ISSN 1752-2935 (online)

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

Vol. 20 • Issue 9 • November/December 2025 www.semiconductor-today.com

# onsemi launches vertical gallium nitride power semiconductors

Tax refunds for Wolfspeed • Navitas & GlobalFoundries partner
Coherent expands SiC to 300mm • First Solar for South Carolina

IQE

# THE GLOBAL LEADER IN EPIWAFER SUPPLY

## *Enabling the Best RF, Photonics & Power Semiconductors*

- 'One-stop-shop' for III-V & Silicon epiwafer products
- 2" to 6" epitaxy ready substrates & polycrystalline materials
- Multiple manufacturing sites; Europe, Asia & America
- Leveraging 30+ years of compound semiconductor IP
- Custom engineered structures; R&D to production volumes

## RF

**GaN HEMT**
*5G Infrastructure*
*Radar, EW/ECM, & SATCOM*

**GaAs HBT / pHEMT / BiHEMT**
*5G Smartphones & Infrastructure*
*WiFi6 Hotspots, GPS & IoT*

**SiGe HBT**
*5G Smartphones*
*WiFi6, Bluetooth, GPS & IoT*

## PHOTONICS

**InP Laser & Detector**
*Optical Comms & Data Centres*
*SW IR Imaging*

**GaSb Laser & Detector**
*MW-LW IR imaging*
*Biometrics*

**GaAs VCSEL**
*3D Sensing & LiDAR*
*Datacoms*

## POWER

**GaN on Si HEMT**
**GaN on GaN**
*Electric Vehicle Systems*
*Power Conversion & Storage*

**GaAs Multi-Junction Solar**
*High Efficiency Terrestrial CPV & Space PV*

**GaN LED & Laser**
*MicroLED Display & AR/VR*
*UV Sterilisation*


EUROPE: +44 2920 839 400
AMERICAS: +1 508 824 6696
APAC: +886 3 579 8181
ALL INQUIRIES: sales@iqep.com


**www.iqep.com**

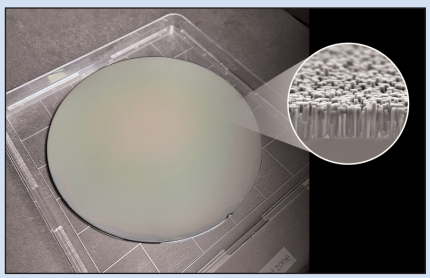
# contents



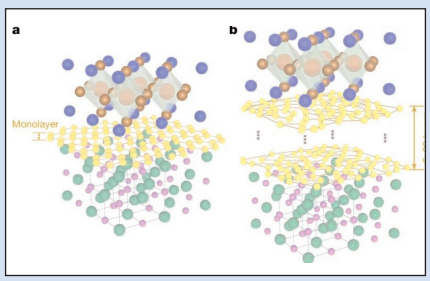

semiconductorTODAY
COMPOUNDS & ADVANCED SILICON

Vol. 20 • Issue 9 • Nov/Dec 2025

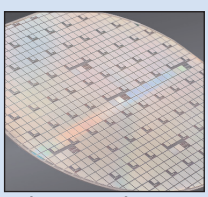

**p10** The University of Arkansas has opened its Multi-User Silicon Carbide Facility (MUSiC).



**p30** IVWorks has developed and implemented mass production of 8-inch InGaN/GaN nanowire epiwafers.



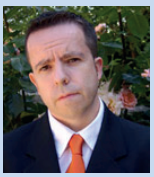

**p42** A Rensselaer Polytechnic Institute-led team has demonstrated remote epitaxy with 2–7nm epilayer–substrate distance.



Cover image: onsemi has introduced vertical GaN power semiconductors. The proprietary GaN-on-GaN technology conducts current vertically, enabling higher operating voltages and faster switching frequencies. **p18**

semiconductorTODAY
COMPOUNDS & ADVANCED SILICON
www.semiconductor-today.com
Semiconductor Today
Semiconductor_T

**Editor**
Mark Telford
Tel: +44 (0)1869 811 577
Cell: +44 (0)7944 455 602
E-mail: mark@semiconductor-today.com



**Commercial Director/Assistant Editor**
Darren Cummings
Tel: +44 (0)121 288 0779
Cell:+44 (0)7990 623 395
E-mail: darren@semiconductor-today.com

**Advertisement Sales**
Darren Cummings
Tel: +44 (0)121 288 0779
Cell:+44 (0)7990 623 395
E-mail: darren@semiconductor-today.com

**Original design**
Paul Johnson
www.higgs-boson.com

***Semiconductor Today* covers the R&D and manufacturing of compound semiconductor and advanced silicon materials and devices** (e.g. GaAs, InP and SiGe wafers, chips and modules for microelectronic and optoelectronic devices such as RFICs, lasers and LEDs in wireless and optical communications, etc).

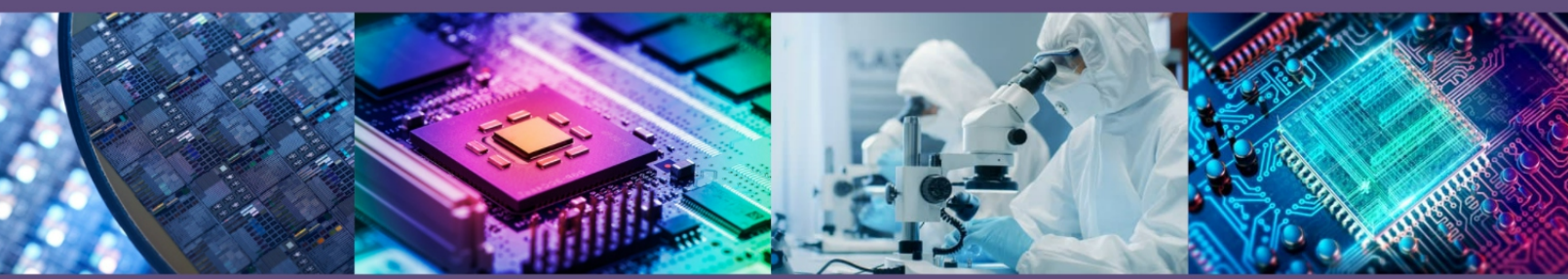
**Regular issues contain:**

- news (funding, personnel, facilities,
- technology, applications & markets);
- feature articles (technology, markets,
- regional profiles);
- conference reports;
- event calendar and event previews;
- suppliers' directory.

***Semiconductor Today* (ISSN 1752-2935) is published free of subscription charge** in a digital format 10 times per year by Juno Publishing and Media Solutions Ltd, Suite no. 133, 20 Winchcombe Street, Cheltenham GL52 2LY, UK.
See: www.semiconductor-today.com/subscribe.htm

csconnected

# THE WORLD'S FIRST COMPOUND SEMICONDUCTOR CLUSTER



CSconnected is home to the world's first regional ecosystem based on the manufacture of compound semiconductor enabled hardware, located in south Wales

Driving tomorrow's technologies

csconnected.com | info@csconnected.com

news

# Smartphone production grows 9% in Q3/2025, driven by seasonal demand and new product releases

## Full-year growth forecast of 1.6% could be lowered due to ongoing memory supply issues

In second-half 2025, the smartphone market entered its peak season, with new product launches further boosting output, according to the latest research by market analyst TrendForce. In third-quarter 2025, global smartphone production hit 328 million units, up 9% quarter-on-quarter and 7% year-on-year. These numbers highlight a distinct seasonal uptick.

TrendForce notes that demand in fourth-quarter 2025 will be supported by the release of new flagship models and extensive inventory buildup for global e-commerce sales. Nevertheless, constrained memory supply and increasing prices are likely to reduce profit margins, particularly for entry-level devices, potentially limiting expected growth. TrendForce currently predicts a 1.6% year-on-year increase in production for 2025, but cautions that ongoing memory supply issues could lead to a further downward revision.

In 2025, China experienced a significant boost from subsidy programs in the first quarter, but their impact has gradually weakened. Full-year sales are projected to grow 2%, maintaining China's position as the largest smartphone market globally with a 23% share.

India follows with a 13% share, supported by recovering demand and expected annual growth of 2%.

North America, the third-largest market, initially stocked up inventory in the first half due to tariff concerns. However, demand has softened since then, and full-year sales are projected to fall by 1%, accounting for an 11% market share.

Samsung produced nearly 63 million units in Q3/2025, up 8% quarter-on-quarter, maintaining its leading position with a 19% market share. The Galaxy A series continued to boost volume, and the updated foldable lineup received positive market response, supporting high-end sales.

Apple closely followed with 57 million units — its highest Q3 production ever. Its tactic of keeping the iPhone 17 base models' prices the same while increasing storage was successful. Additionally, improved design differentiation in the Pro series helped to maintain strong sales momentum.

Xiaomi (including Redmi and POCO) took third place with nearly 45 million units produced, up 6% quarter-on-quarter, supported by new model launches and holiday stocking.

OPPO (including OnePlus and Realme) ranked fourth with about 40 million units, up 8%, supported by recovering sales in India, Southeast Asia, and Latin America.

Transsion (TECNO, Infinix, itel) experienced robust demand in emerging markets across Africa and Asia, manufacturing over 29 million units — up 9% quarter-on-quarter — and ranking fifth.

Vivo (including iQOO) closely followed, with market share less than 0.5 percentage points below Transsion. The strong sales of mid-to-high-end models from the iQOO series and active stocking during the festival season have boosted its Q3 production by over 8%, reaching about 28 million units.

**www.trendforce.com**

| Rankings | Brand | Production | QoQ | Market Share |
|---|---|---|---|---|
| 1 | Samsung | 63 | 8% | 19% |
| 2 | Apple | 57 | 23% | 17% |
| 3 | Xiaomi | 45 | 6% | 14% |
| 4 | Oppo | 40 | 8% | 12% |
| 5 | Transsion | 29 | 9% | 9% |
| 6 | Vivo | 28 | 8% | 9% |

**Global smartphone production by major brands in third-quarter 2025.**

# Cardiff University report highlights urgent need to strengthen semiconductor skills in Wales

## CSconnected Strength in Places Fund program focuses on long-term investment in STEM and vocational pathways

As part of the South Wales-based compound semiconductor cluster CSconnected Strength in Places Fund (SIPF) program funded by UK Research and Innovation (UKRI), a new report published by the Welsh Economy Research Unit at Cardiff University highlights the urgent need for regionally responsive skills development to secure the future of the UK's semiconductor industry. The report explores key challenges in talent pipeline development, workforce readiness, and the role of education and training in driving industrial growth.

The findings highlight a global shortage of STEM graduates entering semiconductor careers and calls for coordinated regional action to close skills gaps, support professional development, and raise awareness of the industry among students, educators, and parents.

"Skills are the foundation of our industry. From primary school outreach to continuing professional development (CPD) for experienced engineers, we're building a roadmap that connects education to employment to rewarding careers," says CSconnected's skills manager Brandon Jones. "This report reinforces the need for long-term investment in STEM and vocational pathways, showing how regional clusters like ours can lead the way in shaping a national response," he adds.

"This vision is already being put into action through the CSconnected Skills Plan, a strategic framework that outlines how we're inspiring the next generation, guiding further education graduates into semiconductor careers, and upskilling the current workforce. Further investment is crucial to help us close the clearly evidenced skills gap."

The report identifies several initiatives already underway in Wales, including the development of Level 2 and Level 4 semiconductor qualifications with the Welsh Joint Examination Committee (WJEC), the launch of the Semiconductor Skills Academy, and the delivery of CPD courses through Cardiff University. However, it also identifies key challenges, including limited apprenticeship availability, low public awareness of semiconductor careers, and the need for stronger public-private partnerships to help expand apprenticeship provision.

While talent supply has been a key driver of growth in the semiconductor industry, shortages in skills and labour have often constrained development even in well-established industrial regions.

In the latest CSconnected annual report, it was identified that insufficient labour and skills supply are the most critical risk factor currently facing the global semiconductor industry.

'Evidence shows that those countries with a sustained commitment to developing relevant talent tend to have seen the strongest growth in their semiconductor industries," notes Dr Mark Lang, research associate at the Welsh Economy Research Unit. "For firms, skills shortages can lead to reduced productivity and innovation. Building an appropriate skills-base is not only essential for industry's expansion, however, it is also critical for broadening varied employment opportunities for local people."

The new report concludes with eight key recommendations, including:

- investing in STEM education at all levels;
- expanding apprenticeship programs;
- promoting industry-specific training;
- increasing visibility of semiconductor careers;
- supporting ongoing professional development;
- facilitating international talent recruitment;
- enhancing coordination between education and industry;
- strengthening regional skills ecosystems.

Through initiatives such as CSconnected Sparking STEM (which introduces young people to semiconductor technology) and the new Fast-Track Integration Programme for Engineers developed by Cardiff University's CPD Unit (designed to help engineers from other sectors transition into semiconductor roles), CSconnected and its partners are putting in place programs that directly address the report's recommendations. Alongside new WJEC qualifications, CPD courses and the Semiconductor Skills Academy, these initiatives create a pathway from school outreach to professional re-skilling. But their success and the UK's ability to build the skills base that industry urgently needs will depend on sustained and significant government investment to secure their long-term future and impact, says the report.

CSconnected is the world's first compound semiconductor cluster, located in South Wales. Supported by the Strength in Places Fund (UK Research and Innovation) and Cardiff Capital Region, the cluster unites leading companies, research institutions, and government partners to drive innovation, economic growth, and global leadership in semiconductor technology.

**www.csconnected.com**
**www.ukri.org**

# CSconnected announces £1m third call to Supply Chain Development Programme

## Grant available up to £100,000, or £30,000 for micro-companies

The South Wales-based compound semiconductor cluster CSconnected has announced a £1m third call in its Supply Chain Development Programme (which was launched in March), delivered in partnership with Cardiff Capital Region (CCR), to accelerate the expansion of the compound semiconductor supply chain in South Wales. The initiative aims to drive job creation, stimulate economic growth and enhance the UK's strategic position in advanced semiconductor manufacturing.

Supported by the Strength in Places Fund (UK Research and Innovation) and Cardiff Capital Region, CSconnected is the world's first compound semiconductor cluster, and unites leading companies, research institutions, and government partners to drive innovation, economic growth, and global leadership in semiconductor technology.

The Supply Chain Development Programme is designed to strengthen supplier relationships, stimulate commercial growth and build long-term resilience across one of the UK's most critical technology sectors. It is open to UK-based buyers and suppliers linked to the compound semiconductor industry in South Wales, including those providing advanced manufacturing, engineering, chemicals, raw materials, specialist design tools, fabless semiconductor solutions and system integration across key end markets such as automotive, communications, aerospace and healthcare.


**CSConnected Supply Chain Day.**

The programme will support projects of up to £100,000 in grant value, with a maximum intervention rate of 50%, equivalent to a total project cost of £200,000. Micro-companies are eligible for a 70% intervention rate for grants up to £30,000. Projects must be led by a UK-registered limited company, run for between six and nine months, and demonstrate clear benefits to the Cardiff Capital Region. All proposals must be supported by a primary cluster organization and will be awarded as Minimum Financial Assistance (MFA) subsidies under the Subsidy Control Act 2022, with recipients receiving quarterly payments in advance.

"This £1m programme is about building resilience and capacity within the UK's semiconductor ecosystem," says CSconnected's managing director Howard Rupprecht. "By connecting local suppliers with global manufacturers, we are helping to anchor high-value activity here in Wales, ensuring that South Wales remains at the forefront of advanced manufacturing and semiconductor innovation."

Current projects are equipping suppliers with new production line capabilities enhancing throughput, new product/service validation to improve production and design efficiencies, and the utilization of UK suppliers to onshore an in-house manufacturing process.

The investment forms part of the CSconnected mission to strengthen regional supply chains and ensure that the compound semiconductor sector continues to deliver measurable economic impact for Wales and the UK.

CSconnected is delivering a webinar event on 20 November from 12noon-1pm, sharing further information and allowing for Q&A. Those interested can sign up here.

The deadline for applications is 17 December at 4pm.

**www.eventbrite.co.uk/e/supply-chain-development-programme-call-3-tickets-1922378478779**

**www.csconnected.com**

# South Wales-based compound semiconductor cluster celebrates tenth anniversary

## CSconnected aims to double size of cluster, creating 3000 jobs by 2030

On 13 November, over 100 industry leaders, researchers, policymakers and educators gathered in Cardiff to celebrate the 10-year anniversary of CSconnected, the world's first compound semiconductor cluster.

The cluster's success has been driven by deep collaboration between universities, industry, and government. Key milestones include the establishment of the Compound Semiconductor Centre (CSC), the Institute for Compound Semiconductors (ICS) at Cardiff University and the Centre for Integrative Semiconductor Materials (CISM) at Swansea University and the UK Research and Innovation (UKRI)-funded Compound Semiconductor Applications Catapult. A major inflection point came in 2020, when CSconnected secured £43m in Strength in Places Fund (SIPF) support, formalizing the cluster as CSconnected and embedding operational collaboration.

With £850m invested in facilities and involving over £150m in collaborative R&D since its origins in 2015, the South Wales-based compound semiconductor cluster has become a cornerstone of the UK's deep-tech and manufacturing sector, generating £434m+ in revenue for the UK economy (90%+ exports) and supporting about 3000 high-value jobs.

The cluster is anchored by global firms including IQE, Vishay, KLA, and Microchip, alongside research institutions such as Cardiff and Swansea Universities. Together, they form a full research-to-manufacturing supply chain for the compound semiconductor industry, which is not only unique, it is reckoned, but is also extremely difficult to replicate, making it strategically valuable to Wales and the UK.

"CSconnected's tenth anniversary is a testament to Government, business and university collaboration," according the event's keynote address by Jack Sargeant MS (Wales' Minister for Culture, Skills and Social Partnership, whose portfolio aligns with the cluster's focus on talent pipelines and skills development). "Over the past decade, this cluster has attracted significant investment, created thousands of high-quality jobs, and established Wales as a global leader in compound semiconductors. As we look to the future, we continue to support this vital sector, ensuring it continues to drive economic growth and prosperity across our communities."

This density of firms, skills and facilities creates an end-to-end supplychain in a single region, from epiwafer growth and device fabrication through to testing, packaging, and applications. This integrated model is said to reduce lead times, lower risks, and make Wales an attractive location for organizations looking to scale in a constrained global market.

"Ten years ago, CSconnected was an ambitious idea. Today, it's a thriving ecosystem that connects research, manufacturing, and talent," says CSconnected's managing director Howard Rupprecht. "We're building a future where Wales leads in creating the enabling technologies for quantum, photonics, and AI; collaboration continues to be our competitive edge, and talent development is central to our strategy. This anniversary marks the beginning of that next chapter," he added.

"We aim to double the size of the cluster [to £1bn in revenue], which means the creation of an additional 3000 new jobs by 2030," Rupprecht continues, ensuring that value is captured across the region through well-paid jobs and a resilient supply chain.

**Membership scheme launched**

As part of the 10th anniversary celebrations, CSconnected launched its membership, enabling more organizations in the industry to become part of the cluster. Membership is open to organizations involved in the advanced semiconductor supply chain.

**www.csconnected.com/membership**

# CSconnected 'Cluster Champions' recognised

The event recognised the following group of outstanding individuals as 'Cluster Champions' whose leadership, commitment and vision have helped shape the CSconnected cluster over the past decade:

- Chris Meadows: non-executive director, CSconnected;
- David Rosser: chief regional officer (South), Economy, Skills & Natural Resources Group, Welsh Government;
- Dr Drew Nelson OBE, FREng: co-founder, IQE;
- Kellie Beirne: chief executive, Cardiff Capital Region (CCR);
- Martin McHugh: former chief executive, CSA Catapult;
- Professor Paul Meredith OBE, FLSW: director of the Centre for Integrative Semiconductor Materials at Swansea University;
- Professor Ruedi Allemann: pro vice-chancellor (International) & head, College of Physical Sciences & Engineering, Cardiff University;
- Professor Wyn Meredith FREng FLSW: founding director, Compound Semiconductor Centre & chair, CSconnected.

Their contributions have been "instrumental in building the foundations of a world-leading cluster and in driving continued collaboration across academia, industry and government".

# Multi-User Silicon Carbide Facility opened at Arkansas

## MUSiC to provide open-access domestic opportunities for prototyping, proof-of-principle demos and device design

The University of Arkansas has opened its Multi-User Silicon Carbide Facility (MUSiC), which is claimed to the only open-access fabrication facility of its kind in the USA.

MUSiC will provide domestic opportunities for prototyping, proof-of-principle demonstrations and device design incorporating SiC, and its facilities and services will be available to external researchers and industry.

"MUSiC is a powerful example of our land-grant mission in action," said chancellor Charles Robinson. "This facility will give students hands-on experiences that prepare them for success in a high-tech workforce while helping our researchers push the boundaries of what's possible in materials science and semiconductor technology. In doing so, it will strengthen Arkansas' economy, improve lives across the nation and help safeguard America's long-term security and prosperity."

Robinson was joined by leaders including US Representative Steve Womack and Arkansas State Attorney General Tim Griffin, as well as Kim Needy (dean of the College of Engineering) and Alan Mantooth (UA Power Group's founding director and Distinguished Professor of Engineering). Alumni from semiconductor firms including Wolfspeed, GlobalFoundries, onsemi, Microchip and Texas Instruments also attended the opening.

"The technology that will emerge from the MUSiC fab is foundational to our economic strength and national security," commented Womack. "The University of Arkansas will serve as ground zero for this important work, developing scalable technologies that will bolster our ability to compete in the global marketplace," he added.

Funded partly by the US National Science Foundation's Mid-Scale Research Infrastructure Program, MUSiC provides a multi-project wafer model enabling collaborative prototyping and research across academia, government and industry. The facility features an eight-bay cleanroom, expandable to 10 bays in Phase 2, within a 22,000ft$^2$ building. It complements the UA Power Group's vertically integrated research ecosystem for advancing technologies from materials to systems.

**The Multi-User Silicon Carbide Facility (MUSiC). Photo by Russell Cothren.**

The University of Arkansas Power Group (UAPG) represents one of the USA's most comprehensive academic programs in advanced power electronics, integrating three national centers of excellence — GRAPES, POETS, and CITES — and over $150m in core research facilities. With 24 faculty across five departments and $31m in annual research expenditures, the Power Group spans energy systems, electrified transportation, and high-power electronics innovation.

**Industry and academic collaboration**

Together with the High-Density Electronics Center (HiDEC) and the National Center for Reliable Electric Power Transmission (NCREPT), the MUSiC Fab anchors one of the USA's largest academic clusters in power and energy research. This tri-center model is said to enable rapid innovation across materials science, advanced packaging, integrated circuit design and power electronics, creating a multi-disciplinary national hub for SiC and energy systems research.

"From lab to fab, MUSiC provides a clear on-ramp," comments Tom Johnston, senior X-FAB Texas manager and chairman of the MUSiC External Advisory Board. "Its alignment with industry standards and X-FAB's manufacturing capability helps convert prototypes into qualified, high-reliability silicon carbide devices — quickly. By standardizing interfaces and providing foundry-ready design enablement, MUSiC helps our teams move from tape-out to ramp with fewer surprise," he adds.

"Our vertically integrated research — from materials to systems — allows us to train students, serve industry and innovate at every level of the power electronics ecosystem," notes Mantooth.

**Expanding national capability and economic impact**

Arkansas now houses what it says is one of the largest academic power electronics programs in the USA, with: more than $31m in annual research expenditures; $150m in core facilities; and 24 faculty members across five departments — the largest such team in the nation.

MUSiC builds on this foundation to strengthen the USA in SiC power electronics, directly supporting energy independence, defense readiness and industrial competitiveness. It also signals the university's growing partnership with federal agencies and leading semiconductor companies in driving next-generation energy, automotive, aerospace and defense technologies.

**Investing in people**

MUSiC will also serve as a hands-on training ground for U of A students and visiting researchers nationwide. By integrating fabrication, design and systems testing, it creates an educational pipeline preparing graduates for careers and research in power electronics, energy and semiconductors.

The facility's open-access model welcomes academic, government and private-sector collaborators, offering opportunities for prototyping, small-volume production and custom process development — all designed to accelerate innovation and workforce readiness.

**Building a semiconductor workforce**

Beyond its technical mission, MUSiC is dedicated to cultivating the future semiconductor and AI workforce. Designed to welcome both new and transitioning workers into the industry, this initiative builds a foundation for future-ready skills in semiconductor fabrication, materials engineering and systems integration.

"MUSiC will give students from Arkansas and across the US access to world-class SiC fabrication capabilities," Mantooth says. "That exposure will advance their skills, empower research excellence and feed directly into the nation's energy and transportation industries," he adds.

"By providing our students and faculty with direct access to advanced fabrication, packaging and testing environments, we are preparing the workforce that will lead America's semiconductor renaissance," believes Needy.

"MUSiC can help create clear pathways for building an AI and semiconductor workforce," says Dr Ardy Sidhwa, senior advisor to Hill and Kincaid's Excellence in Semiconductors Initiative and an active alum of the University of Arkansas. "By merging hands-on training with cutting-edge research and real-world industrial collaboration, MUSiC is redefining how the next generation of engineers, scientists and technologists will power the global SiC revolution and the AI-driven economy ahead."

**https://research.uark.edu**
**www.uapower.group**

# SK keyfoundry accelerating development of SiC-based power semiconductor technology

South Korea-based SK keyfoundry — which provides specialty analog and mixed-signal foundry services on 8-inch wafers for consumer, communications, computing, automotive and industrial applications — says that it is accelerating the development of silicon carbide (SiC)-based compound power semiconductor technology, bolstering its efforts for the global power semiconductor market. Leveraging its manufacturing expertise and intellectual property (IP) portfolio across the semiconductor manufacturing process, in first-half 2025 the firm acquired SK powertech (formerly Yes Power Technix, until its acquisition by SK Inc in 2022), which has core competencies in the SiC sector.

SK keyfoundry says that it has accumulated a range of process optimization technologies and know-how for yield improvement based on its manufacturing expertise from wafer fabrication to back-end operations. Through this acquisition, SK keyfoundry has secured SK powertech's SiC processes and power device design technologies, establishing a foundation for technological self-reliance in the SiC power semiconductor field.

Building on this, SK keyfoundry is accelerating development with the goal of providing SiC MOSFET 1200V process technologies by the end of 2025 and launching a SiC-based power semiconductor foundry business in first-half 2026. In particular, it plans to expand its process technology, focusing on high-voltage and high-efficiency applications such as electric vehicle powertrain systems, industrial power converters, and renewable energy inverters. To achieve this, SK keyfoundry is strengthening its process optimization and reliability evaluation process, while also establishing a dedicated team to provide customized SiC solutions.

