "This publication strengthens the technical foundation underlying our Adamantine Platform and supports our process-development roadmap as we advance toward tool-enabled development and OEM qualification activities."

According to Pierantozzi, the company has prioritized three market segments where its technology can help solve immediate industrial challenges:

- For AI infrastructure and advanced packaging: It provides thermal dissipation layers that draw heat away from high-power processors, reducing cooling requirements and operating costs.
- For optics and photonics: It maximizes optical performance, transmittance, and extreme scratch resistance for advanced sensors and consumer electronics.
- For semiconductors and quantum systems: It supports emerging semiconductor and quantum technologies through improved interface performance across multi-generation component architectures.

GAINING PATHWAYS TO GROWTH WITH LUMINATE

Earlier this year, Diamond Quanta was selected to participate in the Luminate NY accelerator, the premier global launchpad for optics, photonics, and imaging (OPI) innovators. The Rochester, New York-based program offers expertise and support tailored to help the company translate deep-tech momentum into scalable market impact.

"Luminate has helped us sharpen our commercialization strategy, strengthen our investor narrative, refine our market positioning, expand our network, and deepen engagement with potential customers, partners, and advisors," notes Pierantozzi. Luminate also has pushed the company to think far beyond fundamental physics, focusing heavily on building a robust, scalable business structure.

Michael Pierantozzi co-founder and COO/BD of Diamond Quanta

"Advancing manufacturing capabilities in the United States, particularly in the semiconductor and advanced packaging industries, requires moving past the physical bottlenecks of legacy materials," says Dr. Sujatha Ramanujan, managing director and chief investment officer, Luminate. "Startups like Diamond Quanta are absolutely vital to this mission. By making a game-changing material like diamond practical for existing production lines, they aren't just driving technical breakthroughs—they are introducing the exact kind of domestic infrastructure innovation needed to improve industry capabilities and alleviate critical supply chain vulnerabilities."

By embedding themselves within Rochester's world-class regional OPI cluster, Diamond Quanta has unlocked immediate access to specialized mentors, corporate relationships, and regional development resources. This immersion builds on existing endorsements the company has cultivated through participation in other elite deep-tech accelerators, including Silicon Catalyst, alongside ongoing validation from national research facilities and commercial tech leaders.

WHAT'S NEXT: TRANSLATING TECHNICAL VALIDATION INTO COMMERCIAL DEPLOYMENT

As part of the current Luminate cohort, Diamond Quanta will compete for a portion of $2 million in follow-on funding at Luminate Finals on September 30—an initiative made possible by Empire State Development's Finger Lakes Forward Upstate Revitalization Initiative. Should the company secure investment, it will use the funding to accelerate customer qualification cycles, scale manufacturing readiness, and fast-track global licensing agreements.

As AI infrastructure, semiconductors, photonics, and advanced packaging continue to evolve, manufacturers are seeking new ways to improve performance while leveraging existing manufacturing infrastructure. Giving the market new platform options for building the next era in technological advancements is critical. Diamond Quanta is well on its way to proving that the future of high-performance infrastructure for these technologies isn't just faster—it is cooler, highly durable, and anchored firmly in what they proudly call The Physics of Forever™.