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FOR IMMEDIATE RELEASE

Nitride Global Awarded AFWERX Direct-to-Phase II SBIR to Advance Revolutionary Substrate Platform for Next-Generation Power Electronics

(Wichita, KS, December 4, 2025) – Nitride Global, Inc. (NGI), a global leader in ultrawide bandgap Aluminum Nitride materials, and thermal management advanced packaging technologies, today announces it has been selected by AFWERX for a Direct-to-Phase II contract in the amount of $1,249,844 focused on its revolutionary multilayer aluminum oxynitride (AlON)/copper (Cu) substrate platform, a breakthrough technology that unifies power, control, signal, and passive functions within a single, thermally robust package, to address the most pressing challenges in the Department of the Air Force (DAF). The Air Force Research Laboratory and AFWERX have partnered to streamline the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) process by accelerating the small business experience through faster proposal to award timelines, changing the pool of potential applicants by expanding opportunities to small business and eliminating bureaucratic overhead by continually implementing process improvement changes in contract execution. The DAF began offering the Open Topic SBIR/STTR program in 2018 which expanded the range of innovations the DAF funded and now on September 18th 2025, Nitride Global will start its journey to create and provide innovative capabilities that will strengthen the national defense of the United States of America.

The award will accelerate development of Nitride Global's patented multilayer aluminum oxynitride (AlON) substrate platform to provide an entirely new set of capabilities in areas such as high power RF communications, laser and directed energy systems, quantum guidance systems amongst others. Furthermore, commercializing this technology domestically will enhance the Department of Defense and position the United States as a global leader within the semiconductor advanced packaging domain.

Modern defense and aerospace systems rely on increasingly complex power electronics capable of operating in extreme environments. However, today's fragmented approach—where switches, drivers, control logic, and magnetic components are distributed across multiple boards—creates inefficiencies, increases parasitic losses, and limits reliability. NGI's integrated AlON/Cu substrate architecture eliminates these barriers by enabling the direct co-location of wide-bandgap power devices, RF amplifiers, and photonic elements on a single substrate.

“This award validates the transformative potential of our AlON technology to reshape power electronics for defense and commercial systems alike,” said Mahyar Khosravi, CEO of Nitride Global. “Our platform offers a pathway to smaller, lighter, and more thermally resilient systems that enable a new generation of solutions that can thrive where conventional packaging fails”.

Under the Phase II effort, Nitride Global will advance fabrication repeatability, validate high-frequency, high-voltage, and harsh environments performance, and integrate AlON/Cu substrates into representative Air Force systems for field-relevant testing. The program will elevate the technology from Technology Readiness Level and demonstrate its readiness for mission-critical deployment.

The AlON platform directly supports multiple Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) Critical Technology Areas (CTAs), including Advanced Materials, Microelectronics, Directed Energy, and Integrated Sensing and Cyber. Its high thermal conductivity, dielectric strength, and structural integrity at elevated temperatures make it ideally suited for next-generation power and signal integration under extreme thermal, electrical, and mechanical stressors.

Beyond defense, NGI’s technology has strong dual-use potential in commercial markets such as electric vehicles, high power lasers, RF communications, datacenter power and grid modernization, and AI/quantum computing, where high power density and miniaturization are critical.

Nitride Global is one of only four companies globally—and the last remaining domestically owned entity—capable of ultrawide bandgap aluminum nitride crystal growth. The company’s patented AlON material system and proprietary deposition technology represent a U.S.-controlled, export-compliant solution for advanced microelectronics packaging, helping restore domestic leadership in a field that has largely moved offshore.

About Nitride Global

Founded in 2021, Nitride Global (nitrideglobal.com) is an advanced materials innovator specializing in ultrawide bandgap materials with its ultra-high-purity aluminum nitride boules, and advanced packaging solutions with its revolutionary and patented aluminum oxynitride technology. Its cutting-edge solutions are designed to enable the next generation of semiconductor devices & microelectronics in sectors such as power grid, aerospace & defense electronics, EV, datacenters, power electronics, and sustainable energy solutions. Through continuous innovation and strategic partnerships, Nitride Global is committed to pushing the boundaries of performance while building a more sustainable, energy-efficient future.

About AFRL

The Air Force Research Laboratory, or AFRL, is the primary scientific research and development center for the Department of the Air Force. AFRL plays an integral role in leading the discovery, development and integration of affordable warfighting technologies for our air, space and cyberspace forces. With a workforce spanning across nine technology areas and 40 other operations around the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit afresearchlab.com.

About AFWERX

As the innovation arm of the DAF and a directorate within the Air Force Research Laboratory, AFWERX brings cutting-edge American ingenuity from small businesses and start-ups to address the most pressing challenges of the DAF. Headquartered at Wright-Patterson Air Force Base, Ohio, AFWERX employs military, civilian and contractor personnel executing an annual $1.4 billion annual budget. Since 2019, AFWERX has awarded over 10,400 contracts worth more than $7.24 billion to strengthen the U.S. defense industrial base and drive faster technology transition to operational capability. For more information, visit: afwerx.com.

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