In recent years, global demand for compound power semiconductors, including SiC, has been growing rapidly, notes SK keyfoundry. The adoption of SiC is accelerating across industries where energy efficiency has become a key competitive factor, such as electric vehicles, energy storage systems (ESS), 5G infrastructure, and data centers. According to market research firm Omdia, the global SiC market is expected to grow at a robust annual rate of over 24% from 2025 to 2030. Amid these market shifts, SK keyfoundry aims to make the SiC-based power semiconductor sector its next growth engine and to expand collaboration with domestic and international customers to increase its global market share.

"The acquisition of SK powertech, a specialist in SiC, marked a pivotal step for SK keyfoundry in securing its own distinctive technological edge in the compound semiconductor field," says SK keyfoundry's CEO Derek D. Lee. "By combining the core development capabilities of both companies and launching high-efficiency SiC power semiconductor process technologies and products, SK keyfoundry aims to establish differentiated technological leadership in the rapidly growing global market for high-voltage and high-efficiency compound semiconductor applications."

**www.sk-powertech.com/en**

# Wolfspeed launches 1200V silicon carbide six-pack power modules for E-mobility propulsion systems

## 3x power cycling capability and 15% higher current capability

Wolfspeed Inc of Durham, NC, USA — which makes silicon carbide (SiC) materials and power semiconductor devices — has launched 1200V SiC six-pack power modules for high-power inverters. By combining its latest Gen 4 SiC MOSFET technology and innovative packaging, the modules are claimed to deliver three times more power cycling capability at operating temperature than competing solutions, and 15% higher inverter current capability in an industry-standard footprint.

"These modules provide a means for electric mobility OEMs to take a quantum leap forward in technology," reckons chief business officer Dr Cengiz Balkas. "We took proven, well-rounded switching performance made possible with our Gen 4 MOSFETs and turned further knobs with our YM package to greatly improve power cycling — one of the biggest performance hurdles a power designer can face. In doing so, we're delivering the reliability, efficiency and power density that heavy-duty, construction and agricultural vehicles demand."

**System durability and lifetime**

The new modules incorporate state-of-the-art packaging technology including sintered die attach, epoxy encapsulant material, and copper clip interconnects, enabling what is said to be 3x more power cycles than best-in-class competitor devices in the same footprint.

**Greater ampacity for industrial inverters**

The modules achieve a 22% $R_{DS(ON)}$ improvement at 125°C compared to the previous generation, while reducing turn-on energy ($E_{ON}$) by about 60% across operating temperatures. Additionally, the soft-body diode enables 30% lower switching losses and 50% lower $V_{DS}$ overshoot during reverse recovery compared to previous generation.

**Simplified system integration**

The modules' industry-standard packaging enables seamless adoption without complex redesign, serving as a direct replacement for IGBT solutions in existing system architectures. With simpler assembly requirements, the modules eliminate the need for power terminal laser welding and complex cold-plate mounting while maintaining compatibility with traditional power ecosystems including capacitors, cooling solutions, gate drivers, and current sensors.

"These modules' enhanced power cycling capabilities and efficiency translate directly to reduced maintenance costs, extended vehicle operational life, and improved energy efficiency — addressing critical concerns for fleet operators and OEMs focused on total cost of ownership and sustainability goals," notes Guy Moxey, VP & general manager for Industrial and Energy.

The 1200V SiC six-pack power modules are now available for customer sampling, with full availability at distributors in early 2026.

**www.wolfspeed.com/products/power/sic-power-modules/ym-power-module-family**

# Wolfspeed's 2.3kV LM Pack Module being integrated into Hopewind's 950$V_{ac}$ Wind Power Converter

Wolfspeed is collaborating with Hopewind of Shenzhen City (one of the largest wind power converter suppliers in China). Together, they will develop the next generation of wind power solutions by integrating Wolfspeed's 2.3kV LM Pack Module into Hopewind's modular, lightweight 950$V_{ac}$ Wind Power Converter.

Hopewind's product utilizes silicon carbide devices and high-reliability packaging technology to achieve an increase in power density of up to 38% and a high switching frequency of up to 6kHz, greatly increasing efficiency and reliability. The collaboration between Wolfspeed and Hopewind is expected to accelerate the development of next-generation wind power solutions for markets worldwide.

Wolfspeed's 2.3kV LM Pack Module is said to offer substantial system benefits, including simplified system design, higher efficiency, increased power density, and improved reliability — key factors that reduce overall system cost and provide superior performance for large-scale wind power applications. The 2.3kV LM Pack Module is expected to be commercially available in early 2026.

"Our 2.3kV LM Pack Module is perfectly aligned with the growing demand for higher-voltage, higher-current and higher-efficiency systems in the wind power sector," reckons John Perry, VP & general manager, Medium- and High-Voltage Products at Wolfspeed. "This collaboration not only strengthens Wolfspeed's position as a trusted long-term SiC provider, but also helps meet the increasing global demand for renewable energy solutions."

Hopewind was recently named to the list of photovoltaic inverter manufacturers that meet the tier-1 standards of the energy research institution Bloomberg New Energy Finance (BNEF). There are only seven firms worldwide that have made it to tier-1 level, affirming Hopewind's global competitiveness in the field of photovoltaics.

# Wolfspeed cuts quarterly loss after CapEx slashed

## Year-on-year revenue growth of 36% for Power Products counteracts decline for Materials Products

For its fiscal first-quarter 2026 (to 28 September 2025), Wolfspeed Inc of Durham, NC, USA — which makes silicon carbide (SiC) materials and power semiconductor devices — has reported revenue of $196.8m, roughly level with last quarter and up by just 1% on $194.7m a year ago.

Materials Products revenue has fallen back by 17% from $78.4m last quarter to $65m, down 33% on $97.6m a year ago. In contrast, following a low of $90.8m in fiscal Q2/2025, Power Products revenue has rebounded further, by 11% from $118.6m last quarter to $131.8m (up 35.7% on $97.1m a year ago). Of this, the Mohawk Valley Fab in Marcy, NY (opened in April 2022 to produce SiC power devices on larger, 200mm wafers) contributed $97m, rising by 3.1% from $94.1m last quarter and roughly doubling from $49m a year ago.

On a non-GAAP basis, gross margin was –26%, compared with +1% last quarter and +3% a year ago. However, this includes the impact of under-utilization costs related to the Mohawk Valley Fab and to The JP (the John Palmour Manufacturing Center for Silicon Carbide) materials facility in Siler City, NC. The latter rose from $26m a year ago to $47m since, prior to its attainment of production readiness in late fiscal 2025, Siler City's costs were presented as start-up costs, which were $19.7m a year ago.

Net loss has been cut from $115.8m ($0.91 per share) a year ago and $119.8m ($0.77 per share) last quarter to $85.2m ($0.55 per share). However, this excludes $503.8m of reorganization items related to Chapter 11 case (including $28m of professional fees and $476m of debt-related adjustments).

Operating cash flow has been cut to just –$5.7m, from –$242.5m last quarter and –$132m a year ago. Capital expenditure (CapEx) was $103.9m (slashed from $211.6m last quarter and $395m a year ago (which mainly comprised investment into The JP). Free cash outflow has hence improved further, from –$528.2m a year ago and –$454m last quarter to –$99.6m.

Cash, cash equivalents, and short-term investments have fallen further, from $1687.6 a year ago and $955.4m last quarter to $926m.

**Chapter 11 emergence & recapitalization**

After filing for Chapter 11 bankruptcy protection on 30 June, Wolfspeed emerged from Chapter 11 on 29 September. The firm says that, throughout the restructuring process, it was able to maintain payments to its vendors, continue serving customers, and operate business as usual. Wolfspeed adds that, as of the end of fiscal Q1/2026, the balance sheet of $926m provides flexibility to execute its self-funded business plan post-emergence.

**Near-term outlook**

For its fiscal second-quarter 2026, Wolfspeed expects revenue to fall sequentially to $150–190m, driven primarily by accelerated customer purchases in fiscal Q1 (as certain customers built up inventory by placing orders from the Durham fab prior to its planned closure at year-end) and by certain customers pursuing second-sourcing of products during Wolfspeed's bankruptcy process. In addition, in line with others in the industry, Wolfspeed has experienced ongoing softness in the market that it expects will continue through fiscal 2026.

**Longer-term outlook**

"Through our restructuring, we've strengthened the foundation of the company, emerging as a leaner organization with a focus on product innovation and market leadership," says CEO Robert Feurle. "We're building a stronger Wolfspeed that capitalizes on our world-class 200mm manufacturing footprint and leadership in silicon carbide," he adds. "As we look ahead, we're taking a disciplined approach to align the business with the near-term headwinds while advancing into new, high-growth applications like AI data centers, aerospace, and energy storage. We believe these actions position Wolfspeed to deliver sustainable growth and long-term value."

www.wolfspeed.com

# Wolfspeed receives $698.6m in cash tax refunds

Wolfspeed has received $698.6m in cash tax refunds from the Internal Revenue Service (IRS) from the Advanced Manufacturing Investment Credit (AMIC) under Section 48D of the Internal Revenue Code. The refund represents a significant step in the monetization of the approximately $1bn of Section 48D cash tax refunds accrued from the AMIC. In fiscal 2025, Wolfspeed received $186.5m in cash tax refunds related to its fiscal 2023 and fiscal 2024 federal tax filings.

Wolfspeed's cash balance is now about $1.5bn, boosting financial flexibility as it ramps its 200mm silicon carbide manufacturing footprint. Wolfspeed says it continues to focus on diversifying its power device revenue into key growing segments, including AI data centers, aerospace & defense, and industrial & energy, in addition to continuing to support the EV market.

Wolfspeed plans to allocate $192.2m of the refund toward retiring about $175m of outstanding debt, with the remaining funds for general corporate purposes.

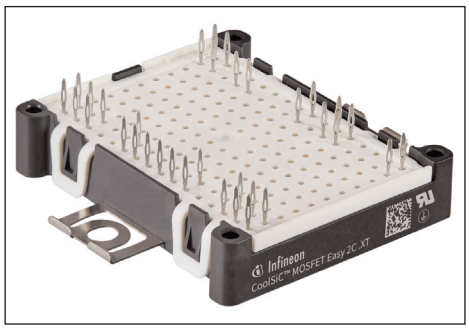
# Infineon launches EasyPACK C package, with silicon carbide power module as first product

## CoolSiC MOSFETs 1200V G2 and .XT interconnection technology combine to enhance efficiency and lifetime for industrial applications

Infineon Technologies is launching EasyPACK C, the next generation of its EasyPACK package family, for industrial applications such as fast DC electric vehicle (EV) charging, megawatt charging, energy storage systems and uninterruptible power supplies (UPS) operating under harsh conditions and fluctuating load profiles, which demand high efficiency, robust power cycling capability and long lifetime.

The first products in this new package are silicon carbide power modules that integrate Infineon's CoolSiC MOSFETs 1200V G2 and its proprietary .XT interconnection technology. By reducing static losses and improving reliability, the modules help to address increasing energy demand and sustainability goals in industrial applications.

Leveraging Infineon's CoolSiC MOSFET G2 technology, the new products enable designs with more than 30% higher power density




and up to 20 times longer lifetime compared to the previous generation of CoolSiC MOSFETs. In addition, they offer a significant reduction in $RD_{S(on)}$, with around 25% improvement. Furthermore, the new EasyPACK C housing concept enhances power density and layout flexibility, paving the way for future designs with higher voltage classes. Infineon's proprietary .XT interconnection technology further extends device lifetime.

The modules withstand overload switching conditions up to $T_{vj(over)}$ = 200°C. They include new PressFIT pins that double the current capacity, reduce PCB-level temperatures, and improve the mounting process. A new plastic material and silicone gel support operating temperatures of up to $T_{vj(op)}$ = 175°C. Furthermore, the modules offer an isolation rating of 3kV AC for 1 minute. These features contribute to what is claimed to be outstanding module and system efficiency, extended lifetime, and high temperature resilience.

The new modules in the EasyPACK C package are available in various topologies, including 3-level and H-bridge configurations, with options with and without thermal interface material.

The first modules featuring CoolSiC MOSFET G2 technology in the EasyPACK C package are available now. Infineon will further expand the product portfolio to meet the evolving needs of diverse applications.

**www.infineon.com/coolsic**

# Vishay launches 1200V SiC MOSFET power modules in MAACPAK PressFit package

Vishay Intertechnology Inc of Malvern, PA, USA has launched two 1200V MOSFET power modules designed to increase efficiency and reliability for medium- to high-frequency applications in automotive, energy, industrial and telecom systems. With four and six MOSFETs, respectively, in the low-profile MAACPAK PressFit package, the Vishay Semiconductors VS-MPY038P120 and VS-MPX075P120 combine the latest silicon carbide technology with a rugged transfer mold construction.

The modules integrate Vishay's latest-generation SiC MOSFETs with an NTC thermistor for temperature sensing and fast intrinsic SiC diodes with low reverse recovery. This reduces switching losses and raises efficiency for solar inverters; chargers for electric (EV) and hybrid electric (HEV) vehicles; motor drives, welding equipment, DC/DC converters, UPS, and HVAC systems; large-scale battery storage systems; and telecom power supplies.

For increased reliability, the rugged transfer mold technology of the modules allows them to achieve much longer product lifecycles than legacy solutions available on the market, while improving thermal resistance. For more efficient, cleaner switching, the devices' low profile helps to reduce parasitic inductance and EMI, while saving space. The modules' PressFit pins are arranged in a matrix that adheres to industry-standard layouts, allowing for easy replacement of competing solutions in existing designs to enhance performance.

The VS-MPY038P120 offers a full-bridge inverter topology with low on-resistance of 38mΩ and continuous drain current of 35A at +80°C, while the VS-MPX075P120 features a three-phase inverter topology with on-resistance of 75mΩ and continuous drain current of 18A. Both devices deliver high-speed switching with low capacitance and offer a high maximum operating junction temperature of +175°C.

**www.vishay.com**

# Infineon and SolarEdge collaborate on high-efficiency power infrastructure for AI data centers

## Solid-state transformer to enable direct medium-voltage to 800–1500V DC conversion with over 99% efficiency, reducing size, weight and $CO_2$ footprint

Infineon Technologies AG of Munich, Germany and smart energy technology firm SolarEdge Technologies Inc of Milpitas, CA, USA are collaborating to advance SolarEdge's solid-state transformer (SST) platform for next-generation AI and hyperscale data centers. The collaboration focuses on the joint design, optimization and validation of a modular 2–5MW SST building block. It combines Infineon's silicon carbide (SiC) switching technology with SolarEdge's proven power-conversion and control topology set to deliver >99% efficiency, supporting the global shift towards high-efficiency, DC-based data-center infrastructure.

The solid-state transformer technology is positioned to play a crucial role in future, highly efficient 800V direct current (VDC) AI data-center power architectures, it is reckoned. The technology enables end-to-end efficiency and offers key advantages, including a significant reduction in weight and size, a reduced $CO_2$ footprint, and accelerated deployment of power distribution, among others, when connecting the public grid with data-center power distribution. The SST under joint development will enable direct medium-voltage (13.8–34.5kV) to 800–1500V DC conversion.

"Collaborations like this are key to enabling the next generation of 800V DC data-center power architectures and further driving decarbonization," says Infineon's chief marketing officer Andreas Urschitz. "With high-performance SiC technology from Infineon, SolarEdge's proven capabilities in power management and system optimization are enhanced, creating a strong foundation for the efficient, scalable and reliable infrastructure demanded by AI-driven data centers," he adds.

"The AI revolution is redefining power infrastructure," notes SolarEdge's CEO Shuki Nir. "It is essential that the data-center industry is equipped with solutions that deliver higher levels of efficiency and reliability. SolarEdge's deep expertise in DC architecture uniquely positions us to lead this transformation," he adds. "Collaborating with Infineon brings world-class semiconductor innovation to our efforts to build smarter, more efficient-energy systems for the AI era."

As AI infrastructure drives a surge in global power demand, data-center operators are seeking new ways to deliver more efficient, reliable and sustainable power, notes Infineon. Building on more than 15 years of work in DC-coupled architecture and high-efficiency power electronics, this development would enable SolarEdge to expand into the data-center market with solutions designed to optimize power distribution from the grid to the compute rack. This optimization relies on the efficient conversion of power, a challenge that Infineon is addressing, enabling efficient power conversions from grid to core (GPU). With a focus on delivering reliable and scalable power systems based on all relevant semiconductor materials silicon (Si), silicon carbide and gallium nitride (GaN), Infineon says that it is enabling reduced environmental footprint and lower operating costs for the AI data-center ecosystem.

**www.infineon.com/coolsic**
**www.solaredge.com**

# Infineon's CoolGaN technology used in Enphase's new IQ9 solar microinverter

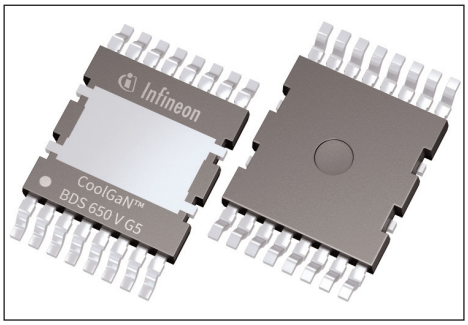
## CoolGaN bi-directional switch allows single-stage power conversion, replacing two or four unidirectional switches

Infineon Technologies AG of Munich, Germany says that it is providing its gallium nitride (GaN) technology for the next generation of solar microinverters from global energy technology company Enphase Energy Inc, which is said to be the world's leading supplier of microinverter-based solar and battery systems. Infineon's CoolGaN bi-directional switch (BDS) technology enables significant enhancements in power output, energy efficiency and system reliability for Enphase's IQ9 Series Microinverters. For the new IQ9N-3P Commercial Microinverter, this helps to simplify design complexity and lower installation and balance of system costs.

"As a market leader in power semiconductors, Infineon masters all relevant materials: silicon (Si), silicon carbide (SiC), and gallium nitride," says Adam White, division president at Power & Sensor Systems at Infineon. "The development of GaN technology is a key part of our vision, offering the most efficient power semiconductor solutions for companies like Enphase to create high-performance, efficient applications to drive the widespread adoption of photovoltaic (PV) systems," he adds.

"Utilizing Infineon's CoolGaN bi-directional switch technology allows us to service a much larger segment of the commercial market with our IQ9 Series Microinverters," comments Ron Swenson, senior VP of operations at Enphase Energy. "We're excited by the performance gains enabled by GaN-powered technology and look forward to deepening our long-term partnership with Infineon."

Infineon says that its CoolGaN bi-directional switch technology allows single-stage power conversion. By replacing two or four unidirectional switches with a single bi-directional switch that allows power flow in both directions, significant cost savings can be achieved while enabling the design of smaller, more efficient power devices. The BDS technology has demonstrated a significant reduction in power loss, outperforming conventional silicon switches by 68% and GaN unidirectional switches by 42%. Bi-directional switch technology based on GaN is said to be a crucial component in a wide range of applications, including renewable energies PV and wind, energy storage systems (ESS), electric vehicle (EV) motor drives, on-board chargers, and AI servers that benefit from increased efficiency, density and reliability.




**Infineon's CoolGaN bi-directional switch (BDS) technology.**

**Expansion into new markets underscores the versatility and capabilities of its GaN technology and its potential to drive growth and innovation in the renewable energy industry**


**Enphase's new IQ9N-3P Commercial Microinverter.**

The partnership reinforces both companies' commitment to address the rapidly growing solar energy market. Solar PV generation produced about 7% of total electricity globally in 2024. The world is set to add more than 5500GW of new renewable energy capacity between 2024 and 2030 — almost three times the increase seen between 2017 and 2023. Solar PV alone is forecast to account for 80% of the growth in global renewable capacity by 2030, according to the International Energy Agency (IEA).

By achieving higher power output and efficiency, Enphase's new microinverters can now service not only the residential solar market but also a much larger portion of the commercial market. Infineon says that this expansion into new markets underscores the versatility and capabilities of its GaN technology and its potential to drive growth and innovation in the renewable energy industry.

Infineon has made more than 40 GaN product announcements in the last year. It is also on track with its implementation of scalable GaN manufacturing on 300mm wafers, enabling higher production capacity and faster delivery of GaN products.

**www.infineon.com/products/power/gallium-nitride/gan-bidirectional-switches**

# Infineon's CoolGaN technology used in Anker's new-generation 160W prime charger

## Components include CoolGaN Drive 700V G5 with integrated driver and CoolGaN Transistor Dual 650V G5

Infineon Technologies AG of Munich, Germany has expanded its collaboration with Anker Innovations of Changsha, Hunan, China (a manufacturer of fast-charging power devices) to develop a new generation of high-speed chargers that can deliver up to 160W of power in a compact, pocket-size format.

The result of the cooperation is said to be redefining industry standards for high power density and efficiency, represented by the launch of Anker's 160W Prime Charger.

The device features Infineon's latest XDP digital controller and gallium nitride (GaN)-based CoolGaN transistor technology, enabling a credit-card-size design, which makes the charger suitable for travelers and professionals alike.

"The key to unlocking the full potential of Anker's charger technology lies in a full systems approach," believes Johannes Schoiswohl, head of GaN Business Line at Infineon. "By designing and optimizing the entire system, including the GaN devices, drivers and control units, we achieve unprecedented levels of efficiency, power density, and reliability in the chargers. Together with Anker, we strive to deliver high-performance, compact, and energy-efficient charging solutions that meet the demanding requirements of today's mobile devices."


**Anker's 160W 3-port-charger A2687.**

Infineon's digital control technology ensures precise energy management, while GaN-based components excel in high-frequency and high-efficiency power conversion. By integrating power factor correction (PFC) and hybrid-flyback control (HFB) stages to minimize the size while improving the overall performance, the Infineon XDP XDPS2221E hybrid-flyback digital combo controller enhances the energy efficiency of the charger, delivering high power density without sacrificing reliability. The technology allows up to 140W power supply from any of the three USB-C single ports and allocating 160W intelligently across three devices. Other key components include the CoolGaN Drive 700V G5 with integrated driver and the CoolGaN Transistor Dual 650V G5, which integrates two GaN transistors in a single package, reducing board space and optimizing layout.

By leveraging high-efficiency design, high-frequency switching, soft-switch control, and digital combination control technology, along with multiple patented innovations, Infineon has optimized the overall system performance of the Anker Prime Charger. This has enabled the delivery of higher-output capability within the same volume, while also reducing the number of peripheral components and lowering bill-of-material (BOM) costs.

The collaboration is strengthened by the Innovation Application Center in Shenzhen established jointly by Infineon and Anker in early 2024. The center serves as a hub for developing more energy-efficient and $CO_2$-saving charging solutions, supporting decarbonization and driving innovation in the fast-charging sector.

At the Consumer Electronics Show (CES 2026) in Las Vegas, Nevada (6–9 January), Infineon is showcasing its latest innovations, including the new 160W Prime Charger, at The Venetian Resort Hotel, with demos in the Venetian Tower Guest Suites 29-139.

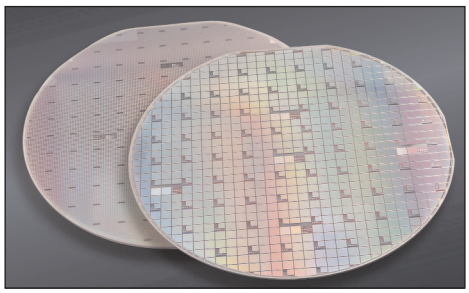
**www.ces.tech**
**www.anker.com**
**www.infineon.com/products/power/gallium-nitride**

# onsemi unveils vertical GaN power semiconductors

onsemi of Scottsdale, AZ, USA has introduced vertical gallium nitride (vGaN) power semiconductors, which it claims sets a new benchmark for power density, efficiency and ruggedness for applications including AI data centers, electric vehicles (EVs), renewable energy, and aerospace, defence & security, as well as other energy-intensive applications. The proprietary GaN-on-GaN technology conducts current vertically, enabling higher operating voltages and faster switching frequencies, leading to energy savings to deliver smaller and lighter systems.

Developed and manufactured at onsemi's fab in Syracuse, NY, the firm holds over 130 global patents spanning fundamental process, device architecture, manufacturing and systems innovations for vertical GaN technology.

"As electrification and AI reshape industries, efficiency has become the new benchmark that defines the measure of progress," says Dinesh Ramanathan, senior VP of corporate strategy. "The addition of vertical GaN to our power portfolio gives our customers the ultimate toolkit to deliver unmatched performance."



**Fully processed GaN-on-GaN wafers made in onsemi's fab in Syracuse, NY.**

onsemi's vGaN technology is designed to handle high voltages of 1200V and more in a monolithic die, switching high currents at high frequency with superior efficiency. High-end power systems using this technology can reduce energy loss by almost 50% and, by operating at higher frequencies, can also reduce the size, including passives like capacitors and inductors by a similar amount. Also, compared to commercially available lateral GaN, vGaN devices are about 3x smaller.

onsemi says that this makes its vGaN suitable for critical high-power applications where power density, thermal performance and reliability are paramount, including:

- AI data centers: reduced component counts, increased power density for 800V DC–DC converters for AI compute systems to greatly improve cost per rack;
- electric vehicles: smaller, lighter and more efficient inverters, for increased EV range;
- charging infrastructure: faster, smaller, more rugged chargers;
- renewable energy: higher voltage handling, reduced energy losses for solar and wind inverters;
- energy storage systems (ESS): fast, efficient, high-density bidirectional power for battery converters and microgrids;
- industrial automation: smaller, cooler, higher-efficiency motor drives and robotics;
- aerospace, defense and security: higher performance, enhanced ruggedness and more compact designs.

onsemi is now sampling both 700V and 1200V devices to early-access customers.

**www.onsemi.com/solutions/technology/vertical-gan**

# onsemi authorizes $6bn share repurchase program

onsemi's board has authorized a new share repurchase program of up to $6bn over the next three years, launching on 1 January 2026 after the expiry on 31 December of the previous $3bn authorization. Under that, onsemi has repurchased $2.1bn of its common stock over the last three years (spending about 100% of its free cash flow in 2025 for share repurchase).

"Doubling our share repurchase authorization demonstrates our commitment to disciplined capital management and creating long-term shareholder value," says executive VP & chief financial officer Thad Trent. "Our strong balance sheet and consistent cash generation enable us to return capital while continuing to invest in strategic initiatives that drive sustainable growth," he adds.

"Our increased share repurchase program reflects the confidence we have in our long-term strategy," says president & CEO Hassane El-Khoury. "As we continue to execute with discipline, we are investing in differentiated technologies across power and sensing that will define the next generation of intelligent, energy-efficient systems. These investments position onsemi to capture growth opportunities across our key markets of automotive, industrial and AI data center and deliver sustainable value to our shareholders."

Under the new share repurchase program, onsemi may repurchase shares of its common stock from time to time through open market purchases, in privately negotiated transactions or by other means, including through the use of trading plans intended to qualify under Rule 10b5-1 under the Securities Exchange Act of 1934, as amended, in accordance with applicable securities laws and other restrictions. The timing and amount of share repurchases will depend on business, economic and market conditions, corporate and regulatory requirements, prevailing stock prices, and other considerations. The authorization expires on 31 December 2028, may be suspended or discontinued at any time, and does not obligate the company to acquire any amount of its common stock.

# onsemi and Innoscience sign MoU to collaborate on speeding global rollout of GaN power portfolio

## onsemi's system integration, drivers and packaging to combine with Innoscience's GaN wafers and high-volume manufacturing

Intelligent power and sensing technology firm onsemi of Scottsdale, AZ, USA and China-based InnoScience (Suzhou) Technology Holding Co Ltd — which manufactures gallium nitride (GaN) power chips on 200mm silicon wafers — have signed a non-binding memorandum of understanding (MoU) to evaluate opportunities to accelerate deployment of GaN power devices, starting with 40–200V, and significantly broaden customer adoption.

The partnership includes wafer procurement and extended collaboration, bringing together onsemi's expertise in integrated systems and packaging with Innoscience's GaN technology and high-volume manufacturing to enable delivery of smaller and more cost-effective, highly efficient GaN products. onsemi expects to begin sampling in first-half 2026.

GaN devices offer higher switching speeds, smaller form factors and lower energy losses to deliver more power in less space. Until now, limited offerings and manufacturing capacity have slowed GaN adoption in the low- and medium-voltage segment, says onsemi. onsemi and Innoscience aim to overcome these barriers to quickly bring high-volume, worldwide deployment of optimized GaN solutions for mainstream markets, including:

- industrial: motor drives for robotics, solar microinverters, and optimizers;
- automotive: DC–DC converters, synchronous rectification;
- telecom infrastructure: DC–DC and point-of-load converters;
- consumer and mass market: power supplies, adaptors, DC–DC converters, motor drives, audio, light e-mobility, power tools, robotics;
- AI data center: intermediate bus converters, DC–DC converters, battery backup units.

For onsemi customers, the collaboration with Innoscience would enable:

- faster time to market: rapid prototyping, accelerated design-in, and swift entry into mainstream markets with onsemi's system expertise and Innoscience's proven GaN technology and manufacturing;
- scalable manufacturing: true mass-market scalability to handle large-volume ramps, leveraging onsemi's global integration and packaging experience and Innoscience's established GaN capacity;
- lower system cost: an optimized package, fewer components and simplified thermal management deliver more compact designs and lower total system cost.

"As power demands rise across every sector, GaN offers higher efficiency, smaller size, and lower energy losses compared to other materials," notes Antoine Jalabert, onsemi's VP of corporate strategy. "Until now, in the low- and medium-voltage segments, cost and supply constraints have limited its widespread adoption. Through a collaboration with Innoscience, we expect to be able to access the industry's largest GaN production footprint and quickly scale our GaN offerings for customers worldwide to enable broader adoption in mainstream power applications" he adds.

**The partnership includes wafer procurement and extended collaboration, bringing together onsemi's expertise in integrated systems and packaging with Innoscience's GaN technology and high-volume manufacturing to enable delivery of smaller and more cost-effective, highly efficient GaN products. onsemi expects to begin sampling in first-half 2026**

"GaN technology is essential to improving electronics, creating smaller, more efficient power systems, saving electric power, and reducing $CO_2$ emissions," says Yi Sun, Innoscience's senior VP, product & engineering. "Innoscience is excited to explore a strategic collaboration opportunity with onsemi, to expand and accelerate the adoption of GaN power worldwide, and to create a system integration platform with onsemi's broad portfolio."

**Complete intelligent power portfolio**

In its report 'Power GaN 2025', market analyst firm Yole projects that GaN power devices will rise at compound annual growth rate (CAGR) of 42% from 2024–2030, reaching $2.9bn (11% share of the global power semiconductor market). The collaboration with Innoscience would build on onsemi's intelligent power portfolio, which now spans silicon, silicon carbide (SiC) and GaN technologies. onsemi sats that, together, these technologies enable it to deliver the optimal power system for application across AI data center, automotive, industrial and consumer. This complete low- and medium-voltage portfolio strengthens onsemi's position as a provider of fully integrated power systems to help maximize performance and energy efficiency as global electrification and AI-energy demand continues to surge.

**www.innoscience.com**
**www.onsemi.com**
**www.yolegroup.com/product/report/power-gan-2025**

# onsemi releases EliteSiC MOSFETs in T2PAK top-cool package

## Enhanced thermal performance, reliability and design flexibility for automotive and industrial applications

Intelligent power and sensing technology firm onsemi of Scottsdale, AZ, USA has released its EliteSiC MOSFETs in the industry-standard T2PAK top-cool package, advancing power packaging for automotive and industrial applications. The new product delivers enhanced thermal performance, reliability and design flexibility for demanding high-power, high-voltage applications for markets including electric vehicles, solar infrastructure, and energy storage systems.

onsemi's latest portfolio of 650V and 950V EliteSiC MOSFETs in T2PAK packaging combines the firm's silicon carbide technology with top-cool packaging. Initial devices are shipping to lead customers, with additional products planned for fourth-quarter 2025 and beyond. By introducing the T2PAK across its EliteSiC family, onsemi is offering a new option for automotive and industrial customers seeking efficiency, compactness and durability in demanding high-voltage applications.

With rising power requirements in applications such as solar inverters, EV chargers, and industrial power supplies, effective thermal management has become a critical engineering challenge, notes onsemi. Conventional packaging often forces designers to choose between thermal efficiency and switching performance. The EliteSiC T2PAK solution addresses this issue by efficiently transferring heat from the printed circuit board (PCB) directly into the system's cooling infrastructure, enabling superior performance without compromise. This results in:

- superior thermal efficiency and reduced operating temperatures;
- lower component stress, extending system lifetime;
- higher power density and compact system design;
- simplified system design to achieve faster time to market.

"Thermal management is one of the most critical challenges facing power systems designers in automotive and industrial markets today… seeking solutions that deliver efficiency and reliability without compromise," says Auggie Djekic, VP & head of onsemi's SiC Division. "With our EliteSiC technology and the innovative T2PAK top-cool package, customers can unlock superior thermal performance and design flexibility, empowering them to create next-generation products that stand out in today's competitive landscape," he adds.

The T2PAK's top-cool package delivers an optimal balance of heat dissipation and switching performance by enabling direct thermal coupling between the MOSFET and the application heatsink. This design minimizes junction-to-heatsink thermal resistance and supports a wide range of $R_{ds(on)}$ options (12mΩ to 60mΩ), providing enhanced design flexibility.

Key technical highlights include:

- superior thermal performance by channeling heat directly into the system's heatsink, bypassing the PCB thermal limitations;
- maintains low stray inductance, enabling faster switching speeds and reduced energy losses;
- combines the benefits of both TO-247 and D2PAK without significant drawbacks.

onsemi summarizes that, with EliteSiC's superior figure of merit in a T2PAK top-cool package, designers can achieve more compact, cooler and higher-efficiency systems.

**www.onsemi.com/products/discrete-power-modules/silicon-carbide-sic/silicon-carbide-sic-mosfets**

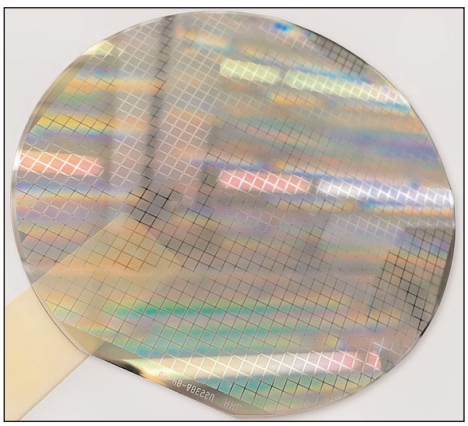
# X-FAB's XbloX accelerates time-to-market for scalable, high-performance SiC MOSFETs

## Improved on-state resistance enables 30% area reduction

Through its XbloX platform, analog/mixed-signal and specialty foundry X-FAB says that it is offering easy access to a standardized yet flexible set of silicon carbide (SiC) process technologies that accelerate the development of advanced power devices. From rapid prototyping to full production, the modular and fully scalable XbloX platform helps SiC device developers to expedite engineering assessments and technology release, with production starts achieved up to nine months faster than traditional methods, it is reckoned.

Many next-generation SiC power metal-oxide-semiconductor field-effect transistors (MOSFETs) are currently up for design and development in sectors that include automotive, industrial, energy, and data center, making now the ideal time for fabless developers to engage with a foundry that can shorten time-to-market, the firm says.

The standardized and unique module configuration of the XbloX wide-bandgap (WBG) discrete foundry model offers two benefits for those designing or refining advanced SiC devices. Firstly, X-FAB takes on process development activities with the introduction of an innovative Process Installation Kit (PIK), where design and implant recipes provide the key differentiators. Secondly, the use of XbloX ensures that wafer manufacturing at X-FAB becomes a highly scalable activity in line with application requirements, differing considerably from the less scalable production provided by a traditional foundry model for customer-specific SiC technologies.



**A silicon carbide wafer manufactured at X-FAB Texas.**

By taking advantage of the PIK and process blocks already developed at X-FAB, it becomes possible to reduce process development resources accordingly. Customers benefit from expedited onboarding, far fewer design risks, and significantly faster development time. The planning phase, for example, is up to six times shorter than that required by conventional approaches, it is reckoned. Those taking advantage of XbloX are said to gain a competitive edge, with design engineers able to create a diverse product portfolio while achieving production timelines up to nine months faster than conventional development pathways.

"Thanks to a PIK, qualified SiC process development modules, and an automated onboarding process, customers need do little more than access our global hotline for support on block selection and deployment," says Brian Throneberry, business director SiC Foundry at X-FAB. "We have robust rules in place to help guide design, mask tooling, engagement, and so on. Once the selection is finalized, XbloX automatically generates the process flow, which subsequently integrates quality systems, business functions, and commercial aspects for the customer. It's a highly expedited way of providing customers with the flexibility required to build custom SiC MOSFET technologies at an accelerated rate."

Scalable and streamlined, XbloX delivers simplified SiC process integration into CMOS-modeled process specifications, CMOS-modeled design rules, control plans, and FMEAs (failure mode and effects analysis). Customers using the platform can also benefit from any forthcoming X-FAB developments, such as new process modules.

Suitable for the smallest-form-factor planar SiC MOSFETs, the new, third-generation XbloX platform XSICM03 delivers considerably reduced cell pitch, enabling up to 30% more dies per wafer due to its improved on-state resistance.

**www.xfab.com/technology/sic-gan**

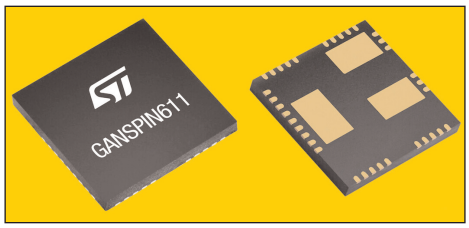
# ST launches GaNSPIN system-in-package family

## GaN ICs tailored for motor drives in white goods and factory automation

STMicroelectronics of Geneva, Switzerland has unveiled new smart power components that let home appliances and industrial drives leverage the latest gallium nitride (GaN) technology to boost energy efficiency, increase performance, and save cost.

GaN power adapters and chargers available on the market can handle enough power for laptops and USB-C fast charging to achieve extremely high efficiency to meet stringent incoming eco-design norms. ST says that its latest GaN ICs now make this technology applicable to motor drives for products like washing machines, hairdryers, power tools, and factory automation.

"Our new GaNSPIN system-in-package platform unleashes wide-bandgap efficiency gains in motion-control applications by introducing special features that optimize system performance and safeguard reliability," says Domenico Arrigo, general manager, Application Specific Products Division. "The new devices enable future generations of appliances to achieve higher rotational speed for improved performance, with smaller and lower-cost control modules, lightweight form factors,




and improved energy ratings."

In the new GaNSPIN system-in-package, unlike in general-purpose GaN drivers, the driver controls turn-on and turn-off times in hard switching to relieve stress on the motor windings and minimize electromagnetic noise. The nominal slew rate (dV/dt) of 10V/ns preserves reliability and eases compliance with electromagnetic compatibility (EMC) regulations such as the EU EMC directive. Designers can adjust the turn-on dV/dt of both GaN drivers to fine-tune the switching performance according to the motor characteristics.

Features of GaNSPIN include:

- system-in-package with driver and half-bridge power stage with latest-generation 650V GaN power transistors for driving 3-phase BLDC motors;
- integrated bootstrap diode for high-side circuitry;
- suitable for universal 110–230V AC offline-powered appliances;
- fault-sensing comparator for smart shutdown provides fast-acting overcurrent protection with programmable disable time;
- undervoltage lockout (UVLO), overvoltage, overcurrent, thermal, and interlocking protection;
- wide supply- and input-voltage range up to 20V, for robust and easy conversion of traditional power stages;
- standby pin for power saving.

The first members of the new family, the GANSPIN611 and GANSPIN612, can power motors of up to 400W including domestic and industrial compressors, pumps, fans, and servo drives. With $R_{DS(on)}$ of just 138mΩ in the GANSPIN611 and 270mΩ in the GANSPIN612, the GaN transistors minimize power dissipation and associated self-heating. This lets power components operate without a heatsink in many applications, reducing the bill of materials, while also reducing circuit footprint by up to 60% to permit a smaller, lower-cost PCB.

Pin compatibility between the two devices ensures that designs are easily scalable. GANSPIN611 is in production now, in a 9mm x 9mm thermally enhanced QFN package, from $4.44.

**www.st.com**

# MACOM agrees exclusive license to manufacture products based on HRL's 40nm T3L GaN-on-SiC process

## Firms to work on rapid transfer of process to MACOM foundry

MACOM Technology Solutions Inc of Lowell, MA, USA (which designs and makes RF, microwave, analog and mixed-signal and optical semiconductor technologies) has entered into an agreement to license and manufacture the proprietary 40nm T3L gallium nitride-on-silicon carbide (GaN-on-SiC) process technology of HRL Laboratories LLC of Malibu, CA, USA (a corporate R&D lab co-owned by The Boeing Company and General Motors).

HRL and MACOM will work collaboratively on a rapid transfer of this proprietary semiconductor process from HRL's facility to one of MACOM's US Trusted Foundries. Under the agreement, MACOM will have an exclusive license to manufacture products based on the T3L process.

T3L utilizes a proprietary epitaxial structure and an advanced gate design, which contribute to its performance and enhanced reliability at millimeter-wave frequencies. The process is suitable for supporting commercial and defense applications.

T3L was matured by HRL under the Office of the Undersecretary of Defense's (OUSD) State-of-the-Art Radio Frequency Gallium Nitride (STARRY NITE) and the Defense Research Advanced Projects Agency's (DARPA) Dynamic Range Electronics and Materials (DREaM) programs, along with additional HRL funding that includes owner contributions.

"T3L is one of the most advanced high-frequency semiconductor processes in the industry, which we anticipate will enhance our existing portfolio and accelerate execution of our roadmap," says MACOM's president & CEO Stephen G. Daly. "We were not part of the STARRY NITE or DREaM programs; however, MACOM and our customers will soon be the beneficiaries of the results, as we industrialize this technology," he adds.

"This new relationship with MACOM demonstrates HRL's expertise at developing and proving technology concepts and then transitioning them into production," says HRL's president & CEO Rob Vasquez. "Our GaN-on-SiC process technologies were established over many years of diligent work."

**www.hrl.com**
**www.macom.com**

# ST introduces GaN flyback converters

## VIPerGaN50W contains 700V GaN power transistor

STMicroelectronics of Geneva, Switzerland is introducing a series of gallium nitride (GaN) flyback converters that are said to simplify designing and building compact, efficient USB-PD chargers, fast battery chargers, and auxiliary power supplies. The converters handle reduced loads with a proprietary technique that ensures power supplies and chargers always operate soundlessly, it is claimed.

Beginning with the VIPerGaN50W (which contains a 700V GaN power transistor), the new converters also integrate the flyback controller, and optimized gate driver in a compact power package. The integrated gate driver saves fine-tuning the gate resistance and inductance, helping to accelerate time to market, in addition to increasing power density and minimizing the bill of materials.

The 50W flyback controller operates in quasi-resonant mode with zero-voltage switching (ZVS) up to the full load. Frequency foldback at light load and valley skipping at mid-to-high load limit the switching frequency for optimal efficiency. In valley skipping, ST's proprietary valley lock stabilizes the number of valleys skipped to prevent variations at audio frequencies and thus ensure silent operation across the load range. At no-load the converter operates in burst mode, cutting power consumption below 30mW to help meet stringent eco-design regulations.

Advanced power management features ensure that the output power capability and switching frequency remain stable, even when the supply voltage changes. These include line-voltage feedforward to prevent excessive output power, which lets designers avoid over-specifying power supply components, and dynamic blanking time that minimizes switching losses by limiting the frequency. There is also input and output overvoltage protection, thermal shutdown, and brown-in and brown-out protection.

The EVLVIPGAN50WF evaluation board, available now, accelerates converter development with the VIPerGaN50W by implementing a 15V/50W isolated flyback converter with secondary-side synchronous rectification. Developed for general purpose applications operating from 90VAC to 265VAC, the converter exercises VIPerGaN50W features including its embedded senseFET and high-voltage startup circuitry.

The VIPerGaN50W is in production, in a 5mm x 6mm power QFN (PQFN) package, and is available at the eSTore and distributors from $1.09 for orders of 1000 pieces.

**www.st.com/en/power-**

# PowerAmerica requests proposals for 24-month projects

## Projects to develop wide-bandgap power semiconductor technologies, power electronics assemblies, and packaging and manufacturing processes, and to demo manufacturing processes and/or devices in high-volume, commercially viable applications

PowerAmerica — a public–private research initiative established in 2014 as the US Department of Energy (DOE)'s first Clean Energy Manufacturing Innovation Institute — has issued a request for proposals for projects lasting up to 24 months, focused on the development of advanced wide-bandgap power semiconductor technologies, power electronics assemblies, and packaging and manufacturing processes with the potential to improve performance and lower cost. Demonstration of wide-bandgap (WBG) manufacturing processes and/or devices in high-volume, commercially viable power electronic applications is also desired. Technology Readiness Levels should be in the range TRL 4–6.

The submission deadlines are 12 December for concept papers and 13 February for full applications. The expected date for notifying proposed projects of selection is 18 May 2026, prior to project negotiations.

Funding comprises $9m from PowerAmerica in industrial projects plus $9m in performer cost-match; $3.2m in PowerAmerica University projects plus $3.2m in performer cost-match; and $900,000 in member-initiated projects plus $450,000 in member cost-match — an anticipated total of $26m in WBG projects to accelerate commercialization of silicon carbide (SiC) and gallium nitride (GaN) chips and power electronics.

Where applicants are making multiple proposals, industry and National Lab recipients may receive up to $1m total, and university recipients may receive up to $230,000 total.

Primary metrics used to evaluate the proposed projects include their potential to:

- accelerate the adoption of wide-bandgap power electronics;
- lower the cost of WBG devices and power modules;
- demonstrate the system-level advantages of WBG technologies in power electronics applications;
- demonstrate the reliability of WBG systems;
- create a pathway to commercialization;
- impact US manufacturing competitiveness;
- impact workforce development and education;
- production of US technicians and engineers with expertise in WBG power electronics;
- address technological gaps linked to the needs defined in the PowerAmerica or other relevant DOE or industry roadmaps and identify additional knowledge gaps to be addressed.

As a member of Manufacturing USA (a national network of institutes for advanced manufacturing through large-scale public–private collaboration on technology, supply chain, and education and workforce development) and supported by the US Department of Energy's Advanced Materials and Manufacturing Technology Office (AMMTO), the PowerAmerica institute's purpose is to accelerate the commercialization of WBG semiconductor power electronics. Led by North Carolina State University in Raleigh, NC, partnership is committed to increasing technical capabilities, domestic manufacturing, and creating jobs across the US wide-bandgap semiconductor industry.

**https://poweramericainstitute.org/**

# GF licenses TSMC's 650V and 80V GaN technology

## US-made power products to be available in late 2026, targeting data-center, industrial and automotive applications

GlobalFoundries of Malta, NY (GF, the only US-based pure-play foundry with a global manufacturing footprint, including facilities in the USA, Europe and Singapore) has entered into a technology licensing agreement with Taiwan Semiconductor Manufacturing Company Ltd (TSMC) for 650V and 80V gallium nitride (GaN) technology. This strategic move will accelerate GF's next generation of GaN products for data-center, industrial and automotive power applications and provide US-based GaN capacity for a global customer base.

As traditional silicon CMOS technologies hit their performance limits, GaN is emerging as the next-generation solution for meeting the increasing demand for higher efficiency, power density and compactness in power systems, notes GF. GlobalFoundries is developing a comprehensive GaN portfolio, including high-performance 650V and 80V technologies aimed at enabling electric vehicles, data centers, renewable energy systems and fast-charging electronics. Its GaN solutions are designed for harsh environments, with a holistic approach to GaN reliability that spans process development, device performance and application integration.

GF will qualify the licensed GaN technology at its manufacturing facility in Burlington, Vermont, leveraging the site's expertise in high-voltage GaN-on-silicon technology to accelerate volume production for customers seeking next-generation power devices. Development is set for early 2026, with production to begin later in the year.

"This agreement reinforces GF's commitment to innovation and its strategic focus on differentiated technologies that address essential power devices," says Téa Williams, GF's senior VP, power business. "With the addition of this proven GaN technology, we will accelerate the development of our next-generation GaN chips and deliver differentiated solutions that address critical power gaps for mission-critical applications from the data center, to the car, and to the factory floor."

www.tsmc.com

# GlobalFoundries and Navitas partner on US gallium nitride technology and manufacturing

## Partnership expands US capacity for GaN technology, design and at-scale manufacturing for AI data centers and critical power applications

GlobalFoundries of Malta, NY (GF) and Navitas Semiconductor Corp of Torrance, CA, USA — which provides GaNFast gallium nitride (GaN) and GeneSiC silicon carbide (SiC) power semiconductors — have announced a long-term strategic partnership to strengthen and accelerate US-based GaN technology, design and manufacturing. Together, the firms will collaborate, develop and deliver solutions for critical applications in high-power markets that demand the highest efficiency and power density, including AI data centers, performance computing, energy and grid infrastructure and industrial electrification.

Navitas has achieved GaN deployment in high-volume markets such as mobile fast chargers, consumer, performance computing, electric vehicles, energy storage and industrial devices and is working to accelerate GaN adoption in high-power markets. GF has decades of experience as a global foundry partner, providing production at scale. Through this long-term partnership, GF and Navitas will manufacture GaN technology at GF's facility in Burlington, Vermont, leveraging the site's expertise in high-voltage GaN-on-silicon technology and Navitas' GaN technology and device expertise. Development is set for early 2026, with production expected to begin later in the year.

It is reckoned that, by combining GF's manufacturing capabilities and Navitas' GaN innovation, the strategic partnership will provide secure and scalable GaN solutions. Together, the firms will enable a US pathway for GaN, supporting national security and competitiveness while driving decarbonization across next-generation energy and compute platforms.

"GaN is transforming how the world moves power. And this partnership represents a significant step forward for US semiconductor leadership and the deployment of GaN technology to address essential applications," says GlobalFoundries' CEO Tim Breen. "By joining forces with Navitas, we are enabling a secure and sustainable supply chain for GaN technologies that power the future of AI, energy and industrial innovation," he adds.

"GaN adoption is accelerating in high-power semiconductor markets such as AI data centers, performance computing, energy and grid infrastructures and industrial electrification, and our collaboration and partnership with GF ensures that Navitas can deliver the performance, efficiency and scale our customers demand and to manufacture those solutions in critical and national security applications in the United States," says Navitas president & CEO Chris Allexandre. "Together, we are building a foundation for next-generation applications that are critical to national competitiveness and energy sustainability. Our partnership with GF is another milestone and step forward for Navitas 2.0".

**www.navitassemi.com**
**www.gf.com**

# Navitas consolidates Asian franchised distributor base

## Strategic distribution partnership with WT strengthened

Navitas and Asian distributor WT Microelectronics Co Ltd have strengthened their strategic partnership to provide enhanced technical and supply chain services in Asia.

Navitas has consolidated its franchised distributor base, and WT is allocating expanded technical and commercial resources. This should better support AI data centers, performance computing, energy and grid infrastructure and industrial electrification customers with its high-voltage and high-power wide-bandgap semiconductor devices.

WT will lead customer engagement and design-in activities, backed by robust regional logistics to ensure reliable product availability and fast delivery of Navitas products to its customers in Asia.

"As part our Navitas 2.0 transformation, we decided to massively consolidate our distribution network so we can better align to our high-power growth markets and improve speed and quality of support. Our collaboration with WT strengthens our ability to serve customers that demand advanced high-power and high-voltage solutions," says Alessandro Squeri, VP global distribution, Operations & Transformation, Navitas. "WT's market expertise and comprehensive distribution network will help accelerate the adoption of Navitas technologies in fast-growing segments while allowing us to consolidate our distribution base in Asia," he adds.

"WT brings not only exceptional technical support but an extensive customer reach across Asia and a proven track record in power electronics," says WT's founder, chairman & CEO Eric Cheng. "We are delighted to support Navitas as their preferred partner during this next phase of their growth."

**www.wtmec.com**

# GigaDevice and Navitas unveil Digital Power Joint Lab to accelerate high-efficiency power management deployment

## MCUs to combine with GaN and GeneSiC technologies

GigaDevice Semiconductor Inc — a fabless supplier of Flash memory, 32-bit microcontrollers (MCUs), sensors and analog products that relocated its headquarters this year from Beijing to Singapore — has officially launched the Digital Power Joint Lab in collaboration with Navitas Semiconductor Corp of Torrance, CA, USA. By combining GigaDevice's GD32MCU expertise with Navitas' advantages in high-frequency, high-speed and highly integrated GaN technologies and its GeneSiC technology leveraging 'trench-assisted planar' technology, the collaboration aims to deliver intelligent and high-efficiency digital power solutions for emerging markets such as AI data centers, photovoltaic inverters, energy storage systems, charging infrastructure, and electric vehicles.

Before its official launch, the lab achieved several technical milestones, including 4.5kW and 12kW server power supply solutions and a 500W single-stage PV micro-inverter, addressing the industry's demand for high-density, high-efficiency power design and demonstrating the combined innovation strength of both companies.

- The 500W single-stage PV micro-inverter solution, powered by GigaDevice's GD32G553 MCU and Navitas' GaNFast Bi-Directional power ICs, adopts a single-stage one-to-one architecture, offering high efficiency, low loss, high integration, and cost optimization. Through a hybrid modulation strategy and soft-switching techniques, it achieves over 97.5% peak efficiency, CEC efficiency above 97%, and MPPT efficiency exceeding 99.9%. The single-stage architecture directly converts DC to AC, removing the intermediate DC–DC stage, improving power density while reducing components and system loss. Magnetic integration and GaNFast Bi-Directional power ICs further minimize system size and bill-of-materials (BOM) cost.
- The 4.5kW and 12kW AI server power solutions, developed with GigaDevice's GD32G553 MCU alongside Navitas GaNSafe ICs, and Gen-3 Fast SiC MOSFETs, target AI servers, conventional servers, and hyperscale data centers. The 12kW model complies with OCP, ORv3 and CRPS standards, through a compact, optimized design, and surpasses the 80 PLUS 'Ruby' efficiency benchmark, reaching 97.8% peak efficiency.

With the establishment of the Digital Power Joint Lab, GigaDevice and Navitas aim to further expand their collaboration to accelerate innovation in next-generation digital power systems. The lab will focus on developing comprehensive system-level reference designs and application-specific solutions to enable smarter, greener and more energy-efficient power systems across data centers, renewable energy, and electric mobility.

**www.navitassemi.com**
**www.gigadevice.com**

# Navitas announces private placement of common stock for proceeds of $100m

## Raised capital to accelerate transformation into high-power markets

Gallium nitride (GaN) power IC and silicon carbide (SiC) technology firm Navitas Semiconductor of Torrance, CA, USA has entered into a definitive securities purchase agreement for the purchase and sale of 14,814,813 shares of Class A common stock at a purchase price of $6.75 per share. The private placement was expected to close on or about 10 November, subject to customary closing conditions. Needham & Company is acting as the sole placement agent.

Gross proceeds are expected to be about $100m, before deducting the placement agent's fees and offering expenses payable by the company. Navitas intends to use the net proceeds for working capital and other general corporate purposes.

**We're fueling and energizing the shift to Navitas 2.0, focusing our energy on the high-power markets... AI data centers, performance computing, energy and grid infrastructure, and industrial electrification**

"This capital raise enables us to support Navitas' transformation and accelerate our momentum into higher-power markets," says president & CEO Chris Allexandre. "We're fueling and energizing the shift to Navitas 2.0, focusing our energy on the high-power markets that are shaping the future: AI data centers, performance computing, energy and grid infrastructure, and industrial electrification."

**www.navitassemi.com**

# imec achieves record GaN breakdown exceeding 650V on Shin-Etsu Chemical's 300mm QST substrate

## 650V-rated HEMT to be followed by 1200V+ variant, targeting AI data-center, industrial and automobile applications

Tokyo-based Shin-Etsu Chemical Co Ltd says that its QST substrate has been adopted for the 300mm gallium nitride (GaN) power device development program at nanoelectronics research center imec of Leuven, Belgium, where sample evaluation is in progress. In the evaluation, a 5µm-thick high-electron-mobility transistor (HEMT) device achieved a record breakdown voltage, for a 300mm QST substrate, of more than 650V.

Dedicated to the growth of GaN, the QST (Qromis Substrate Technology) substrate was developed by QROMIS Inc of Santa Clara, CA, USA and licensed to Shin-Etsu Chemical in 2019. Shin-Etsu Chemical has since manufactured 150mm and 200mm QST substrates, as well as GaN-on-QST epitaxial substrates of various diameters. In September 2024, it started providing 300mm QST samples in a joint initiative with QROMIS.

Shin-Etsu Chemical and QROMIS have established a specific partnership to provide 300mm QST substrates for imec's 300mm CMOS fab. imec's 300mm GaN power device development program was officially launched in October, announcing its plan to develop a GaN power device using 300mm QST. imec's 650V-rated product is to be followed by a variant with a 1200V+ withstand voltage, targeting AI data-center, industrial and automobile applications.

The initial evaluation results showed that imec has fabricated a 5µm-thick high-voltage GaN HEMT structure on Shin-Etsu Chemical's 300mm QST substrate in compliance with the SEMI standards, using a Hyperion metal-organic chemical vapor deposition (MOCVD) system from Aixtron SE of Herzogenrath, near Aachen, Germany. This achieved a record breakdown voltage of over 800V, significantly exceeding 650V on substrates compliant with SEMI standards, demonstrating excellent in-plane uniformity. These results are said to demonstrate that the QST substrate, whose thermal expansion coefficient is matched to GaN, can stably deliver excellent GaN crystal growth performance even at large diameters.

Because imec's existing silicon wafer production line can be used for GaN, increasing the substrate diameter is expected to reduce production costs. However, GaN growth on silicon wafers suffers from increasingly poor production yields at larger diameters due to issues such as wafer warpage, preventing practical mass production. The 300mm QST substrate is said to solve this issue by enabling the epitaxial growth of thick-film 300mm GaN for high-voltage applications without warping or cracks — previously unattainable on silicon wafer substrates — thus significantly reducing device costs. To date, Shin-Etsu Chemical has been enhancing facilities for 150mm and 200mm QST substrates and is currently working toward the mass production of 300mm QST substrates.

The QST substrates are currently being evaluated by many Japanese and international customers for applications such as power devices, high-frequency devices, and LEDs. They are in the development phase for practical applications to address the recently increasing interest in AI data-center power supplies.

**www.shinetsu.co.jp**
**www.imec-int.com**

# Filtronic completes multi-year project to develop plastic QFN packaging for GaN devices

## Projects strengthens UK's independence in critical semiconductor technology for defence, space and communication systems

Filtronic plc of Sedgefield and Leeds, UK — which designs and manufactures RF and millimeter-wave (mmWave) transmit & receive components and subsystems — has completed a multi-year project to develop novel plastic QFN packaging for gallium nitride (GaN) devices, marking what is described as a significant milestone for UK sovereign capability in advanced semiconductor technology.

The project was part-funded through the Defence and Security Accelerator (DASA), part of UK Defence Innovation, via its Defence Technology Exploitation Programme (DTEP). Supported by a major defence prime contractor, the project was completed in August.

The program saw Filtronic design, manufacture and qualify QFNs incorporating GaN-based monolithic microwave integrated circuits (MMICs). This included the procurement and commissioning of a QFN production line to enhance vertical integration.

Working closely with its customer and the awarding body, this engineering-led work developed the required processes and techniques to overcome some of the known issues of QFN technology, particularly for high-power-density compound semiconductor devices.

More than 150 units were manufactured and subjected to extensive qualification testing under some of the most challenging conditions possible. This included high-moisture exposure at level five, thermal cycling across 500 ramps and rigorous electrical stress testing designed to push the devices to their limits.

Despite the extreme demands of GaN, which generates substantial heat, every device passed 100% of electrical performance tests.

"This project demonstrates the UK's ability to deliver advanced GaN technologies at scale, while also proving the robustness of novel packaging approaches," says chief technology officer Tudor Williams. "By pushing devices to their limits and validating their performance, we've taken a step forward in sovereign capability. This not only puts Filtronic at the forefront of GaN innovation but, crucially, strengthens the UK's independence in critical semiconductor technology and secures its future in advanced defence, space and communication systems," he adds.

"Working with Filtronic on this project is a great example of how UKDI-DASA supports UK-based technology leaders to deliver strategic advantage at pace," comments UKDI-DASA, DTEP business relationship manager. "This collaboration is pushing the boundaries of what's possible and helping to ensure the UK remains at the forefront of defence innovation."

www.filtronic.com

# UK Space Agency's National Space Innovation Programme awards £1.2m funding to develop 550W Ka-band solid-state power amplifiers

Filtronic has been awarded £1.2m funding via the UK Space Agency's National Space Innovation Programme (NSIP) for a project to develop a high-power 550W Ka-band solid-state power amplifier (SSPA).

Designed to fit into existing satellite ground stations, Filtronic's new SSPA is said to enable an easy, plug-and-play transition from older travelling-wave tube amplifier (TWTA) technology.

This strategic development builds on Filtronic's SSPA design and targets a critically important frequency band. The Ka band is central to the expansion of non-geostationary constellations, which rely on it for high-capacity, low-latency feeder and user links. Its adoption is also essential for enabling next-generation services, from in-flight connectivity to 5G Non-Terrestrial Networks. As a result, Ka band will underpin many of the high-throughput Satcom services expected to shape the industry over the next decade.

NSIP is a UK government initiative funding innovative space technology projects, and Filtronic's new high-power amplifier features in the program's 'Major Projects' category, a scheme designed to advance the commercialization of high-impact UK technologies, de-risk investment and speed up the route to market.

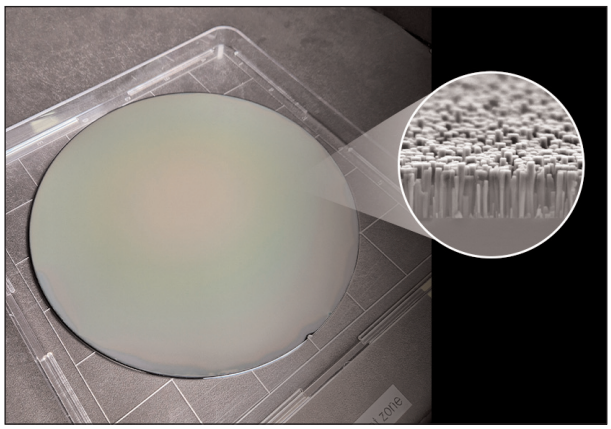
"This award reflects the strength of our innovation pipeline and our place in the UK's space ecosystem. The 550W Ka-band SSPA is a significant step change in solid-state performance, offering leading linear power in a TWTA-compatible form factor," says CEO Nat Edington. "It will enable operators to transition from travelling-wave tube systems with reduced operating expense and enhanced reliability, helping to support more sustainable and future-ready satellite networks. Built on strategic industry partnerships and a proven record of innovation, our integrated design and manufacturing model delivers scalable, cost-efficient solutions that earned us selection under this leading program," he adds.

# IVWorks implements mass production of 8-inch InGaN/GaN nanowire epiwafers

## Development of 12-inch epiwafers is being accelerated, targeting solar panels for artificial photosynthesis of hydrogen

IVWorks Co Ltd of Daejeon, South Korea – which was founded in 2011 and manufactures 100–200mm gallium nitride (GaN) epitaxial wafers for RF & power electronics applications – claims to be first in the industry to develop and implement mass production of 8-inch gallium nitride (InGaN/GaN) nanowire epiwafers. This is expected to serve as a key foundation for further enhancing green hydrogen production efficiency through artificial photosynthesis.

The InGaN/GaN nanowire epiwafers serve as a key component in artificial photosynthesis panels that produce hydrogen using only sunlight and water. The nanowire structure increases the reactive surface area, maximizing photocatalytic efficiency and, when implemented on large-diameter wafers, it can significantly boost hydrogen output. However, precisely controlling nanowire growth on large-diameter wafers has been extremely challenging, and, until now, no company worldwide had successfully commercialized this technology, says IVWorks. However, leveraging its proprietary patents and ongoing R&D, IVWorks has succeeded in uniformly growing GaN nanowires on 8-inch wafers.



**IVWorks' 200mm InGaN/GaN nanowire epiwafer. Right: a scanning electron microscope (SEM) image of the nanowire structure magnified 100,000 times.**

In 2023, IVWorks established a contract manufacturing partnership with a US-based green hydrogen company for artificial photosynthesis panel epiwafers. Under this agreement, IVWorks applies its large-diameter growth technology to produce the nanowire structures designed by its partner. Through this collaboration, the initial 3-inch prototype solar panels have been scaled up to 8-inch wafers using IVWorks' proprietary technology.

Looking ahead, IVWorks is accelerating the development of 12-inch large-diameter nanowire epiwafers. Expanding from 8-inch to 12-inch wafers is expected to increase hydrogen production by about 2.3 times. This technology is recognized as a key enabler for accelerating the commercialization of green hydrogen production via artificial photosynthesis. On 16 October, IVWorks' CEO Youngkyun Noh presented the company's 8-inch large-diameter nanowire wafer mass-production technology at the National Assembly seminar, highlighting its industrial significance.

**www.ivwkr.com**

# Waterloo's Dr Lan Wei awarded Canada Research Chair

Four researchers at the University of Waterloo have been awarded $3.95m in funding to support their research as part of the Canada Research Chairs (CRC) program.

This year, the CRC program is investing more than $198m to support new and renewed chairholders. Through the program, up to $311m each year is invested to attract and retain accomplished and promising academics.

The announcement was made by the Honourable Mélanie Joly, Minister of Industry and Minister responsible for Canada Economic Development for Quebec Regions.

Joining a network of chairholders working across the university's six faculties, Waterloo's newest CRC awardees include the Faculty of Engineering's Dr Lan Wei, who gains $500,000 (CRC) + $100,000 (Federal Research Fund) in a tier-2 NSERC (Natural Sciences and Engineering Research Council of Canada) CRC in Nanoscale Devices and Circuits.

With wide-bandgap semiconductors — particularly gallium nitride — emerging as a leading material, Lan Wei will build on her research expertise and experience translating semiconductor devices and integrated circuit innovation to industry.

Leveraging collaborations and the University of Waterloo's facilities, her research aims to meet the demanding needs of commercial and industrial applications, such as more reliable wireless communication in harsh environments for aerospace, medical imaging, oil drilling, and efficient power management for fast chargers, electric vehicles and data centers.

Beyond WBG, Wei is also pioneering advancements in cryogenic semiconductor and quantum technology to enable the next generation of large-scale quantum computers.

**www.uwaterloo.ca**

# Coherent expands silicon carbide platform from 200mm to 300mm

## Larger-diameter, conductive SiC substrate addresses increasing thermal efficiency demands in AI data-center infrastructure

Materials, networking and laser technology firm Coherent Corp of Saxonburg, PA, USA says that it has leveraged its 200mm silicon carbide platform expertise to develop a next-generation 300mm silicon carbide solution, engineered to manage rising thermal loads, that meets the accelerating performance and scalability needs of modern data centers. As these systems demand higher power density, faster switching, and superior thermal management, the transition to larger-diameter SiC wafers can unlock major gains in energy efficiency and thermal performance, the firm says.

While data-center thermal management applications are the primary focus of the platform, Coherent is also advancing its SiC technology for AR/VR devices and power electronics through continued materials innovation and expanded manufacturing capacity.

"AI is transforming the thermal-management landscape in data centers, and silicon carbide is emerging as one of the foundational materials enabling this scalability," says senior VP & general manager Gary Ruland. "Our 300mm platform, which we plan to ramp in high volumes, delivers new levels of thermal efficiency that translate directly into faster, more power-efficient AI data centers."

The platform's conductive SiC substrates provide low resistivity, low defect density, and high homogeneity, enabling low dissipation, high frequency, and good thermal stability. In AI and data infrastructure, their properties boost energy efficiency and thermal performance in next-generation data-center systems. The same technology enables thinner and more efficient waveguides for AR smart glasses and VR headsets, improving reliability in compact immersive display modules. In power electronics, the transition to 300mm allows more devices per wafer and reduces cost per chip, supporting applications such as electric vehicles, renewable energy systems and industrial automation.

**www.coherent.com/materials/wide-bandgap-electronics/sic-substrates-epitaxy**

# Beneq unveils Transmute high-throughput ALD tool for power, RF and μLED device production

## New platform targets wide-bandgap and specialty device manufacturing

Beneq of Espoo, Finland has launched Transmute, a next-generation atomic layer deposition (ALD) platform designed for high-volume semiconductor manufacturing. Engineered for high-volume production of wide-bandgap (WBG) power electronics, advanced RF devices, and micro-LEDs and other specialty devices, the new system combines performance, scalability and cost efficiency in one system.

**Atomic precision at manufacturing speed**

Transmute extends the performance of the Transform XP platform into production environments with Beneq's proprietary 3-step ALD architecture. By combining plasma pre-treatment, plasma-enhanced ALD (PEALD) and thermal batch ALD, the platform delivers conformal, high-performance dielectric stacks with atomic-level interface control — now at high throughput.

Beneq Transmute ALD platform

Its flow-uniform 25-wafer chambers, paired with advanced precursor dosing technology, enable rapid cycle times, optimized wafer coverage, and reduced material waste – resulting in a low cost of ownership across a broad range of semiconductor applications.

"Beneq Transmute represents a major leap forward in making ALD a truly high-volume manufacturing solution," says Lucas Monteiro, head of product. "By combining the precision of ALD with throughput and scalability that match production demands, we are giving our customers the ability to produce next-generation wide-bandgap and RF devices at high throughput and low cost of ownership – with the uncompromised film quality that Beneq is known for."

**Designed for dedicated production requirements**

Transmute supports both thermal and plasma-enhanced ALD within a modular cluster architecture that enables dedicated configurations. With up to two transfer chambers and eleven process module slots — including PEALD, Thermal, Buffer, and Preheater — each system can be tailored to match specific customer applications and fab roadmaps while ensuring long-term scalability.

**www.beneq.com/transmute**

# Transform XP second-generation ALD platform launched

## Advanced control, in-cycle annealing and high-throughput performance for wide-bandgap power and RF device manufacturing

Beneq has introduced the Transform XP, a second-generation ALD platform developed to meet the performance demands of wide-bandgap (WBG) power and RF device technology development and manufacturing. Building on the proven Transform platform, the new system adds advanced ALD control, faster cycle times, and greater process capabilities in a high-throughput format.

The Transform XP features a second-generation, flow-optimized 25-wafer mini-batch thermal ALD reactor that achieves what is claimed to be breakthrough deposition rates with single-digit-second cycle times for common ALD oxides and nitrides. Refined flow and pressure dynamics ensure exceptional within-wafer and wafer-to-wafer uniformity — even at a few nm film thicknesses — while precise dwell-time control delivers excellent conformality on high-aspect-ratio structures.

Transform XP also introduces advanced PEALD process control to precisely manage low-energy ions. This enables optimized plasma pre-cleaning and deposition, resulting in improved interface quality, tunable passivation, and enhanced device performance and reliability. The system integrates in-cycle annealing, a proprietary step that densifies and purifies films to achieve stoichiometric, low-impurity materials and crystalline alignment, such as aluminium nitrideAlN lattice orientation.

"Transform XP is our response to the next wave of device challenges in power and RF manufacturing," says Dr Mikko Söderlund, head of sales, Semiconductor ALD. "Customers value the original Transform for its versatility and reliability. With XP, we introduce capabilities they specifically asked for – improved ion control, faster cycles, and in-cycle film densification – all in a versatile platform."

With over a dozen Transform clusters installed globally for WBG pilot and production use, and more than 100 process modules shipped, Beneq continues to support leading IDMs, foundries and RTOs advancing More-than-Moore technologies, motes the firm.

**www.beneq.com/transform-xp**

# NPL leading Government-backed metrology project to accelerate UK role in compound semiconductors

The National Physical Laboratory (NPL) in Teddington, UK has been appointed by the Department for Science, Innovation and Technology (DSIT) to lead a £1.2m Government-funded project to establish new metrology capabilities that will strengthen the UK's semiconductor innovation infrastructure. The strategic investment aims to accelerate the UK's role in developing next-generation semiconductor materials and processes, helping to attract private investment and boost economic growth in the sector.

Industrial and academic partners span the entire innovation landscape — Vishay Newport Ltd; GEN3; Custom Interconnect Ltd; Element Six; RENA; Viper RF; Keysight Technologies; the Henry Royce Institute; Power Roll; Poro Technologies; Oxford Instruments; Swansea University; the University of Cambridge; and the University of Warwick.

These capabilities are urgently needed to address critical bottlenecks in UK semiconductor innovation, such as ensuring material integrity and guaranteeing device reliability under extreme conditions.

Silicon's mature global industry is dominated by a few major players. In contrast, the growing demand for emerging technologies (from electric vehicles to 5G networks) is accelerating innovation in the use of advanced materials that excel in high-performance applications where speed, optical precision and energy efficiency are critical. These materials include compound semiconductors such as gallium arsenide (GaAs), gallium nitride (GaN) and silicon carbide (SiC), as well as perovskites (increasingly used in solar panels and LEDs), and their supporting processes, from prototyping to fabrication and performance verification.

To fully harness the potential of these materials, robust standards and access to measurement capabilities are essential. Standards provide benchmarks to verify that semiconductor innovations work, building industry confidence, and de-risking investment. They also allow the structure, performance and reliability of advanced semiconductor materials to be compared across applications, supporting process optimization, and ensuring interoperability, so players across complex supply chains can work together effectively. This rapidly expanding field is an opportunity for UK leadership, it is reckoned.

The project consortium partners are expected to accelerate the UK ability to capitalize on that opportunity by:

- Combining the academic expertise of the consortium's university partners with NPL's metrology experience to create new UK measurement capabilities for advanced semiconductor materials. These include new measurement and test capabilities and new metrology methods that can address key challenges for the adoption of advanced semiconductor materials globally.
- Applying these capabilities to address critical bottlenecks in UK semiconductor innovation. These challenges range from assessing material purity and testing the reliability of new devices under thermal and electrical stress, to verifying the integrity of RF signals and developing standardized methods for evaluating the performance of emerging materials.
- Sharing these new capabilities with industry partners through open dissemination and collaboration to build a national consensus that shapes the UK's input into international standards committees and strengthen its role in developing international standards for advanced novel semiconductor technologies and the processes to support their application in industry.

"The semiconductor industry is evolving rapidly, driving breakthroughs in AI, quantum computing and advanced electronics. To compete globally, the UK must harness its strengths in research, innovation and precision measurement," says Gareth Edwards, head of Advanced Manufacturing and Materials Strategy at NPL. "Standards are key — they provide the framework that ensures reliability, interoperability and confidence across complex supply chains," he adds.

"This project brings together NPL's metrology expertise with the technical capabilities of UK academia and industry to define standards for next-generation semiconductors. By doing so, we give the UK a strong global voice in shaping how these technologies are developed and adopted, strengthening supply chains, attracting investment and enabling British innovation."

Through extensive consultation between 2023 and 2025, NPL and its partners have identified three application areas where the UK can have the greatest global impact and on which the project will focus:

- Power Electronics — Driven by demand for electric vehicles and sustainable energy systems, this field relies on materials such as GaAs, SiC and GaN. Yet, there are currently no independent methods to verify key aspects of manufacturing, such as in-process defect detection and high-voltage reliability.
- Radio frequency (RF) Communications — The need for power-efficient, high-frequency communications devices in space and defence continues to rise, demanding new methods to verify performance at ever-higher operating frequencies.
- Optoelectronics — Advances in display, lighting, sensing, photovoltaics and optical communications all depend on new light-transmitting materials. Characterizing their performance is vital to speeding up adoption and deployment.

**www.npl.co.uk**

# ElementUSA awarded $29.9m in Defense funding to create US supply of gallium and scandium

## Initial development at Critical Resource Accelerator in Texas plus demonstration facility in Louisiana

The US Department of War has awarded $29.9m via Title III of the Defense Production Act (DPA) to ElementUSA Inc of Fort Lauderdale, FL, USA to enable the development of a demonstration facility in Gramercy, Louisiana for extracting gallium and scandium from existing industrial waste.

"China's controlled access to critical minerals threatens US national security and US jobs. Obtaining these critical minerals from resources in Louisiana is good for US national security and good for US and Louisiana jobs," says Senator Bill Cassidy of Louisiana.

ElementUSA says that it is accelerating America's access to critical minerals by unlocking overlooked domestic resources and delivering the processing to supply industry and defense. It develops midstream processing infrastructure to recover minerals from both primary and secondary sources, addressing the rising demand from US manufacturers in sectors including semiconductors, national defense, and energy infrastructure. The firm is pioneering Waste2Market solutions that offer faster and more sustainable pathways than traditional mining. Central to this is its Critical Resource Accelerator (CRA) in Cedar Park, Texas, an R&D hub focused on scalable mineral recovery processes. ElementUSA will hence also conduct initial development work at the Critical Resource Accelerator.

"ElementUSA's work is essential to securing America's supply of critical elements and reducing our dependence on foreign adversaries, strengthening both our national security and American manufacturing," states Congressman John Carter. "I have no doubt ElementUSA will continue to grow and lead the way in building a stronger, more resilient domestic supply chain for our nation."

ElementUSA recovers minerals and metals from industrial waste streams to create domestic supply chains of critical minerals necessary for national defense. Using DPA Title III funds to construct the demonstration facility, the firm will become one of the first US producers of both gallium and scandium. Systems such as missile defense platforms, sensors, fighter aircraft (e.g. F-35 and F-22) and hypersonic weapons all require these elements in their manufacture. The company will use a proprietary process to separate and extract these critical minerals, along with several others, from over 30 million tons of mineral-rich bauxite residue, a byproduct of the alumina refining process. ElementUSA will hence not only create a domestic supply chain of critical minerals but also clean up a waste product with no additional mining required.

"This award enables ElementUSA to scale innovative technologies that extract gallium and scandium, among other critical minerals and rare earths, from secondary domestic resources – reducing our reliance on foreign supply and reinforcing the nation's industrial and defense resilience," says ElementUSA's chief investment officer Dan Byrne. "It's an exciting step forward for US innovation, sustainability, and security," he adds.

**www.elementusaminerals.com**

# Nimy gains CSIRO Kick-Start program funding

## Regolith Research study to develop geomorphic model for Mons Project in Western Australia

Mining exploration company Nimy Resources Ltd of Perth, Western Australia has entered into an agreement with Australia's national science agency CSIRO, supported by their Kick-Start program, to commence the Regolith Research study. This study aims to develop a geomorphic model to enhance the confidence in gallium exploration within the Mons Project in Western Australia.

The aims of the CSIRO Kick-Start program are as follows:

- the regolith research will focus on the Block 3 Gallium Resource;
- the research will utilize cutting-edge machine learning and scientific expertise;
- the findings from the project will be utilized in improving the understanding of in-situ and transported regolith at Mons and how gallium and associated pathfinders move through these environments.

"The focus of the project will be on the Block 3 Gallium Prospect, building upon the recently developed CSIRO LandScape+ Model, to develop a more refined geomorphic province model," says Nimy's managing director Luke Hampson. "Our exploration findings from the studies will assist in targeting on both an individual deposit and regional scale, focusing on additional high-grade gallium resource tonnes."

**www.nimy.com.au/csiro-kick-start-program-funding-for-gallium-**

# Quantum Critical Metals and Nusano collaborate on developing & refining critical minerals in North America

## Target elements include antimony, gallium and germanium

Canadian mineral exploration company Quantum Critical Metals Corp and Nusano Inc of Valencia, CA, USA (a privately held physics-based technology company specializing in advanced mass-separation processes) have signed a memorandum of understanding (MoU) to collaborate on the development and refining of critical minerals in North America. The partnership aims to strengthen supply chains for US and Canadian industries by bringing high-purity mineral processing back to North American soil. Most refining of critical minerals currently occurs overseas. This dependence leaves North America vulnerable to geopolitical, economic and environmental disruptions.

Under the MoU, Quantum will supply material from its Canadian projects to Nusano's facility in West Valley City, Utah, for refining into metals. Target elements include antimony, cesium, gallium, germanium, rubidium, tin, zinc, gadolinium, and other rare-earth elements.

The companies will also evaluate the joint development of a dedicated refining hub in Utah to integrate concentration, extraction and processing operations for North American and allied markets.

Quantum holds a 100% interest in a portfolio of land packages in Québec and British Columbia, positioned near major recent discoveries.

"Our scalable model leverages technology and partnerships to bring critical minerals to market faster," says Quantum's CEO Marcy Kiesman. "Nusano shares our vision for innovative, outside-the-box solutions that unlock new production pathways."

Nusano's proprietary physics-driven technology removes multiple slow, hazardous and inefficient steps from conventional ore processing. Its modular system extracts multiple elements from minimally processed feedstock, enabling environmentally responsible production.

"Critical minerals processing is overdue for new solutions," says Nusano's CEO Chris Lowe. "Our platform applies innovative, physics-based extraction processes tailored to customer needs and market demand. We look forward to working with Quantum to scale these technologies for the benefit of the USA, Canada and allied partners."

**www.nusano.com**
**www.quantumcriticalmetals.com**

# 5N Plus added to MSCI Canada Small Cap Index

Specialty semiconductor and performance materials producer 5N Plus Inc (5N+) of Montréal, Québec, Canada has been included in the MSCI Canada Small Cap Index, effective as of the close of trading on 24 November.

The MSCI Canada Small Cap Index is designed to measure the performance of the small-cap segment of the Canada market. With more than 180 constituents, the index covers about 14% of the free float-adjusted market capitalization in Canada. MSCI's market-capitalization weighted indexes are among the most widely used in the financial industry.

"Our inclusion in the MSCI index is recognition of our focused growth strategy and strong execution, which have driven strong market performance and investor confidence in 5N+," says CEO Gervais Jacques. "As we continue to strengthen our position as a trusted supplier of advanced materials for critical applications on Earth and in space, we remain committed to creating sustainable, long-term value for our shareholders."

**www.5nplus.com**

# AXT's Q3 revenue far exceeds guidance, after China export licenses granted for InP

## Demand booming from data centers, but licensing constraining shipments while order backlog climbs

For third-quarter 2025, AXT Inc of Fremont, CA, USA — which makes gallium arsenide (GaAs), indium phosphide (InP) and germanium (Ge) substrates and raw materials at plants in China — has reported revenue of $28m, rebounding by 56% on $18m last quarter and up 18% on $23.6m a year ago, and far exceeding the guidance of $19–21m.

Of total revenue in Q3 (compared with a year previously), the proportion from the Asia Pacific region was 87% (up from 77%), North America was just 1% (down on 11%), while Europe was 12% (level with a year ago).

The proportion of revenue coming from the top five customers has risen further, from 29.4% a year ago and 30.9% last quarter (with one customer exceeding 10%) to 45.2% in Q3/2025 (with two customers now exceeding 10%).

"This has been a highly active time for our business with the strong uptick in indium phosphide demand from data-center applications globally," says CEO Morris Young.

Indium phosphide revenue grew to a three-year high of $13.1m, rebounding by 250% (far more than the expected 30%) from just $3.6m last quarter (and almost doubling from $6.8m a year ago), due mainly to data-center and passive optical network (PON) customers outside China. "We obtained export permits [from China] for a number of significant InP orders [after being granted the first permit for InP in late June]," says Young. "Our indium phosphide permits are taking approximately 60 business days or approximately three months to be processed by China's Ministry of Commerce. This is a bit longer than our initial expectations, but customers are adapting to the requirements and are adjusting their ordering patterns to give us more visibility and longer lead-times," he adds.

The China government imposed trade restrictions on export of GaAs in August 2023 and InP in February 2025, aiming to restrict the export of materials used for military applications and requiring an export permit for every customer order.

Gallium arsenide revenue was $7.5m, up by more than 20% from $6.2m last quarter. The biggest driver was semi-insulating wafers for wireless RF devices, which remains a focused application for AXT. Industrial laser applications were roughly flat relative to Q2, but there was an uptick in semiconducting wafers for data-center laser applications. "However, VCSELs [vertical-cavity surface-emitting lasers] don't typically require a lot of GaAs material, so they don't move the needle much as a gross driver. But they do require high-quality material, which we are well positioned to supply," says Young.

Germanium substrate revenue fell back to $0.64m, from $1.5m last quarter (which had been driven by satellite solar cell applications in China). AXT had said that germanium substrates permits for sales outside of China have been difficult to obtain, and that revenue would remain at a lower-level rate throughout second-half 2025. "The germanium substrate market has very poor gross margin potential today," notes Young.

**This has been a highly active time for our business with the strong uptick in indium phosphide demand from data-center applications globally**

"While our material performed well in the solar cell applications that we supply, gross margin constraint disincentivizes us to pursue many opportunities. In addition, certain customers prefer to source substrates outside of China. As such, we do not expect growth in germanium substrates in Q4," he adds.

Revenue was level sequentially at $6.7m from the two consolidated raw material joint venture companies: BoYu (which makes high-temperature pyrolytic boron nitride crucibles and pBN-based tools for organic light-emitting diodes) and JinMei (which supplies high-purity materials including gallium and germanium, as well as InP poly and other materials). "Raw material business in Q3 was solidly profitable within a stable pricing market," notes Young. "We expect the same for Q4."

"We remain highly focused on our efforts to drive gross margin recovery and expansion, operating expense discipline, and inventory reduction," says Young.

On a non-GAAP basis, gross margin was 22.4%, recovering further from 8.2% last quarter and exceeding the low- to mid-teens guidance (reflecting improved product mix and a higher volume to absorb fixed overhead costs, as well as continuing to drive better manufacturing efficiency) but still down on 24.3% a year ago.

Operating expenses have been cut further, from $8.34m a year ago and $7.6m last quarter to $6.66m. "Given the difficult climate, we've been working hard to hold down OpEx," notes chief financial officer Gary Fischer. "In addition, we had some favorable adjustments in R&D in Q3 that brought our OpEx down to a lower-than-normal level. These will not carry over into Q4."

Net loss was $1.17m ($0.03 per

share, far better than the expected $0.11–0.13), cut from $6.4m ($0.15 per share) last quarter and $2.12m ($0.05 per share) a year ago.

During the quarter, cash and cash equivalents and investments fell further, by $3.9m, from $35.1m to $31.2m. Accounts receivable rose by $11m. So, the difference in cash is explained in working capital.

Net inventory has been cut further, from $86.1m a year ago and $80.1m last quarter to $77.7m. "This continues to be a focus, and we expect to bring it down further in quarters to come," says Fischer.

**Growing order backlog**

"We continue to build healthy backlog for both indium phosphide and gallium arsenide materials as our industry and our customers adapt to a new normal within a rapidly changing environment," notes Young.

"Tremendous growth in demand for InP-based lasers and detectors for high-speed optical connectivity [related to AI and the ongoing data-center upgrade cycle], coupled with our successful obtaining export permits on behalf of our customers, are driving a strong increase in our InP order backlog, which, as of today, is more than $49m [a record, more than doubling from Q2] and growing. Our established customers are planning for longer lead-times by placing longer-term orders and giving us more visibility into their expected demand. We are also seeing active engagement with several new tier-1 customers to qualify our material into their supply chains for the first time in many years. This includes leading optical transceiver module makers, both in China and around the globe. The supply chain for optical transceiver is quite complex and highly globalized. This geographic interdependence is providing both opportunities and incentives for the ecosystem to work together in new ways to solve global supply chain shortages," says Young.

**Tremendous growth in demand for InP-based lasers and detectors for high-speed optical connectivity, coupled with our successful obtaining export permits on behalf of our customers, are driving a strong increase in our InP order backlog**

**Fourth-quarter outlook**

"We have about $20m in revenue that can be realized in Q4 across our substrate product lines and raw materials for which we either already have a permit to ship or for which an export permit is not required because it shifts within China. In addition, we believe there's an incremental $7–10m in InP and GaAs backlog, which is currently in our manufacturing process, for which we believe we may be able to ship in Q4 if we are awarded permits," says Fischer.

"We are in a similar or slightly better position in terms of customer order backlog and permit submissions than we were at this same point in the prior quarter," he adds. "We have the capability to achieve revenue of $27–30m in Q4. This takes into consideration approximately flat sequential revenue contribution from germanium substrates and raw materials, with incremental growth in Q4 likely coming from InP and GaAs substrates."

However, OpEx is expected to increase to about $9m as a result of some incremental end-of-the-year adjustments and a return to a more normalized level. Net loss is hence expected to be $0.01–0.03.

**Return to profitability expected in 2026**

"The massive AI infrastructure build-out and the planned CapEx spending by cloud services and AI platform providers in the USA is the primary driver for EML [electro-absorption modulated lasers] and silicon photonics-based optical transceivers," says Young. "Our material are being used in multiple US hyper-scalers, and we expect that end-customers' use will continue to broaden. In China, the data-center build-out is early in its ramp, but there is a strong desire for domestic suppliers at every level of the supply chain, and we believe over the next 12–18 months, we will see healthy growth in the China data-center market. Data-center expansion in China is quickly overtaking PON as the leading application in China for our InP substrates," he adds.

"With strong, ongoing market trends fueling the data-center upgrade cycle, we believe we have tremendous opportunity in 2026 to drive meaningful growth in our business and a return to profitability," concludes Young.

**www.axt.com**

# STAR Market listing update

On 10 January 2022, AXT's China-based wafer manufacturing subsidiary Beijing Tongmei Xtal Technology Co Ltd submitted its application to list its shares in an initial public offering on the Shanghai Stock Exchange's Sci-Tech innovAtion boaRd (STAR Market) and the application was accepted for review.

Subsequently, Tongmei responded to several rounds of questions received from the Shanghai Stock Exchange (SSE). On 12 July 2022, the SSE approved the listing of Tongmei's shares. On 1 August 2022, the China Securities Regulatory Commission (CSRC) accepted Tongmei's IPO application for review. The STAR Market IPO remains subject to review and approval by the CSRC and other authorities.

# Aixtron's Q3 revenue and margin impacted by volume shifts into Q4

## Strong free cash flow generation continues, driven by working capital optimization and cut in CapEx

For third-quarter 2025, deposition equipment maker Aixtron SE of Herzogenrath, near Aachen, Germany has reported revenue of €119.6m. This is down 13% on €137.4m last quarter and down 23.5% on €156.3m a year ago, and in the lower half of its guidance range of €110–140m, reflecting the continued soft market environment.

Due to the negative impacts of volume shifts from Q3/2025 into Q4/2025 (€8m) and foreign exchange (FX) effects (€2m), gross margin is down from 43% in Q3/2024 to about 39% in Q3/2025.

While automotive demand remains soft for silicon carbide (SiC) power devices, Aixtron says that it reached a significant milestone in Q3/2025 with the shipment of its 100th G10-SiC chemical vapor deposition (CVD) system since the product's launch.

At the same time, GaN power customers are seeing increased utilization from data-center demand, for both mid- and low-voltage applications.

The continued AI data-center build out also remains the driver for tool demand in the Optoelectronics segment. The pick up in demand for datacom lasers seen in Q2 has been confirmed in Q3 (and is expected to continue into 2026). Aixtron's G10-AsP metal-organic chemical vapor deposition (MOCVD) platform continued to gain market share, successfully replacing legacy systems at leading customer accounts.

**Profits more than halved year-on-year**

Operating expenses were €30.9m in Q3/2025, up 4% on Q3/2024's €29.6m, driven primarily by R&D expenses rising by 12% from €21.2m to €23.7m.

The operating result (EBIT) has more than halved from Q3/2024's €37.5m (EBIT margin of 24%) to a lower-than-expected €15.4m in Q3/2025 (EBIT margin of 13%) due to the FX effects as well as quarter-on-quarter shifts.

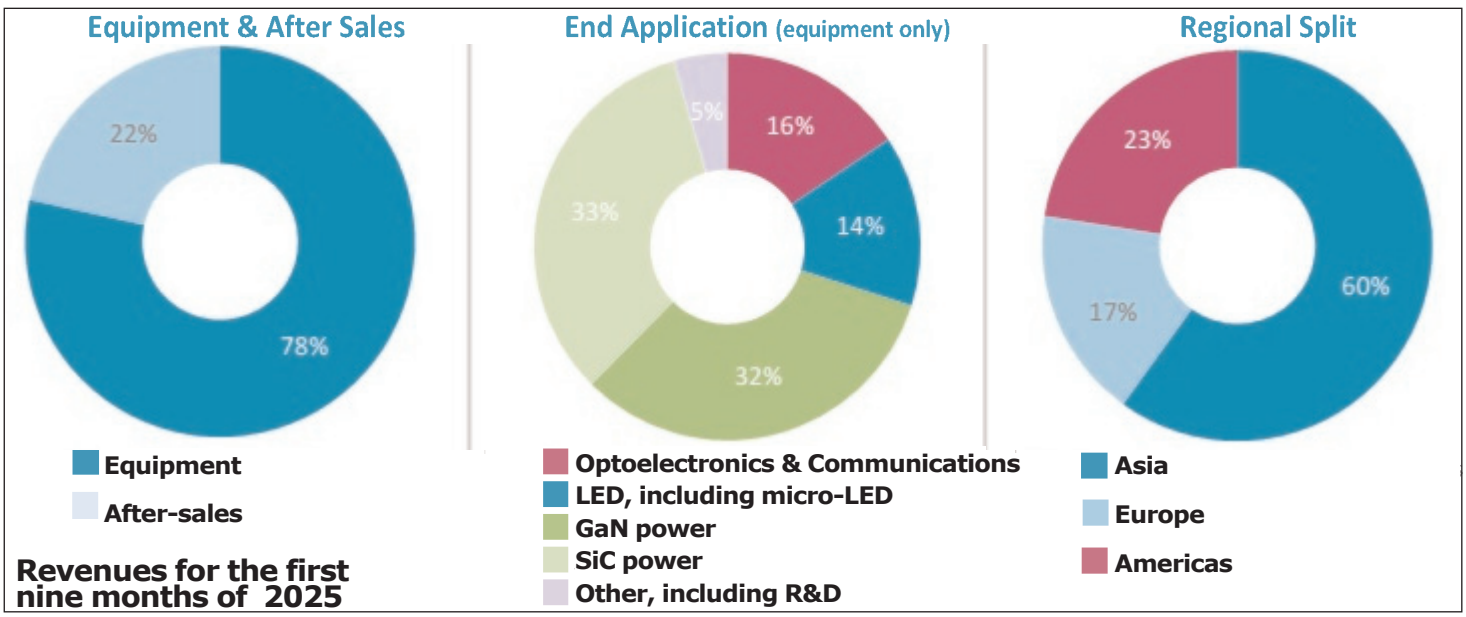
Net profit has likewise more than halved, from €30.9m to €13m.

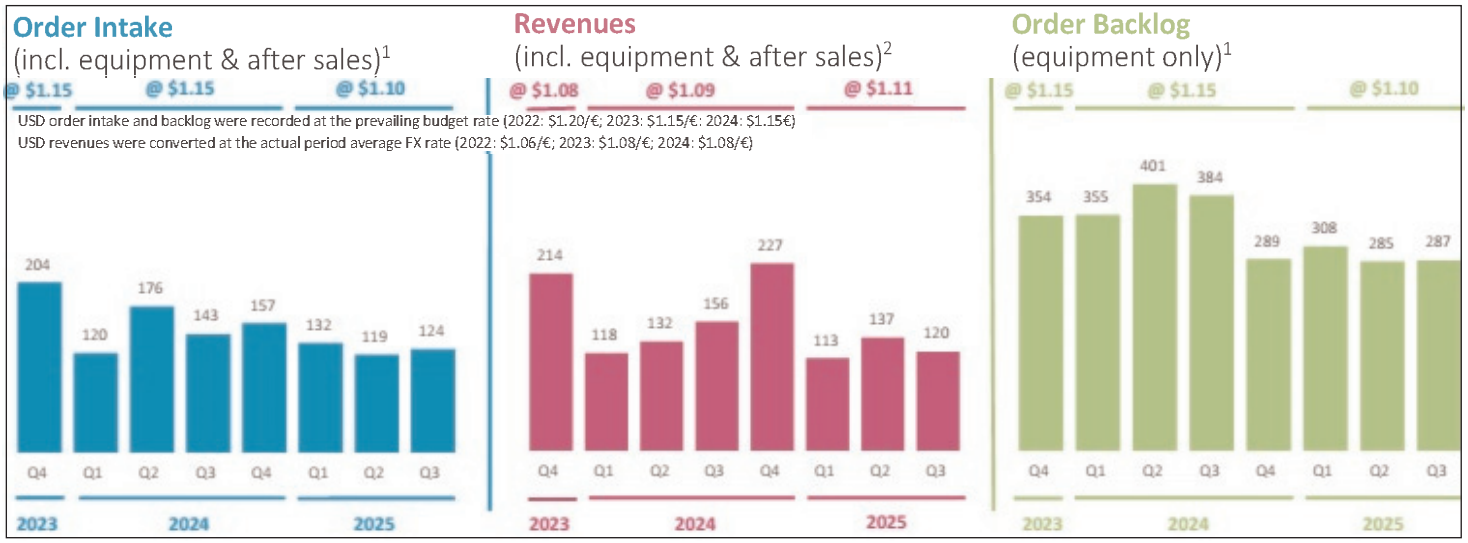
**Operating cash flow almost triples year-on-year**

Cash flow from operating activities has almost tripled from €15.4m a year ago to €43.4m, driven primarily by continued working capital optimization more than compensating for the decrease in net profit. Also, capital expenditure has been slashed from €17m a year ago to just €4.2m. Hence, free cash flow has continued to improve, from –€1.5m to €39.2m. This has contributed to an improvement of €168.3m year-on-year for the first nine months of the year, from –€58m in 2024 to €110.3m in 2025.

Cash and cash equivalents (including other current financial assets) has hence risen from €64.6m at the end of 2024 to €153.4m. The equity ratio increased from 83% to 85%, underscoring the firm's strong financial position, Aixtron says.

"We are progressing as planned with our working capital optimization measures," notes chief financial officer Dr Christian Danninger. "We are well on track to rebuild a strong cash position after the construction of our new 300mm facility, the InnoCenter at our headquarters in Herzogenrath. This brings us again in a good position to master the next wave of growth, once market demand picks up again."






**Order intake and order backlog**

Order intake in Q3/2025 was €124m, down 13.5% on €143.5m a year ago but 4.6% up on €118.5m last quarter. The book-to-bill ratio is 1.04.

Equipment order backlog of €286.5m is down by 25% on €384.5m a year ago, but virtually unchanged from €289.3m at the end of 2024 and €284.6m at the end of last quarter.

**Full-year guidance**

Based on the current soft market environment and assuming an adjusted exchange rate of US1.15/€ for the rest of 2025 (rather than US$1.10/€ previously) due to the currency headwinds, on 17 October Aixtron hence narrowed its full-year 2025 guidance for revenue to €530–565m (down 10.8–16.3% on 2024's €633.2m), which corresponds to the lower half of its initial guidance of €530–600m. Of this, Q4/2025 revenue is expected to be up sequentially to €160–195m (comprising €130–165m from the equipment order backlog and €30m in after-sales revenue).

"We are on track with respect to our operational metrics for the full-year 2025, besides the loss of gross profit due to FX effects," says Grawert.

Foreign exchange effects have led to a reduction of about 1 percentage point in full-year guidance for both gross margin (from 41–42% previously to 40–41%) and EBIT margin (from 18–22% previously to 17–19%).

These amounts include one-off expenses in the mid-single-digit million € range related to staffing cuts implemented in the operations area in first-half 2025. However, this is expected to result in annualized savings in the mid-single-digit million € range, corresponding to an improvement in gross margin and EBIT margin of about 1 percentage point.

**The G10-AsP has become the tool of record in the laser segment**

**Initial indications of re-investment in solar, red-orange-yellow LED, and AR micro-LED applications are emerging**

**Market recovery**

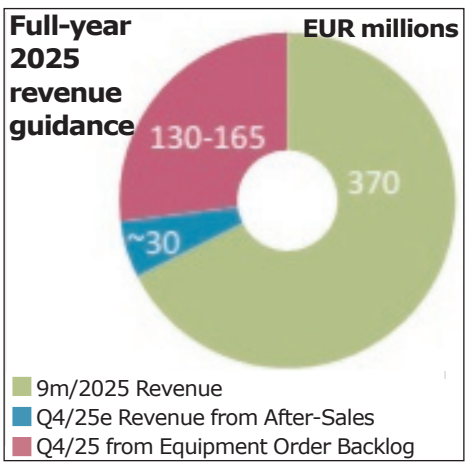
"The demand upturn has not yet materialized in Q3/2025," says CEO Dr Felix Grawert. "But, as AI continues to reshape the semiconductor landscape, our platforms are ideally positioned to support this upcoming transformation. The G10-AsP has become the tool of record in the laser segment, and the shipment of our 100th G10-SiC system marks a major milestone in power electronics," he adds. "While broader market recovery is still pending, our strong execution and focus on diversified end markets keep us firmly on track."

**Our medium- and long-term growth drivers, e.g. with the introduction of new 800V architectures for AI data centers using both SiC [silicon carbide] and GaN [gallium nitride], remain intact**

Initial indications of re-investment in solar, ROY (red-orange-yellow) LED, and augmented-reality (AR) micro-LED applications are emerging. These developments have the potential to positively contribute to Aixtron's business in the coming year.

"Our medium- and long-term growth drivers, e.g. with the introduction of new 800V architectures for AI data centers using both SiC [silicon carbide] and GaN [gallium nitride], remain intact," says Grawert. "By expanding our market position, we will benefit disproportionately from the next upturn," he reckons.

www.aixtron.com



# Ohio State University buys Aixtron CCS MOCVD system

## Tool to be used for GaO and AlGaO epitaxy for materials and device development on 100mm substrates

The Ohio State University (OSU) has purchased a Close Coupled Showerhead system for metal-organic chemical vapor deposition (CCS MOCVD) from Aixtron SE of Herzogenrath, near Aachen, Germany. The tool will be used for epitaxy of gallium oxide (GaO) and aluminum gallium oxide (AlGaO) for materials and device development on 100mm substrates.

Compared with traditional semiconductor materials, gallium oxide and its alloys are known for their superior performance at higher voltages, frequencies and temperatures. The new tool will enable OSU to explore the properties of these materials and develop novel device architectures.

"We have had a great experience working with Aixtron CCS reactors in the past for GaAs and InP materials. Their reactors are world-renowned for state-of-the-art uniformity, high material quality, and large process windows. Aixtron has demonstrated this for gallium oxide (GaO) and aluminum gallium oxide (AlGaO), and we look forward to partnering with Aixtron as we develop novel epitaxy layers and devices using this tool," says professor Steven A. Ringel, associate VP of research at The Ohio State University and executive director of Ohio State's Institute for Materials and Manufacturing Research (IMR). "We particularly value the scalability the platform offers to us and our partners, while providing us with the immediate capability for up to 4" wafers," he adds.

"We are delighted to announce our partnership with OSU and the esteemed professors Hongping Zhao, Siddarth Rajan, and Steve Ringel," says Aixtron's CEO Dr Felix Grawert. "Our CCS MOCVD tools have consistently demonstrated exceptional performance in supporting cutting-edge academic research and seamlessly scaling to tier-1 industrial applications," he adds. "We are particularly enthusiastic about the promising advancements in gallium oxide technology, which herald the next generation of power devices."

The Ga2O3-capable MOCVD reactor will be installed at Nanotech West Lab, a 3500m$^2$ shared user facility servicing the Ohio State materials community. The lab is operated by IMR, a multi-disciplinary institute that provides infrastructure support, development and management of major research facilities at Ohio State.

**www.aixtron.com**

# Veeco receives Propel300 MOCVD system order from GaN-on-silicon power semiconductor IDM

## Supports rapidly growing GaN device market driven by demand for power efficiency for data-center, industrial & automotive applications

Epitaxial deposition and process equipment maker Veeco Instruments Inc of Plainview, NY, USA has received an order for a Propel300 metal-organic chemical vapor deposition (MOCVD) system from a "major power semiconductor integrated device manufacturer" (IDM) for gallium nitride (GaN) epitaxy on 300mm silicon (Si) wafers.

"Qualifying Propel300 for 300mm GaN-on-Si epitaxy for power devices is a significant achievement in the path to widespread adoption of GaN technology," reckons Anil Vijayendran, vice president, MOCVD product line management. "Moving from 200mm to 300mm enables customers to achieve 2.3 times more chips per wafer, while allowing them to use existing 300mm production lines, and ultimately lower their device costs."

GaN's high efficiency and superior thermal and switching properties, which can significantly reduce device and overall system size and weight, are accelerating its adoption in power semiconductor manufacturing, notes Veeco. The GaN device market will grow at a compound annual growth rate (CAGR) of 35% from $555m in 2025 to $2.5bn in 2030, forecasts market analyst firm Yole Group. Key to this will be the increased adoption of GaN technology in automotive, industrial and data-center applications, where the continuously rising power consumption requirements of AI workloads are fueling demand for more efficient power supplies.

Featuring Veeco's proven MOCVD TurboDisc technology, Propel300 combines what is claimed to be exceptional performance with fully automated wafer handling to provide not only best-in-class thickness and doping uniformity but also low defectivity and high productivity. These benefits, together with its ease of use and long campaigns that do not require in-situ cleaning, contribute to Propel300's low cost of ownership per wafer

**www.veeco.com**

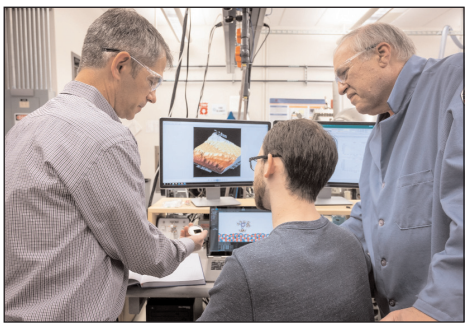
# Boise State selected for $1.5m DEPSCoR award for research on synthesizing GaN

## Team to investigate impurities for enhancing GaN's optical, electrical and thermal properties while improving radiation resistance

Boise State University has been selected for a $1.5m Defense Established Program to Stimulate Competitive Research (DEPSCoR) award, which will expand its defense-relevant research infrastructure and advance innovation in materials designed for extreme environments. Overall, 30 DEPSCoR awards were granted US-wide this year. The award will fund new instrumentation, training and discovery efforts.

Led by David Estrada and Elton Graugnard, professors in the Micron School of Materials Science and Engineering, their research teams will explore innovative methods for synthesizing gallium nitride (GaN). Their work will investigate which added impurities could enhance GaN's optical, electrical and thermal properties while improving its resistance to radiation. The team will also develop atomically precise, wafer-scale fabrication techniques compatible with advanced manufacturing and defense applications.

"This is an important award that builds our capacity to initiate critical research," says the research project's principal investigator Nancy Glenn, Boise State's vice president of research and economic development. "It recognizes the significance of the work our faculty are doing and invests in our ability to expand both research and training opportunities for our students."



**Semiconductor research in Elton Graugnard's lab, marketing, photo by Priscilla Grover Micron School of Materials Science and Engineering (MSMSE) labs, Micron Engineering Center (MEC)**

The funding enables the university to acquire a high-resolution scanning electron microscope, which will accelerate materials discovery and support Idaho's semiconductor, biomedical, manufacturing and energy sectors. "We will be able to image and process materials at unprecedented precision — and train the next generation of scientists and engineers who will lead Idaho's high-tech industries," Estrada says.

The project complements other initiatives at Boise State, including the NSF EPSCoR Centers of Research Excellence in Science and Technology (CREST) Center program and the university's investment in the Microelectronics Education and Research Center (MERC), positioning the university as a hub for semiconductor and defense-related materials research.

"The extreme environments found in space, hypersonic vehicles and nuclear energy systems cause materials and microelectronics to fail in unpredictable ways," Estrada says. "This investment directly supports our goals of achieving Carnegie R1 research status and growing Idaho's role in defense-related research and development," Glenn adds. "It also ensures our students gain hands-on experience with the tools and technologies that define the future of our state's workforce."

The DEPSCoR award represents another step in Boise State's ongoing growth in microelectronics and interdisciplinary graduate programs, paving the way for expanded collaboration among academia, industry, and government on technologies designed to operate in demanding environments.

**www.boisestate.edu/research**

# RPI-led team demonstrates remote epitaxy with 2–7nm epilayer–substrate distance

## Defect-assisted, long-range remote electrostatic interactions enable nucleation and alignment in crystal films

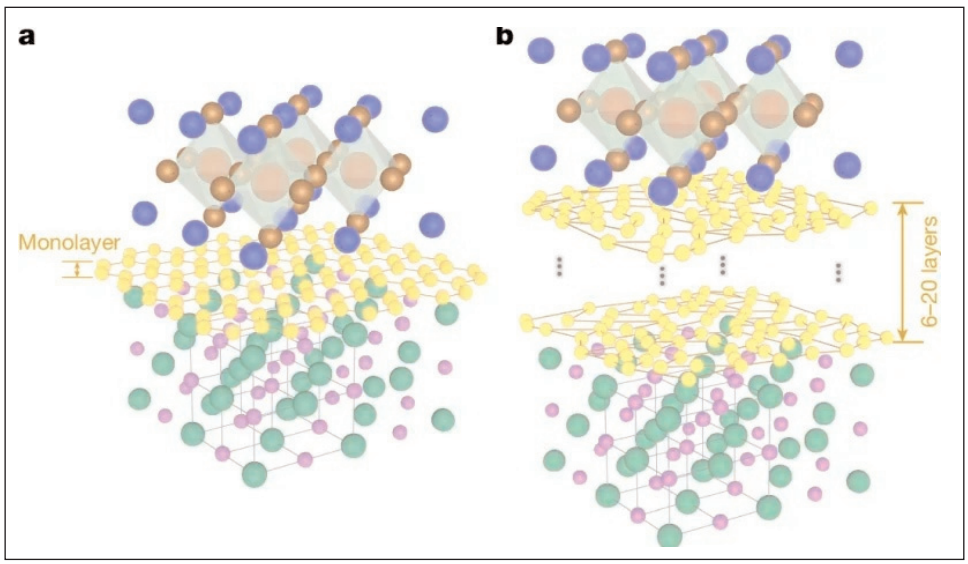
Led by Rensselaer Polytechnic Institute (RPI) of Troy, NY, USA, a team that also includes researchers at the National High Magnetic Field Laboratory, Florida State University and SUNY Buffalo has deepened the understanding of remote epitaxy, a manufacturing technique that entails growing high-quality semiconducting films on one substrate and then transferring them to a different one (Ru Jia et al, 'Long-distance remote epitaxy', Nature, volume 646, p584–591 (2025)).

Remote epitaxy works by placing a thin buffer layer between a substrate and a growing crystal film. The substrate's atomic structure guides the crystal's growth through the buffer, but the buffer prevents permanent bonding, so the finished crystal layer can be peeled off and moved elsewhere.

Until now, researchers believed that the remote epitaxy technique only worked with buffer layers less than 1nm thick, and that a thicker layer would almost completely overshadow the subtle electrostatic forces from the substrate that guide the growth of the crystal film.

But recently-graduated RPI materials science Ph.D. student Ru Jia and her lab fellows grew crystals through carbon buffer layers up to 7nm thick — a 600% improvement — and found that they still aligned well with the substrate beneath.

"This work shows that remote epitaxy could be mediated by substrate defects such as dislocation," says RPI materials science and engineering professor Jian Shi Ph.D. (Jia's Ph.D. advisor, and a senior author on the paper). "Practically, that widens material choices, improves process windows, and aids scalable membrane release and wafer-recycling strategies in real devices."




**Schematic diagram of remote epitaxy process. Panel a shows the conventional process with a graphene layer 0.35nm thick, while panel b illustrates the process using a much thicker buffer layer.**

Using a zinc oxide/gallium nitride model system in conjunction with Yan Xin's team at the National High Magnetic Field Laboratory, Jia and her colleagues discovered that structural defects in the substrate may enable long-distance electrostatic interactions that can influence the structure of the crystal layer. RPI materials science professor Yunfeng Shi Ph.D. and his team validated the findings with computations showing that dislocations may mediate long-distance remote epitaxy.

"This work would not have been possible without close collaboration among experts in materials growth and characterization, advanced characterization, and atomistic-scale computational simulations," notes Jian Shi.

**Substrate defects, traditionally seen as quality control problems, might be deliberately engineered to control remote epitaxy processes**

The researchers tested their approach with multiple crystal/substrate combinations, demonstrating the universality of their findings. As a proof of concept, they built working photodetectors by transferring perovskite crystal films to flexible substrates, demonstrating the technique's practical viability.

The work suggests that substrate defects, traditionally seen as quality control problems, might be deliberately engineered to control remote epitaxy processes. Manufacturers could, for example, use the technique to program functional 'islands' or epilayers in specific locations on their crystal films — a degree of precision that is necessary to fabricate quantum devices that require fine control of crystal growth.

"The paper offers a mechanism — defect-assisted, long-range remote electrostatic interactions — that engineers can intentionally harness to bring about nucleation and alignment in crystal films," Jian Shi concludes.

**www.nature.com/articles/s41586-025-09484-z**
**www.mse.rpi.edu**

# Cornell's Huili Grace Xing to receive 2025 University Research Award in Technology from SIA and SRC

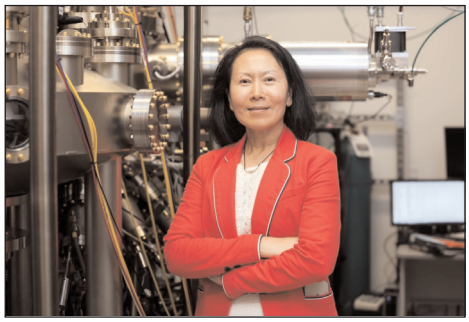
## Honor for pioneering work in III-V nitride materials and devices, oxide materials and devices, 2D semiconductors and layered crystals

Huili Grace Xing, the William L. Quackenbush Professor of Electrical and Computer Engineering and of Materials Science and Engineering at Cornell University, is the recipient of the 2025 University Research Award in Technology from the Semiconductor Industry Association (SIA) and Semiconductor Research Corporation (SRC).

SIA and SRC present the University Research Awards annually to two professors who demonstrate excellence in advancing research in semiconductor technology and design. The awards were established in 1995 by SIA to recognize lifetime research contributions to the US semiconductor industry by university faculty. Winners are selected in conjunction with the SRC board and the SIA board chairman and board of directors.

The 2025 award is being formally presented at the SIA Awards Dinner on 20 November in San Jose, California. Todd Austin, professor of computer science and engineering and of electrical and computer engineering science at the University of Michigan, is recipient of the University Research Award for Design.

"Professors Xing and Austin exemplify excellence in semiconductor research, with their cutting-edge work expanding the frontiers of chip technology and strengthening America's role as the global innovation leader," comments the SIA's president & CEO John Neuffer.



**Huili Grace Xing, the William L. Quackenbush Professor of Electrical and Computer Engineering and of Materials Science and Engineering at Cornell.**

Xing is receiving the award for her pioneering work in III-V nitride materials and devices, oxide materials and devices, 2D semiconductors and layered crystals. Her research on wide-bandgap semiconductors like aluminium nitride and gallium nitride ultra-scaled high-electron-mobility and high-hole-mobility transistors for high-speed, high-power applications has significantly advanced applications of polar semiconductors in electronics and in photonics, such as high-frequency wireless communication, solid-state electronics and energy-efficient devices.

"The hallmark of SRC research programs is the consistent delivery of real-world impact through visionary research, deep collaboration and a commitment to excellence across academia, industry and government," says SRC's president & CEO Todd Younkin. "Professors Huili Grace Xing and Todd Austin exemplify this legacy – not only through their groundbreaking innovations and mentorship, but through the scale and ambition of the programs they've helped lead," he adds. "Their work moves at industry speed and demonstrates the power of public–private partnership to accelerate progress and shape the future of microelectronics."

Xing's contributions include both fundamental research (such as studying material properties at the atomic level) and applied research (involving the design and testing of gallium nitride devices in real-world scenarios). A Fellow of IEEE, AAAS and APS, Xing has previously received numerous awards, including the Intel Outstanding Researcher Award, ISCS Young Scientist Award, NSF CAREER Award, and AFOSR Young Investigator Program Award.

"This recognition highlights the vital partnership among academia, industry and government that drives innovation in semiconductor technology," says Xing. "Over the past two decades, I've been fortunate to contribute to this collaboration in various roles — from a contributing PI [principal investigator] to a JUMP 2.0 center director. This award is also a tribute to the many generations of my graduate students and close collaborators who have shared this journey with me."

**www.engineering.cornell.edu/people/huili-grace-xing**
**www.src.org/newsroom/article/2025/1098**

# III-V Epi appoints Saurabh Kumar to strengthen epi engineering team and increase manufacturing capacity

III–V Epi Ltd of Glasgow, Scotland, UK — which provides a molecular beam epitaxy (MBE) and metal-organic chemical vapor deposition (MOCVD) service for custom compound semiconductor wafer design, manufacturing, test and characterization — has appointed Saurabh Kumar, a specialist in semiconductor device fabrication, to help meet growing demand for its wafer design, manufacturing, test and characterization services. He will strengthen the epitaxial engineering team, increasing resource, expertise and industrial experience.

Most recently, Saurabh served as process engineering team lead at Paragraf in Cambridgeshire, UK, where he provided technical leadership and mentoring, established yield engineering and failure analysis frameworks, and led process

development and tool commissioning strategies for semiconductor fabrication facilities in their Somersham and Huntingdon sites.

In previous roles, Saurabh served as a senior process engineer at the Huawei Ipswich Research Centre, where he was responsible for driving continuous improvement and operational excellence, overseeing yield engineering and failure analysis, developing process strategies, commissioning tools, and implementing statistical process control. Prior to this, he managed Nexperia's high-volume silicon fabrication facility in Manchester.

Saurabh began his career as a research engineer at the University of Sheffield, gaining his initial experience in device fabrication and project management.

As a semiconductor fabrication engineer, Saurabh has extensive expertise in photolithography, etching, deposition and packaging. He has experience in process design, new technology introduction, seamless production operations as well as working to compliance regulations for quality, reliability and health & safety.

Saurabh has a Masters in Nanoelectronics and Nanomechanics from the University of Sheffield, UK and an undergraduate degree in Electrical Engineering from the Babu Banarsi Das National Institute of Technology, Uttar Pradesh Technical University, India.

**www.iii-vepi.com**

# Swansea's professor Owen Guy wins SEMI Academia Impact Award

During the CxO Executive Summit at SEMICON Europa 2025 in Munich, Germany, Professor Owen Guy (head of Chemistry at Swansea University) has been honoured with the SEMI Academia Impact Award, recognizing his "outstanding contributions to semiconductor research, innovation and industry-academia collaboration in Europe".

The award celebrates individuals whose work bridges scientific excellence with real-world impact across the semiconductor ecosystem.

As director of Swansea University's Centre for Nanohealth and a member of its Centre for Integrative Semiconductor Materials (CISM), Guy has played a pivotal role in advancing semiconductor education and research.

He has contributed to collaborative programs such as the SEMI Talent Forums and ChipQuest Challenge, and works within European consortia


**Professor Owen Guy receives the SEMI Academia Impact Award at SEMICON Europa 2025.**

on silicon carbide, graphene, and advanced manufacturing.

"This recognition reflects the collective effort of our community in advancing semiconductor education, outreach and skills — from pioneering research to inspiring the next generation of semiconductor talent," says Guy. "I'm proud of our work with SEMI and our role in shaping Europe's innovation landscape."

Swansea University's semiconductor research is anchored by its £29.9m CISM facility at its Bay Campus. Equipped with cleanrooms, materials growth labs, and device packaging capabilities, CISM (along with its industry partners) is supporting breakthroughs in quantum devices, sensors, and energy systems.

"Europe's semiconductor resilience relies on visionary leaders like professor Guy, who not only advance technology but also cultivate the talent that will carry our industry forward," comments Laith Altimime, president of SEMI Europe. "His dedication to leadership, mentorship and collaboration reflects the qualities Europe needs to strengthen its talent pipeline and global competitiveness."

**www.swansea.ac.uk/staff/o.j.guy**
**www.semiconeuropa.org/program/CxO-Summit**

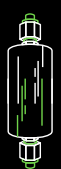
# ARM PURIFICATION
BY APPLIED ENERGY SYSTEMS

# Empower Your Purity

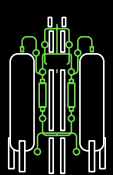
## Proven Gas Purifiers That Enable Total Process Excellence

ARM Purification's purifier solutions are equipped for the precise purification of gases and uphold the most stringent application requirements across industries. **Discover why we're trusted by the world's innovators to meet today's mission-critical gas purity demands.**

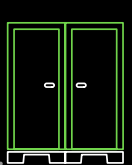
**Our Complete Purifier Solutions:**



Point-of-Use Purifiers



Frame-Mounted Purifiers



Bulk Purifiers

Nova™ Series In-Line Gas Purifier

BROUGHT TO YOU BY

APPLIED ENERGY SYSTEMS

Explore our Gas Purification Solutions

# Cornell upgrades lab with MOCVD system for next-generation nitride materials

## Superconductivity, ferroelectricity and magnetism functionalities to support quantum computers and RF & power devices

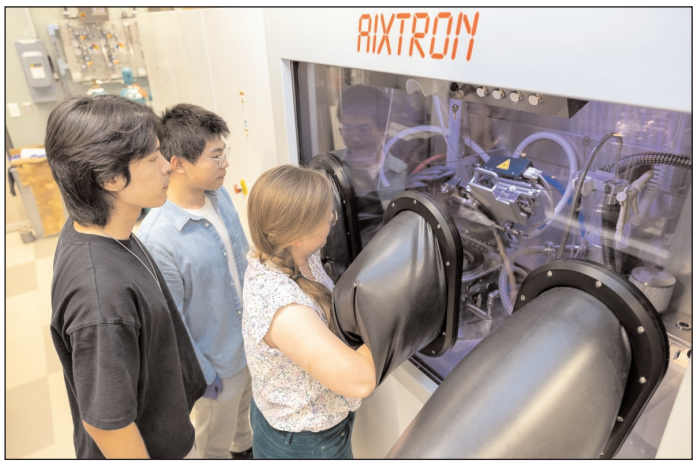
A laboratory upgrade at Cornell University will help to forge new directions for nitride semiconductors by expanding their capabilities to support technologies such as quantum computers and next-generation radio-frequency and power devices.

The upgrade includes the installation in Duffield Hall of a custom-built, metal-organic chemical vapor deposition (MOCVD) system to engineer nitrides with functionalities such as superconductivity, ferroelectricity and magnetism.

"The established family of nitrides do a fantastic job, but now we are at a point where we can move on to other nitrides, like niobium nitride, which is a superconductor," says Hari Nair, assistant professor of materials science and engineering and principal investigator for the MOCVD system. Co-principal investigators are Debdeep Jena (the David E. Burr Professor) and Huili Grace Xing (the William L. Quackenbush Professor), both in the School of Electrical and Computer Engineering and the Department of Materials Science and Engineering.

These new materials could pave the way for high-coherence microwave qubits, memory and radio-frequency devices, far-ultraviolet (UV)-C LEDs and next-generation quantum communication systems. One promising direction involves replacing the aluminum–aluminum oxide Josephson junctions — core building blocks of quantum computers – with versions that are all epitaxial nitride.

Another breakthrough involves making aluminum nitride ferroelectric by substituting in small amounts of scandium, an approach gaining significant traction in both academia and industry, and one that Nair said will be explored with the new MOCVD system.




**From left: doctoral students Wenyuan Yan and Yuxuan Deng observe as postdoctoral researcher Isabel Streicher operates a new MOCVD system. Photo courtesy of Charissa King-O'Brien.**

Many of these new nitrides have only been produced using molecular beam epitaxy (MBE), which is useful for research but difficult to scale for industrial manufacturing. In contrast, MOCVD is already the workhorse for commercial LED and gallium nitride-based power devices.

"Every single LED that's commercially made uses MOCVD," notes Nair. "So, if we can develop growth processes for these new nitrides using MOCVD, they'll be much easier to translate into industry… it's not just about what we can study in the lab, it's about how we can scale it."

Building on recent advances in chemical precursors and high-temperature gas flow control, the Cornell team worked with MOCVD system maker Aixtron to design a one-of-a-kind system capable of handling the unique challenges posed by nitride materials. It is the first such system in the USA specifically configured from the outset for the purpose of growing the new nitrides along with the more established family of nitrides.

Unlike conventional systems, the machine features dual metal-organic delivery channels — one for traditional precursors and another for low-vapor-pressure precursors like scandium and niobium. A triple-plenum showerhead ensures that the traditional precursors and the low-vapor-pressure precursors do not mix until they are injected into the reactor.

The system "gives us the platform to explore, discover and ultimately help drive a new era in materials for electronics, optoelectronics and quantum information systems," says Nair.

The MOCVD system is expected to serve national priorities, enabling a range of research initiatives funded by the US Department of Defense. The system was made possible through a grant from the US Department of Defense with the advocacy of Kenneth Goretta, retired program manager at the US Air Force Office of Aerospace Research and Development.

Cornell researchers expect that the system will also advance technologies being developed by Soctera, a Cornell-based startup focused on millimeter-wave power amplifiers using high-quality aluminum nitride. The company's innovations are targeting defense applications, including advanced radar systems, autonomous vehicle communications and satellite networks.

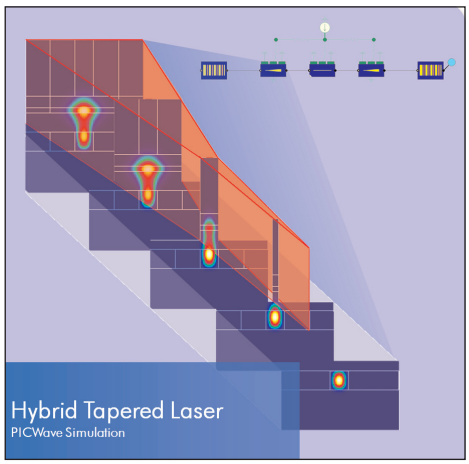
**www.engineering.cornell.edu/people/huili-grace-xing**

# Photon Design provides laser design and simulation training on JePPIX PIC Design Course

## Theory and practice of photonic integrated circuit design using indium phosphide technologies

Photonic simulation CAD software developer Photon Design Ltd of Oxford, UK provided laser design and simulation training on the JePPIX 'PIC Design Course' 2025, held at Eindhoven University of Technology (TU Eindhoven) on 27 October to 7 November.

As the Joint European Platform for Photonic Integration Components and Circuits (an association of commercial enterprises, research organizations and universities serving as a platform for promoting integrated photonics on a European level), JePPIX is a modular, integrated silicon photonics platform that enables a fast, efficient, accurate and compact manufacturing approach, which helps to increase production capacity; essential to meeting increasing demand for photonics devices in multiple markets. The JePPIX training course provided photonics engineers with the theory and practice of photonic integrated circuit (PIC) design, using indium phosphide




(InP) technologies on its platform. The design of photonic components (such as amplifiers, lasers, modulators and detectors) was covered, along with PIC design, layout and simulation using process design kits (PDKs), and practical design for foundry manufacture and multi-project wafer (MPW) runs.

"Our hands-on approach required attendees to design a taper laser comprising III-V epi substrate on SOI (silicon on insulator)," says Photon Design's scientific and technical advisor Alex Edwards. "Our FIMMPROP simulator showed attendees how quickly a taper design could be produced, complete with dynamic step sizing. Reflective Bragg gratings and other periodic structures were simply repeated, before performing a 'length sweep' to determine the laser's adiabatic length. An active PIC simulation was then generated using our PICWave tool," he adds.

"FIMMPROP is an EME-based laser simulator that processes far faster than standard FDTD alternatives. It provides equivalent results regardless of device size, whether the taper is 40μm or 400μm. All simulations were run locally on a regular laptop, showing both the simplicity and speed of EME. In contrast, many FDTD solutions are growing to rely on costly, outsourced cloud processing service for each simulation run which, during the design phase, can occur many times."

**www.photond.com**

# Mojo Vision adds Dr Anthony Yu to advisory board

Mojo Vision Inc of Cupertino, CA, USA — which is developing and commercializing micro-LED display technology for consumer, enterprise and government applications — has appointed Dr Anthony Yu to its advisory board. The firm is applying its micro-LED technology to the development of high-speed optical interconnects for AI infrastructure. The addition of Yu to the board brings decades of silicon photonics leadership experience to support the firm's product strategy and go-to-market execution.

This builds on Mojo's recent $75m Series B fundraising round and the addition of Dr Waguih Ishak to the advisory board, and it further positions the firm to deploy its technology across high-growth markets, including AI data centers and next-generation AI glasses.

Yu has expertise in silicon photonics manufacturing, having built GlobalFoundries' silicon photonics business from the ground up. As vice president of computing & wired infrastructure, he established GlobalFoundries as a major force in photonics manufacturing and drove strategic partnerships that helped to shape the industry's trajectory. His understanding of both the technical and commercial aspects of photonics uniquely positions him to guide Mojo Vision's strategy and execution in the AI infrastructure market, reckons the firm.

"Anthony's track record in building silicon photonics businesses from scratch is exactly what Mojo Vision needs as we scale our micro-LED platform," says CEO Dr Nikhil Balram. "His expertise in product strategy, market positioning and go-to-market execution will be instrumental as we translate our technological advantages into market leadership," he adds.

"After decades in product management, I've learned to recognize the rare convergence of disruptive technology, market timing, and team strength," says Yu. "Mojo Vision has all three. Its micro-LED platform addresses real performance bottlenecks in AI infrastructure, the market is primed for disruption, and the technical team is exceptional," he adds.

Yu joins fellow advisory board members Dr Waguih Ishak and Dr Rajeeva Lahri, veterans of the semiconductor, photonics and optoelectronics industries, along with representatives from Mojo Vision's strategic customers, further strengthening the company's foundation of experience and expertise. "Adding Anthony significantly amplifies Mojo Vision's ability to execute on its ambitious vision," says Ishak. "His proven ability to build and scale photonics businesses will help Mojo accelerate our growth and establish leadership in optical interconnects," he adds.

"Anthony brings a combination of technical depth and commercial acumen that will accelerate our roadmap development," says chief technology officer Dr Mike Wiemer. "His experience building photonics platforms at GlobalFoundries will help us navigate the complexities of scaling our micro-LED technology to the demanding requirements of AI infrastructure."

**www.mojo.vision**

# VueReal expanding presence in China market

Micro-LED technology firm VueReal Inc of Waterloo, ON, Canada is expanding its presence in China after appointing international business development consultancy Intralink.

Intralink, which operates in 27 sites worldwide, specializes in helping firms to secure customers, partners and investors in overseas markets. It has expertise in China and a track record of supporting advanced tech companies in the automotive and consumer electronics sectors.

VueReal's MicroSolid Printing platform enables micro-LEDs to be transferred and integrated directly onto a range of substrates — including glass, flexible films and silicon — more quickly, accurately and reliably than conventional methods. The result is brighter, more energy-efficient and highly versatile displays.

VueReal recently secured over CDN$58m (US$40m) in new funding to accelerate product commercialization and scale its global partnerships. Its technology serves a wide range of sectors including automotive — where it powers dashboards, HUDs and signal/brake lighting — as well as consumer electronics, AR/VR/MR and smart wearables.

Following its appointment, Intralink's team in Shanghai will now launch a targeted business development program, engaging leading display makers — including original design manufacturers (ODMs) and electronic manufacturing services (EMS) providers — as well as major automotive OEMs and tier-one suppliers. A key focus will be driving the adoption of VueReal's reference design kits (RDKs) to accelerate prototype development and derisk product programs.

"China is one of the most exciting markets for advanced display technologies," says VueReal's chief commercial officer Rob Selley. "We see tremendous opportunities to build new relationships and accelerate micro-LED adoption — and Intralink's experience, network and on-the-ground support will be critical in scaling our presence," he adds.

"Our Shanghai team is looking forward to helping VueReal introduce its breakthrough technology and forge the strategic partnerships it needs to bring the next generation of μLED displays to the Chinese market," says Intralink's business development manager Siavash Kianpour.

**www.intralinkgroup.com**
**www.vuereal.com**

# HKUST develops record-efficiency red quantum rod LEDs

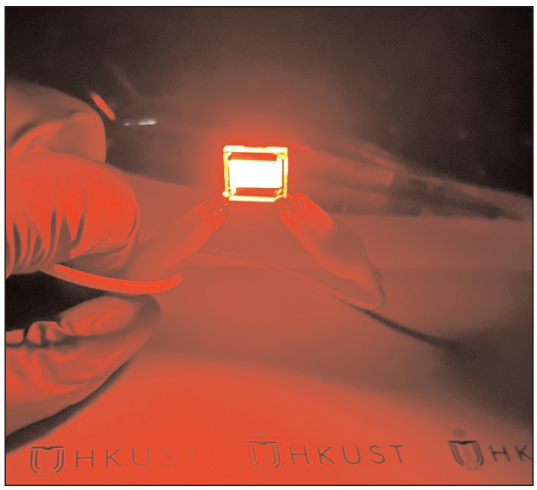
## Peak EQEs of 31% for red QR-LEDs and 20.2% for green dot-in-rod QRs

A research team led by the School of Engineering of The Hong Kong University of Science and Technology (HKUST) is said to have set a record efficiency level for red quantum rod light-emitting diodes (QR-LEDs), which could be applied to boost color vividness and brightness in next-generation display and lighting technologies for smartphones and TVs (Liao Zebing et al, 'Inverted Device Engineering for Efficient and Bright Quantum Rod LEDs', Advanced Materials; https://doi.org/10.1002/adma.202504559).

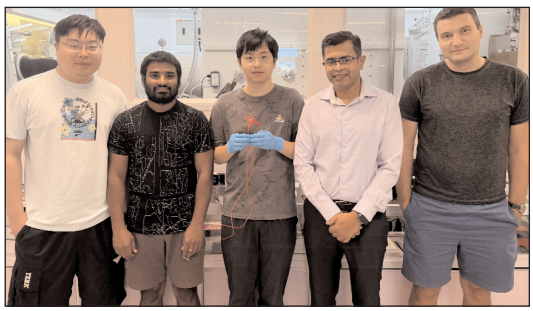
Compared with existing mainstream LEDs, quantum dot LEDs (QD-LEDs) offer superior color purity (color vividness) and higher brightness. However, outcoupling efficiency has now become the primary obstacle, as it sets a fundamental ceiling for external quantum efficiency (EQE), hindering any further performance improvements.

As elongated anisotropic nanocrystals with unique optical properties, quantum rods can be engineered to optimize the light emission direction and ultimately improve outcoupling efficiency. However, QR-LEDs encounter two significant technical challenges: first, the ratio of emitted photons to absorbed photons (photoluminescence quantum yield) is relatively low after the material absorbs photons; second, there is a substantial leakage current due to poor thin-film quality.

To address these challenges, a research team led by professor Abhishek K. Srivastava, associate professor of the Department of Electronic and Computer Engineering (ECE), focused on boosting optical performance of QR-LEDs via refined synthesis engineering. They achieved photoluminescence quantum yield of up to 92% for both green and red quantum rods, along with uniform size distribution and shape confinement, all of which are essential for optimizing QR-LED performance.




**Sample of record efficiency red QR-LED.**



**The research team: corresponding author professor Abhishek K. Srivastava (second right); PhD student and first author Liao Zebing (center, holding a red-emitting QR-LED sample); and co-authors including postdoctoral fellow Dr Maksym Prodanov (first right), PhD students Mallem Kumar (second left) and Song Jianxin (first left).**

In previous studies, the carrier leakage caused by irregular quantum rod films and its impact on diminishing the light coupling efficiency of QR-LEDs has often been overlooked. To tackle this issue, the team built an equivalent circuit model that illustrates the detrimental effects of leakage current in traditional QR-LED structures. This model provided valuable insights into the device's operation, enabling the formulation of targeted solutions to suppress current leakage. By strategically transforming the QR-LED device structure, the team achieved a dual breakthrough: simultaneously enhancing balanced carrier injections and suppressing leakage current.

The results were remarkable — the optimized red QR-LEDs achieved a peak EQE of 31% and a peak brightness of 110,000cd.m$^2$, setting a new record in previous red QR-LED research. Moreover, to validate the universality of their strategies, the team applied the same approach to green 'dot-in-rod' quantum rods. The green devices reached a peak EQE of 20.2% and an ultra-high luminance of 250,000cd.m$^2$. These outcomes not only demonstrate the effectiveness of the innovations but also highlight their potential for application across different color variants of QR-LEDs.

"Previous QD-LED research primarily focused on optimizing quantum dot structures for high efficiency, but this approach does not apply to elongated shaped quantum rods, such as QR-LEDs," notes Srivastava, the corresponding author of the study. "By utilizing equivalent circuit models and quantum rod micromorphology, we revealed that QR-LED have widespread pinholes due to their shape, which leads to critical leakage currents — an issue not encountered in tightly packed QD-LED. By modifying the device structure, we addressed the quality issues in emissive layer and verified fundamental advantages of quantum rod over quantum dots," he adds. "This work is set to guide research on similar anisotropic nanocrystal and advance their commercial applications."

Members of the team are from HKUST's State Key Laboratory of Displays and Opto-Electronics, Center for Display Research, Department of Electronic and Computer Engineering (ECE) and Department of Physics, and collaborators from the University of Edinburgh, UK. The first author is ECE PhD student Liao Zebing, supervised by Srivastava.

**https://advanced.onlinelibrary.wiley.com**

# Silanna UV's 235nm far-UVC LEDs inactivate multiple H5N1 avian 'flu virus strains

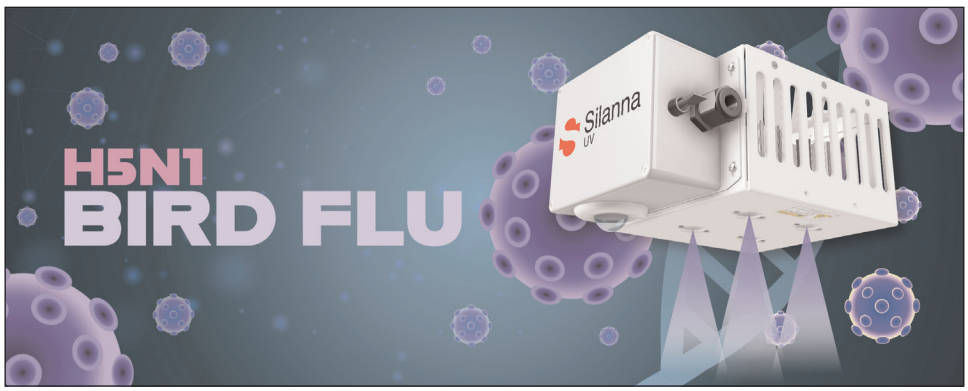
## University tests show viral reduction of up to 99.999% within seconds

Silanna UV of Brisbane, Australia — which provides far-UVC light sources for water quality sensors, gas sensors, disinfection, and HPLC (high-performance liquid chromatography) applications — says that its ultraviolet LEDs effectively inactivate multiple H5N1 avian influenza virus strains within seconds, according to recent research by scientists at the University of Siena. The research showed strong viral reduction of up to 99.999% with Silanna's 235nm far-ultraviolet C (UVC) LEDs, which support applications in public health protection, pandemic preparedness, and agricultural biosecurity.

Avian flu has severely disrupted agricultural markets and food production, posing a major public health threat. Earlier this year, H5N1 outbreaks hit global egg production, leading to shortages and sharp price increases.

The virus's ability to infect humans and other animals has heightened concerns worldwide.

The University of Siena revealed the research results during MEDICA 2025, the world's largest medical trade fair, in Düsseldorf, Germany at the end of November. The presentation highlighted the far-UVC LEDs' strong antiviral performance and the broader implications for far-UVC technology in health, safety and sanitation.




**Safe and effective technology**

Unlike traditional 254nm mercury lamps, far-UVC light (200–240nm) is considered biologically safe within regulatory limits. It cannot penetrate the outer layers of skin or eyes, enabling continuous disinfection in occupied spaces such as hatcheries, food-processing facilities, and clinical environments. Researchers also suggest that microbes are less likely to develop resistance to far-UVC than to conventional antibiotics.

**Stopping the virus in seconds**

The University of Siena's Department of Molecular and Developmental Medicine oversaw the joint research, conducted at a Biosafety Level 3 (BSL-3) laboratory in Italy in 2025. The test results confirmed that 235nm LED irradiation achieves multi-log (up to 99.999%) viral reduction within seconds. These findings position far-UVC LEDs as a next-generation biosecurity solution, reducing viral contamination risks in industrial and public health settings.

**Facing the global avian influenza threat**

Widespread bird flu outbreaks worldwide underscore the urgent need for scalable, sustainable disinfection solutions to curb viral transmission in poultry environments and safeguard global food supply chains and public health. Silanna UV says that its far-UVC LEDs deliver a fast, safe and cost-effective method for effective disinfection against this threat.

**www.silannauv.com/products**

# SemiLEDs full-year revenue grows eight-fold, despite last-quarter drop

## Full-year net loss almost halved

For fiscal fourth-quarter 2025 to end-August), LED chip and component maker SemiLEDs Corp of Hsinchu, Taiwan has reported revenue of $13.22m, down on $17.65m last quarter. Nevertheless, fiscal full-year revenue has grown more than eight-fold from $5.18m for 2024 to $43m for 2025.

Gross margin for fiscal Q4/2025 was 2%, down from 5% last quarter. Full-year gross margin has fallen from 20% for 2024 to just 6% for 2025.

Operating margin for fiscal Q4/2025 worsened to −7%, from −0.4% for last quarter. However, full-year operating margin has improved from −57% for 2024 to −4% for 2025.

Net loss for fiscal Q4/2025 was $1.194m ($0.15 per diluted share), compared to net income of $0.223m ($0.03 per diluted share) last quarter. However, full-year net loss has still been almost halved from $2.03m ($0.32 per diluted share) for 2024 to $1.13m ($0.15 per diluted share) for 2025.

During the quarter, cash and cash equivalents rose from $2.4m to $2.59m, up from $1.67m a year previously.

**www.semileds.com**

# Cree LED and SANlight partner on high-efficiency horticulture lighting

## J Series LEDs being used in STIXX-Series luminaires

A partnership has been announced in which J Series products of Cree LED Inc of Durham, NC, USA (a Penguin Solutions brand) will be used in the new STIXX-Series luminaires of SANlight GmbH of Schruns, Austria, which specializes in LED lighting solutions for both commercial and home gardening applications.

Developed for applications with limited space, the STIXX fixtures feature a slim, space-saving design with module efficiency of up to 3.1_mol/J. Backed by LM-80 testing with TM-21 lifetimes exceeding 53,000 hours, the luminaires deliver what is claimed to be exceptional reliability and long service life. Advanced secondary optics not only direct light with maximum efficiency to the canopy but also fully protect the LEDs, achieving an outstanding IP68 rating for dust and water resistance — ensuring both performance and durability in any environment.

"SANlight brings a deep understanding of photobiology and a commitment to sustainable agronomy — both of which align perfectly with our mission to enable breakthrough lighting performance for growers worldwide," says Cree LED's president Joe Clark.

"Choosing Cree LED as our technology partner ensures that every grower can experience lighting that maximizes yield and efficiency," says SANlight's CEO Martin Anker. "The optimized full spectrum supports vigorous growth and healthy plant structure throughout both the vegetative and generative phases."

With its modular design and versatility, the STIXX-Series can serve as a classic toplight, undercanopy light or in vertical farming applications. The system can be adapted to different growing setups — delivering uniform, diffused light at both low and high intensities to optimize yield, quality and energy consumption.

**www.sanlight.com**
**www.cree-led.com/products/applications/horticulture**

# CreeLED sues Promier Products and Tractor Supply

## Portable lighting products alleged to infringe patents

Cree LED Inc of Durham, NC, USA has filed a patent infringement lawsuit in the US District Court for the Northern District of Illinois alleging that Promier Products (trading as LitezAll) and Tractor Supply Co have infringed its rights in the following patents by selling certain portable lighting products: United States Patent Nos. 9070850, 9754926, 10439112, 11791442, D790486 and D892066.

Together with its predecessor Cree Inc, Cree LED says that it has a 35-year track record of innovations and industry firsts. The firm designs products specifically optimized for portable lighting applications, delivering what is claimed to be industry-leading lumen output and maximum throw distance.

Cree LED says that, as a US-based market leader that extensively invests in research, development and product innovation, it remains committed to protecting and enforcing its intellectual property rights, both proactively and retrospectively.

**www.cree-led.com**

# CEA-Leti launches multilateral program to accelerate AI with micro-LED data links

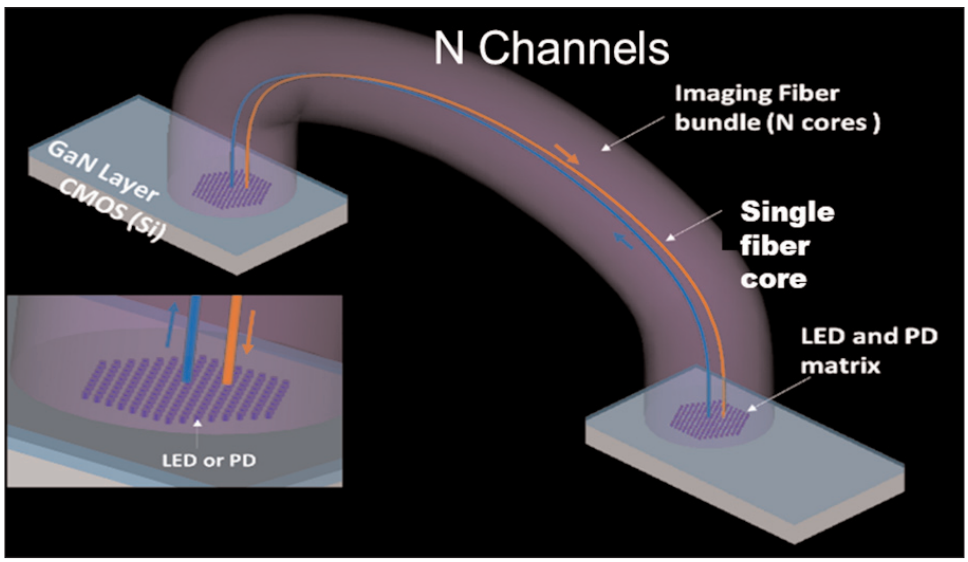
## Project aims to increase high-performance computing speed and efficiency with 'orders-of-magnitude' data-transfer gains

At the SEMICON Europa 2025 event in Munich, Germany (18–21 November), micro/nanotechnology R&D center CEA-Leti of Grenoble, France launched a three-year, multilateral program on micro-LED technology for ultra-fast data transfer, with a particular focus on accelerating artificial intelligence (AI) growth. The lab- to-fab initiative draws on the institute's expertise in micro-LED process technology. Beginning in January, it aims to engage manufacturers of micro-LEDs, optical fibers, photodiodes and interconnects, as well as chipmakers, system integrators, and hyperscalers.

"Over the past decade, the computing power required to train leading-edge AI models has exploded by factors of millions, doubling roughly every 3–4 months as systems become more complex and data-hungry," says CEA-Leti's CEO Sébastien Dauvé. "Supercomputers demand ever-faster communication links with very high energy efficiency and ultra-low latency — but interconnect performance is lagging behind compute power. That gap calls for a paradigm shift capable of boosting high-performance computing speed by orders of magnitude."

Currently, the tech industry is using slower copper-based data systems and costly laser-based solutions. Supported by a mature technology base, micro-LEDs consume less energy than either copper- or laser-based systems.

A recent report on Microsoft's novel optical-link technology "MOSAIC: Breaking the Optics versus Copper Trade-off with a Wide-and-Slow Architecture and MicroLEDs" noted that "micro-LEDs are significantly smaller than traditional LEDs (and) can be modulated at several Gbps using a simple ON–OFF scheme." It also noted that the technology "achieves 10x the reach of copper, reduces power consumption by up to 68%, and offers 100x higher reliability than today's optical links".




**Working principle of micro-LED based data link. Source: Patrick Le Maitre, CEA.**

**Unlike silicon photonics or vertical-cavity surface-emitting lasers, micro-LED is scalable for massive parallel communication**

"Micro-LED represents a true paradigm shift for short-range optical point-to-point data interconnects," says Dauvé. "It delivers extremely high data-density transfer rates with far better energy efficiency than current technologies. Unlike silicon photonics or VCSELs [vertical-cavity surface-emitting lasers], micro-LED is scalable for massive parallel communication," he adds. "By combining the complementary expertise of our program members, we aim to break through the interconnect power and density bottlenecks that limit next-generation computing."

CEA-Leti has been undertaking micro-LED R&D for lighting, display and data communications for more than 15 years, and it holds about 100 patents. Its use of silicon wafers and standard processes to produce micro-LEDs both scales and transfers easily to standard microelectronics foundries.

The institute will lead the Multilateral Micro-LED Data Link Program with financial backing from its industrial partners. Together, members will map out a technical roadmap that sets clear objectives, milestones and deliverables, and will track progress closely — adjusting the course as needed to keep the collaboration on pace and on target.

During the CxO Summit at SEMICON Europa, Sébastien Dauvé gave the presentation 'Executing the European Chips Act with Speed and Impact: CEA-Leti's Pilot Line Fueling Industry Growth and AI Innovation".

**www.semiconeuropa.org/program/CxO-Summit**
**www.leti.fr**
**www.microsoft.com/en-us/research/wp-content/uploads/2025/08/benyahya25mosaic.pdf**

# Avicena's LightBundle optical links operating at 4Gbps per lane with transmitter current as low as 100µA per LED

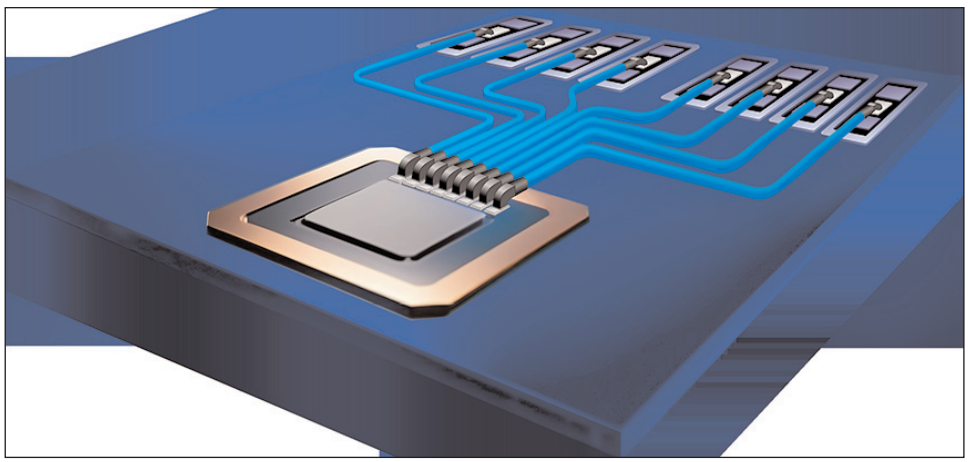
## Micro-LED-based technology delivers Tx power of 80fJ/bit addressing next-generation AI infrastructure

At SuperCompute 2025 (SC25) in St Louis, MO, USA (16–21 November), Avicena Tech Corp of Sunnyvale, CA, USA has announced that its LightBundle micro-LED-based optical links now operate at 4Gbps per lane with transmitter currents as low as 100µA per LED. At this current, each link closes at a raw bit-error rate (BER) of $1x10^{-12}$ with an equivalent energy of 80fJ/bit per LED, all without forward error correction (FEC).

The firm says that this achievement highlights the LightBundle platform's ability to deliver the world's lowest-power optical interconnects for next-generation AI infrastructure by addressing the increasing bandwidth, distance and reliability requirements most efficiently.

Unlike laser-based optical engines — which cannot operate below a lasing threshold — micro-LEDs can scale transmit power to nearly arbitrarily low levels, limited primarily by the receiver's signal-to-noise ratio. While silicon photonics can achieve low effective power by splitting a single external laser across many resonant modulators, micro-LEDs inherently generate their own light, dramatically simplifying packaging. Avicena's micro-LED transmitters are only a few microns in size, require no temperature stabilization, and avoid complex control loops. These microscopic emitters can be arrayed at extremely high density to deliver terabits of aggregate bandwidth.

Avicena says that this new power-per-lane milestone was enabled by its latest high-sensitivity receiver technology, developed in collaboration with manufacturing partners and incorporating optimized photodetectors derived from high-volume image-sensor processes.



**Scalable LightBundle chiplet platform for memory disaggregation.**

Instead of serializing low-speed on-chip data (typically around 2Gb/s per lane) to very high-speed optical lanes, LightBundle transmits raw parallel data directly, dramatically simplifying integrated circuit (IC) input/output (I/O) architectures. This approach enables massive arrays of micro-LEDs to deliver unprecedented aggregate bandwidth at very low latency, low power consumption, while being easily integrated with any silicon node. LightBundle chiplet transceivers are well suited to various packaging architectures including co-packaged optics (CPO), on-board optics (OBO), pluggable optical modules, and wide memory interconnects.

**LightBundle transmits raw parallel data directly, dramatically simplifying IC I/O architectures. This approach enables massive arrays of micro-LEDs to deliver unprecedented aggregate bandwidth at very low latency, low power consumption, while being easily integrated with any silicon node**

"We already demonstrated an efficient micro-LED link in a live demo at ECOC 2025 in September. By further optimizing our highly sensitive receivers, we have managed to further reduce the operating currents of the micro-LEDs and obtained Tx energy consumption down further to tens of femtojoules for this part of the link," says chief scientist Rob Kalman. "Combined with the unique properties of microLEDs, we can achieve unmatched energy efficiency in our LightBundle interconnects," he adds. "This benchmark shows the scalability of our roadmap, how micro-LED technology can replace legacy laser-based links with a simpler, more reliable and far lower-power solution."

This latest development builds on the ongoing work between Avicena and its hyperscale data-center, AI accelerator and memory partners to enable scale-up AI cluster architectures that span multiple racks and thousands of GPUs, dramatically increasing compute performance for emerging agentic AI workloads.

**https://sc25.supercomputing.org**
**https://avicena.tech**

# Nuvoton launches compact 1.7W 402nm violet laser in TO-56 CAN package

## Proprietary chip design and thermal management technologies contribute to space-saving and long-life optical systems

Nuvoton Technology of Kyoto, Japan has launched the KLC435FS01WW compact high-power violet laser diode, which achieves what is claimed to be industry-leading optical output power in an industry-standard TO-56 CAN package of 1.7W at 402nm wavelength.

Through the firm's proprietary chip design and thermal management technologies, the new product achieves compact size, high output power and long life, which were previously considered difficult. It hence contributes to space-saving and long-life optical systems for a wide range of optical applications.

Semiconductor lasers with a wavelength of 402nm are being utilized as alternative light sources to the h-line of mercury lamps in applications such as laser direct imaging (LDI, using lasers to directly expose circuit patterns onto substrates) and resin curing. In recent years, there have been growing expectations for applications in even more areas, including medical devices. In these applications, it is necessary to integrate the light source system into a limited space, which has created a demand for semiconductor lasers that are both compact and high-powered. However, as the optical output power of semiconductor lasers increases, the amount of heat generated also rises, requiring larger heat-dissipation structures and resulting in challenges related to package size limitations.

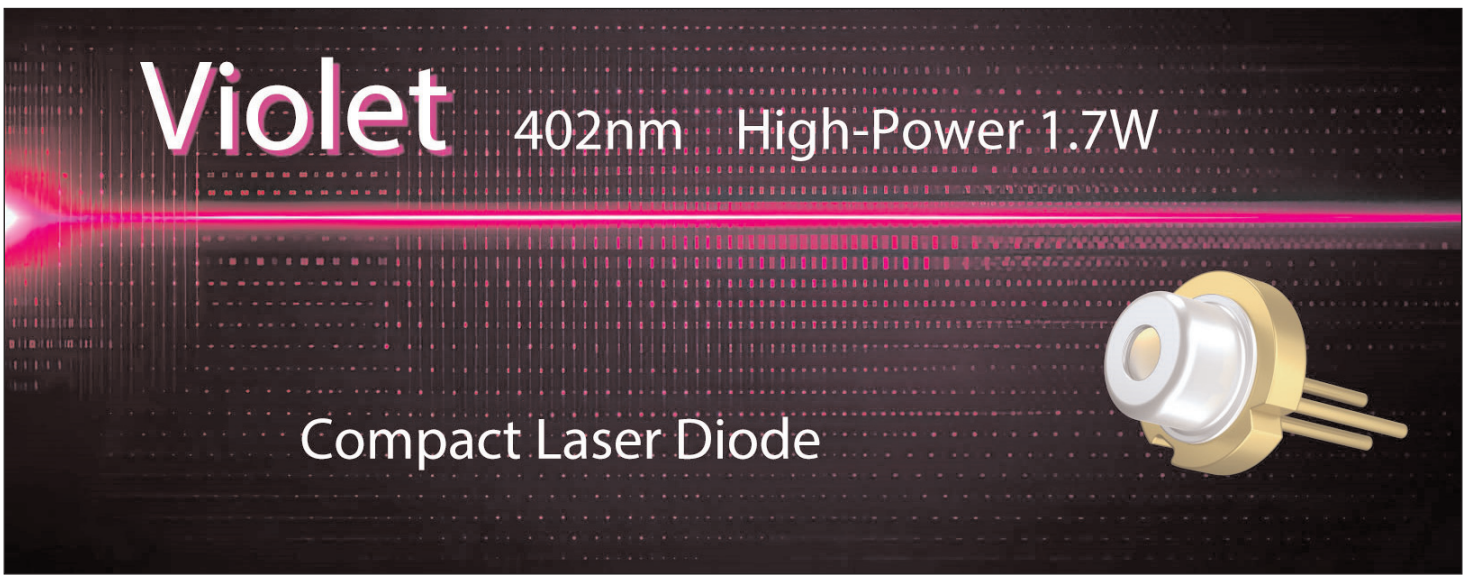
To address this, Nuvoton has evolved its proprietary chip design and thermal management technologies based on over 40 years of experience in laser design and manufacturing. By designing to reduce optical loss inside the laser chip, heat generation is suppressed. In addition, a new optical facet structure that withstands strong laser light has been adopted, enabling the previously difficult combination of compact size, high output power and long life.

As a result, the firm has achieved an optical output power of 1.7W in the industry-standard TO-56 CAN package, representing about a 40% increase in output power compared to the firm's previous products (the KLC433FS01WW). Furthermore, the reliability indicator MTTF (mean time to failure) has also been significantly improved. Hence not only does this new product contribute to space-saving and long life in existing applications but it is also expected to expand and create new applications that were not possible with conventional light sources.

In addition, the product is newly added to Nuvoton's lineup of mercury lamp replacement solutions using semiconductor lasers, providing new options. This enables flexible product selection according to application (including laser direct imaging, resin curing, laser welding, 3D printing, biomedical, displays, and alternative light sources for mercury lamps), installation environment, and required performance, improving the freedom of system design.

Details of the new product are being exhibited at SPIE Photonics West 2026 in San Francisco, CA, USA (20–22 January) and OPIE'26 (OPTICS & PHOTONICS International Exhibition) at Pacifico Yokohama, Japan (22–24 April).

**www.spie.org/conferences-and-exhibitions/photonics-west**
**www.opie.jp**
**www.nuvoton.com/products/laser-diodes/semiconductor-laser/violet**



Fuji Electric
*Innovating Energy Technology*

# Fuji Electric G-Twin UL Plug-In Series

## New High Quality Product with improved safety features, easy installation and compact

TÜV Rheinland IEC JIS EN c UL us LISTED CE

Global Standard

### The New Generation of Molded Case Circuit Breakers and Earth Leakage Circuit Breakers.

- ★ Built-In Compact Ground Fault for Space Saving Designs
- ★ Same Footprint! MCCBs and ELCBs interchangeable without Panel Modifications
- ★ All frame sizes (50AF-250AF) can be mounted with the same mounting pitch of 70mm
- ★ Lock Out Tag Out (LOTO) safety devices (fixed and removable types) are available as an option
- ★ Improves safety measures and easy & quick installation
- ★ UL489 and CSA C22.2 No.5 approved and certified


Fuji Electric Corp. of America **Distribution & Control Department**

**For sales, product & distributor information, please visit americas.fujielectric.com/UL-Plug-In**

**or contact us: x-fea-fuji-dc@fujielectric.com**

# BluGlass gives update on September-quarter activities

BluGlass Ltd of Silverwater, Australia — which develops and makes gallium nitride (GaN) blue laser diodes based on its proprietary low-temperature, low-hydrogen remote-plasma chemical vapor deposition (RPCVD) technology — has provided the following update and financial report for its fiscal first-quarter 2026 (to end-September 2025).

"BluGlass' project pipeline remains strong, exceeding US$100m across approximately 30 active projects and programs," notes CEO Jim Haden. "This sustained momentum reflects continued demand for our novel visible laser technologies, which are enabling next-generation applications across multiple sectors. Purchase orders from global defence prime Collins Aerospace, and quantum leader Infleqtion, reinforce the critical nature of visible laser technology for advanced applications as well as the calibre of customers we're working with. Our high-energy visible lasers provide the precision, fidelity and stability needed to address some of the most complex quantum commercialization challenges, including the ability to scale down in size and up in volume to deliver more cost-effective quantum sensors and processors," he adds.

"We're also progressing project submissions for the Microelectronics Commons with CLAWS (Commercial Leap Ahead for Wide Bandgap Semiconductors) Hub members and our tier-one partners. Despite the US Government shutdown delaying projects with US government departments and agencies, our diversified customer pipeline spanning leading OEMs, defence primes, and other national governments has enabled us to advance and grow our commercial opportunities. While we are encouraged by the health and breadth of our pipeline, we remained focused on converting these projects and commercial partnerships into large revenue-generating contracts," Haden continues.

"Importantly, our non-dilutive capital R&D tax rebate has partially offset operational costs as we continue to improve the performance of our gallium nitride lasers, secure new revenue-generating projects, and scale revenues."

**Laser order from Collins Aerospace**

During the quarter, BluGlass received an initial purchase order of its visible gallium nitride gain chips from RTX Corp subsidiary Collins Aerospace, an American aerospace & defense technology company that delivers advanced systems and services across commercial, military and business aviation sectors. Its portfolio includes avionics, navigation systems, and information management solutions, all designed to enhance efficiency, safety and connectivity for customers worldwide.

**Laser order from Infleqtion**

In October, BluGlass received an initial purchase order of its GaN gain chips from global quantum technology company Infleqtion. The gain chips will be integrated within Infleqtion's quantum systems to support next-generation quantum applications. Infleqtion designs and builds quantum computers, precision sensors and quantum software for governments, enterprises and research institutes. Its customers and collaborators include Nvidia, NASA, DARPA and the US Army.

While BluGlass considers revenue from initial purchase orders from both customers to be immaterial on their own, these collaborations have the potential to become long-term supply contracts with significant revenues, it is reckoned.

"The strong commercial interest BluGlass is receiving from world-leading partners is testament to our best-in-class visible gain chip capabilities," says CEO Jim Haden. "These partnerships will be instrumental to our platform development, supporting the delivery of unmatched precision and fidelity, at scale, for the most exacting of applications."

**Omer Granit appointed to board**

During the quarter, BluGlass enhanced the board's commercialization expertise, welcoming US-based Omer Granit as an independent non-executive director. As an entrepreneur, investor and corporate lawyer, his experience spans capital markets, strategy, technology, defence and advanced manufacturing. BluGlass says that his appointment strengthens its engagement in the UAS, improving access to strategic customers, the global defence industry, and investment community.

"Omer brings renewed energy and the unique combination of deep insight into the US technology and defence sectors as well as valuable experience supporting ASX-listed companies through cross-border growth," comments chair James Walker. "His strong connections across global capital markets and the defence sector make him a tremendous asset at this pivotal time for BluGlass," he adds.

"I would also like to thank Vivek Rao, who retired from the board during the quarter, for his invaluable contribution to BluGlass over the past decade, where he has played a key role in guiding BluGlass from its R&D roots to a global commercialization company."

**Semiconductor Australia 2025**

In October, BluGlass partnered with the Semiconductor Sector Service Bureau (S3B) and Corporate Connect to host Semiconductor Australia 2025 – the second annual conference for the semiconductor, quantum and photonics sectors.

Attended by more than 350 in-person participants and hundreds more online, the event showcased 22 of the nation's deep-tech innovators and featured keynote presentations from industry luminaries including Australia's ninth chief scientist Dr Cathy Foley, and scientist, entrepreneur and investor Dr Simon Poole. Five expert round-table sessions covered critical discussions around essential policy frameworks, global supply chain

access, and growth capital.

"Market education has never been more important in helping Australia's investment community understand the deep-tech landscape, commercialization timeframes, and growth opportunities," comments Haden. "In an increasingly complex geopolitical environment, we are critically able to actively support the United States in restoring resilient supply and production chains in these strategic advanced technologies."

**Industry events**

During the quarter, BluGlass participated at several industry events including, as part of the Team Australia delegation, the Quantum World Congress in Washington DC, the India Defence Ministry forum in Sydney, and the Quantum Semiconductor Workshop in California.

**Fiscal Q1/2026 financials**

Revenue of $1.75m in fiscal Q1/2026 included payments under the North Carolina State University (NCSU) CLAWS Hub contract, laser orders, and foundry services for a European wafer developer. During the quarter, BluGlass received a $6.05m tax rebate for R&D activities carried out across its Australian and US facilities in fiscal year 2025.

Quarterly R&D expenses (comprising laser product development) were $2.81m, inclusive of salaries, materials and fabrication costs. Payments to related parties during the quarter were $109,000, encompassing chair and non-executive director fees.

**Outlook**

"BluGlass is continuing to advance its world-leading laser performance and innovation expertise to solve our customers' biggest challenges, at the same time as establishing critical strategic partnerships with leading OEMs, defence primes, and government agencies," says Haden. "The company's project-to-product strategy delivers growing revenues while building a long-term pipeline of laser orders as our customers' next-generation applications come to market," he adds.

"Visible GaN lasers are increasingly underpinning global mega-trends from quantum, defence, biotech, to space applications. Many of these technologies will require custom solutions that scale-up commercial usability while scaling-down in size," Haden continues. "With just a handful of GaN laser manufacturers globally, BluGlass is the only pure-play specialist offering manufacturing and packaging flexibility as well as custom development capability. The breadth and scale of our pipeline is indicative of the market opportunity ahead of us, and we continue to work hard on converting these sizeable projects."

**www.bluglass.com.au**

# BluGlass appoints Omer Granit as executive chair

BluGlass has appointed non-executive director Omer Granit as executive chair to lead a refreshed board during the next phase of the firm's commercial growth.

Chair James Walker and non-executive director Stephe Wilks have resigned from the board after being "instrumental in leading the business from its R&D roots as a semiconductor capital equipment IP company into one of Australia's only vertically integrated semiconductor manufacturers with global operations and full-suite capabilities". During their tenure they appointed laser veteran Jim Haden as CEO, acquired a Silicon Valley laser fab and launched high-fidelity visible laser and light amplification products. This has led to growing customer traction and global strategic partnerships with top-tier organizations, including as a member of the US Department of Defense's Microelectronics Commons, and the Indian Ministry of Defence.

US-based Granit is an entrepreneur, investor and lawyer with expertise in capital markets, defence and technology across the USA, Europe, and Israel.

Granit is also a partner in the New York-based investment firm EnPar Capital, and a non-executive director and investor of ASX-listed advanced manufacturing company Amaero International Ltd.

Joining the board as independent non-executive directors are:

- Robb Vujcic, a commercial barrister and corporate governance specialist with experience across corporate law, defence procurement, government contracting and international arbitration. Before joining the Bar, she was an associate at US law firm Skadden, Arps, Slate, Meagher & Flom LLP, where she advised multi-national corporations on bilateral investor-state disputes.

A former non-executive director of Amaero International Ltd (a US-based ASX-listed company specializing in advanced manufacturing and high-performance materials for the defence, aerospace, nuclear and energy sectors), Robb Vujcic oversaw significant growth and commercial traction.

- Ata Gokyildirim is a commercial executive with expertise in hands-on sales, customer and revenue growth, and commercialization.

As chief revenue officer at AI technology firm Insait IO, he has accelerated market penetration, formed strategic partnerships, and optimized product delivery. He has a record of leading high-growth tech ventures and understanding complex technology business models, operating environments, and go-to-market strategy from seed through to scale. He was previously chair of biotech company Prima BioMed (now Immutep), and has held senior executive and consulting roles including at AI-powered regulatory technology companies Forter and Sedric as well as AI platform LoudNClear.

James Walker is being retained by BluGlass in an advisory capacity to oversee ongoing strategic Australian programs.

**www.bluglass.com.au**

# NUBURU strengthens balance sheet, advances defense-tech acquisition program and revamps blue laser business

## Executing transformation plan spanning Maddox Defense drones, Tekne special-mission vehicles, and Orbit critical-infrastructure software to build unified defense-tech platform; blue laser technology business acquisition on track

NUBURU Inc of Centennial, CO, USA — which was founded in 2015 and developed and previously made high-power industrial blue lasers — says it has continued to strengthen its balance sheet during the quarter through disciplined capital deployment, selective drawdowns under its Standby Equity Purchase Agreement when beneficial, and a further reduction of legacy payables. Cash on hand remains robust as the firm strategically allocates capital to high-value defense and security growth initiatives under its transformation plan.

"We are executing precisely where we committed to investors — expanding a vertically integrated defense-tech platform while maintaining capital discipline and reinforcing our operational foundation," says executive chairman & co-CEO Alessandro Zamboni. "Our strong cash position, prudent financing approach, and clear governance model ensure that our transformation remains solid and on schedule — including our timely Form 10-Q filing."

"Tekne, Maddox Defense and Orbit each contribute unique and highly strategic capabilities which, when integrated under Nuburu Defense, establish a differentiated global defense & security platform," says Dario Barisoni, NUBURU co-CEO and CEO of Nuburu Defense LLC. "We are advancing rapidly toward controlling interests that unlock major growth potential across NATO markets and high-value mission-critical environments. The expected further acquisition in the laser sector will unlock further synergies, revitalizing our deep expertise in the blue laser technology."

Advancing acquisitions toward consolidated defense-tech platform

NUBURU says that it is delivering rapid progress across its acquisition pipeline, which collectively enables it to develop a unified dual-business model across both hardware (drones and specialized military vehicles) and software (operational resilience for mission-critical sectors):

- Maddox Defense – Advancing joint venture and acquisition initiatives involving Maddox Defense's drone portfolio targeting NATO and allied applications.
- Tekne S.p.A. – Progressing toward the strategic transaction as Tekne accelerates NATO-aligned vehicle deliveries; updated Golden Power regulatory work is underway.
- Orbit S.r.l. – Secured acquisition of 100% of the software-as-a-service (SaaS) company. An initial 10.7% equity stake has been obtained, and the firm is working to exceed 20% ownership by year-end and enable early control ahead of the stockholders meeting to accelerate SaaS commercialization.

**Revamping the blue laser technology business line**

NUBURU is advancing with the acquisition of a blue laser business, which would give it a fully operational entity including engineers, production and R&D facilities, and a customer base spanning civil and military sectors. This strategic move aims to enable seamless integration with NUBURU's current expertise and enhance its capabilities in the laser technology market.

**Market positioning and revenue outlook**

Nuburu Defense anticipates initial billings of about $500,000 in Q4 2025, forming the foundation for progressive revenue growth in 2026 as acquisitions begin consolidation and defense programs accelerate globally. The firm is positioning itself across rapidly expanding defense and national security markets including:

- electronic warfare systems;
- military-grade drone capabilities combined with the monitoring of critical infrastructures also in the civil space;
- special-purpose vehicle integration; and
- critical-infrastructure cybersecurity and resilience.

NUBURU reckons that these complementary verticals strengthen its footprint within NATO and allied environments.

Furthermore, NUBURU and Nuburu Subsidiary Inc, which is focused on blue laser technology, plan to consolidate the financial accounts of the projected acquisition by the end of the year.

**Governance and organizational enhancements**

NUBURU says that it is continuing to strengthen group functions to support the consolidation of new businesses, including:

- the appointment of a financial controller to enhance planning and acquisition accounting;
- the establishment of a revenue office to support subsidiaries and acquisitions;
- the creation of a new internal tech think-tank unit.

**Looking ahead**

NUBURU says it continues to focus on:

- finalizing strategic acquisitions and consolidating them into the group's financial accounts;
- completing regulatory processes on schedule;
- developing synergies among acquired businesses to create a unique, scalable platform;
- enhancing shareholder value via effective operational execution.

www.nuburu.net

# NUBURU executes first tranche of Tekne financial program

## First phase of €15m support package towards strategic-interest goal, industrial cooperation, and expanded global defense operations

NUBURU Inc of Centennial, CO, USA — which was founded in 2015 and developed and previously manufactured high-power industrial blue lasers — has executed the €2m first tranche of financial support for Tekne S.p.A. (a provider of integrated electronic warfare and cyber capabilities in military vehicles), following the updated Tekne agreement announced 12 November.

The funding — facilitated through the Inventory Monetization platform powered by Supply@ME Capital Plc — marks the first phase of NUBURU's broader €15m structured commitment to strengthen Tekne's working capital, financial position, and long-term industrial capabilities.

Both companies confirm that progress across all elements of the renewed strategic partnership remains fully on track, including industrial cooperation, financial support, and joint go-to-market initiatives.

"This milestone reinforces our long-term strategic vision and the deep industrial alignment between our companies," says NUBURU's executive chairman & co-CEO Alessandro Zamboni. "The cooperation on joint innovation, market expansion, and defense-sector initiatives is advancing seamlessly. We look forward to accelerating this momentum as we continue building a unified defense and security platform across Italy, Europe, and the Americas."

Key strategic workstreams & partnership progress is listed as:

- Joint Global Go-to-Market Execution — Progressing exclusive distribution plans for Tekne's products & solutions in the Americas while coordinating on NATO, MENA, and APAC project opportunities.
- Operational Integration & Shared Capabilities — Combining Tekne's engineering, production facilities, and specialized personnel with NUBURU's project guarantees, technology stack, and international market access.
- Innovation and Co-Investment — Joint development programs in mobility, defense, laser-based systems, battlefield resilience, and critical-infrastructure security.
- Strategic-Interest Shareholding & Remaining Financial Support — Advancing toward the €13m convertible shareholder loan and NUBURU's first-step acquisition of a 2.9% equity stake in Tekne. The conversion and path to a wider strategic-interest stake remain subject to the Italian Government review under the Golden Power regulation.
- Golden Power Notification & Drone JV — Preparation is underway for a new Golden Power notification by year-end, aligned with the planned joint venture with Maddox Defense Inc to develop and deploy unmanned aerial systems (UAS) for military and commercial use.

**Next milestone: network contract (Contratto di Rete)**

The companies expected to finalize the Italian 'Network Contract' by 30 November. This legal framework will formalize shared operational resources, coordinated R&D, and integrated commercial execution.

NUBURU says that, together, these milestones underscore its expanding role as a transatlantic defense and security provider, combining advanced laser technology, mobility platforms, drone systems, and resilience software into a unified ecosystem.

**www.teknespa.it**
**www.nuburu.net**

# Voyant appoints former Valeo exec Nouvel as CEO

## On-chip FMCW LiDAR firm transitions from development to large-scale commercialization of silicon photonics-based sensing technology for physical AI

Voyant Photonics of Long Island City, NY, USA — a pioneer in on-chip frequency-modulated continuous wave (FMCW) light detection & ranging (LiDAR) — has appointed Clément Nouvel as chief executive officer. He joins at a pivotal stage as the company transitions from development to large-scale commercialization of its silicon photonics-based sensing technology, enabling machines to autonomously perceive and understand their environments with millimeter precision demanded by the emergence of physical AI.

Nouvel has nearly a decade of experience in LiDAR and automotive sensing at Valeo, where he led multiple initiatives from business development through R&D and production. Having seen the scalability challenges of traditional LiDAR systems firsthand, he now brings his technical insight and operational expertise to a company focused on active sensing.

"LiDAR enabled the first wave of autonomous vehicles," notes Nouvel. "Voyant's on-chip FMCW technology will enable the second wave — autonomous everything. But the challenges are multiple, and purpose-built solutions are required. The era of physical AI demands sensing that's not just accurate but scalable, affordable and ready to deploy across thousands of applications in diverse operating environments," he adds. "At Voyant, we are building the core technology that will enable these applications."

Voyant is shifting from an R&D-driven startup to a deployment-ready technology platform designed for real-world adoption across multiple industries. While early LiDAR innovation focused on vehicles, Voyant's mission is to bring spatial awareness to all machines that interact with the physical world. Applications range from factory and warehouse robots to drones, smart infrastructure, and wearable AR devices.

**Clement Nouvel.**

Artificial intelligence has made leaps in reasoning and perception, yet machines still rely on limited, often costly and bulky sensing systems. As autonomous systems proliferate across manufacturing, logistics, robotics, infrastructure, and mobility, the need for scalable, high-quality spatial data is becoming the defining challenge.

As the boundaries between the digital and physical worlds blur, Voyant says that its on-chip LiDAR enables machines not just to see but to understand motion, depth, and context, which is foundational for the next generation of intelligent systems.

"Intelligence without high-quality spatial data is incomplete," says Nouvel. "The limiting factor isn't AI itself — it's what AI can make sense of. We need systems that can leverage the reasoning power of AI by providing them with more data for depth, velocity and precision."

### LiDAR on silicon for chip-scale economics

Existing LiDAR systems are typically large, expensive and difficult to scale. By contrast, Voyant claims that its fully integrated on-chip approach delivers a breakthrough in sensing performance and scalability with chip-scale economics reminiscent of other application areas such as image sensors, GPUs, and GPS. Key to this performance and scaling are:

- FMCW LiDAR for velocity and distance in one frame: Unlike time-of-flight (ToF) LiDAR, Voyant's FMCW architecture simultaneously captures motion and depth — providing 'superhuman perception' even in bright sunlight or adverse conditions.
- On-chip beam steering: Proprietary libraries already allow a complete, solid-state system on a single silicon photonics chip. Thousands of integrated optical switches enable precise beam steering without bulky moving parts.
- Mass-manufacturable architecture: Designed for billion-unit scalability, Voyant's photonics platform mirrors the economics of camera sensors, bringing high-performance 3D sensing within reach of virtually any device.

Voyant has demonstrated silicon performance and yield with its initial Carbon products and will be delivering the first of its solutions in 2026. Initial pricing starts at $1490 per unit.

**www.voyantphotonics.com/news/817**

# Tower extends 300mm wafer bonding technology across SiPho and SiGe BiCMOS

## Wafer-scale 3D-IC technology unlocks integration of SiPho and EIC processes for emerging applications such as co-packaged optics, including full support by Cadence design tools to the stacked platform technology

Specialty analog foundry Tower Semiconductor Ltd of Migdal Haemek, Israel has announced the expansion of its existing, mature 300mm wafer bonding technology (originally developed and in mass production for stacked BSI image sensors) to enable heterogeneous 3D-IC integration across its silicon photonics (SiPho) and silicon germanium (SiGe) BiCMOS processes, including full support by Cadence design tools for the stacked platform technology. The new offering is said to represent a step forward in extending wafer-scale 3D integration, requiring simultaneous use of multiple process design kits (PDKs), to new domains beyond image sensing, addressing the growing market demand for compact, high-performance systems for data-center applications.

Building on years of high-volume stacked sensor production on 200mm and 300mm wafers, Tower's wafer bonding technology enables stacking wafers (for example, SiPho (PIC, photonic IC) and SiGe (EIC, electronic IC)) to create fully integrated 3D-ICs at the wafer scale. This capability integrates application-specific functions from different process technologies into a single high-density chip, delivering greater functionality and performance in a smaller form factor. This wafer-scale 3D-IC technology supports emerging applications such as co-packaged optics (CPO), which combines PICs and EICs, where compact, high-performance integration is essential.

"Our long-standing experience in high-volume wafer stacking for CIS technologies has laid the foundation for this next stage of 3D integration," says Tower's president Dr Marco Racanelli. "With our advanced 300mm wafer bonding process now supporting multiple wafer technologies on a single 3D-IC, we are enabling customers to achieve new levels of performance, functionality and integration density needed for CPO."

Tower has already demonstrated the wafer bonding process's precision alignment and reliability. Complementing the process technology, Tower has collaborated with Cadence Design Systems to extend their Virtuoso Studio Heterogeneous Integration flow, which allows co-simulation and co-verification of multiple process technologies within a unified design environment. This enhanced design enablement capability is now available for customers to use as a reference flow.

"Tower Semiconductor and Cadence have joined forces to provide a comprehensive design flow for multi-technology stacked die," says Dr Samir Chaudhry, Tower's VP of customer design enablement. "This enables designers to lay out, check connectivity, and fully simulate 3D-IC and wafer-bonded chips built from multiple technology platforms, all within a single Cadence design project. Compatible with Tower Semiconductor SiGe BiCMOS and SiPho PDKs, the new 3D-IC design flow is now fully supported by both companies, greatly improving first-pass success on complex multi-technology die projects," he adds.

"Cadence and Tower have successfully collaborated for over two decades, helping our mutual analog IC customers achieve first-pass success with their complex designs," says Ashutosh Mauskar, VP product management for the Custom Design and System Design and Analysis products at Cadence. "The validation of the Heterogeneous Integration flow, which supports die-to-wafer and wafer-to-wafer applications for PIC/EIC sub-systems using Tower technology, means our mutual customers can count on a robust and unified technology flow to help them deliver quality products on time."

Tower reckons that this expansion reinforces its role in 3D-IC and heterogeneous integration, delivering advanced analog solutions that accelerate innovation across next-generation markets.

**www.towersemi.com/technology**

# Interposer firm NcodiN raises €16m in seed funding

## Funding for product development, engineering hires, CMOS pilot line on 300mm wafers & build-out of supply chain and customer partnerships

NcodiN of Palaiseau, France (which was founded in 2023 to pioneer optical interposer technology with integrated nanolasers for next-generation computing) has secured €16m in an oversubscribed seed financing round.

The funding will propel NcodiN from R&D to industrial scale, enabling to develop product development, key engineering hires to support the industrialization of its technology in a CMOS pilot line on 300mm wafers, and the build-out of its supply chain and customer partnerships.

The equity round was led by MIG Capital, with participation from Maverick Silicon, PhotonVentures, and Verve Ventures, alongside continued support from existing backers Elaia, Earlybird, and OVNI.

**Transforming the future of AI hardware**

NcodiN is developing NConnect, a new generation of photonic interposers designed to overcome the 'copper wall' — the performance and energy limits of electrical interconnects that constrain AI systems. At its core is what is claimed to be the world's smallest laser, enabling dense integration on silicon and unprecedented scalability without disrupting existing processor architectures.

This allows chip-makers to pack supercomputer-level power into a single processor, paving the way for faster, more efficient AI hardware. This fundraising will accelerate industrialization of the platform, including an industrial pilot to demonstrate compatibility with advanced packaging techniques.

With this round, NcodiN will also establish a Silicon Valley presence, expand its R&D capacity, and scale its team in preparation for large-scale manufacturing partnerships — bringing new technology to break the copper wall and redefine AI hardware performance.

"We are delivering the missing piece for the industry's most pressing challenge: enabling extremely high memory bandwidth to power the AI factories of tomorrow," says CEO & co-founder Francesco Manegatti. "Our technology unlocks wafer-scale superchips by providing the most energy-efficient interconnects for networking across tens of chiplets — an essential component in the architectures everyone is chasing. As new generations of GPUs and AI accelerators emerge to keep pace with rapidly evolving GenAI algorithms, NcodiN is laying the photonic foundation that makes them possible," he adds.

"Memory bandwidth has become a defining bottleneck in AI, with copper interconnects struggling to deliver the reach and efficiency required for next-generation systems," comments Josh Mine of Maverick Silicon. "NcodiN's photonic interposers unlock memory bandwidth and capacity beyond copper's limits."

**Building on momentum**

Over the past 18 months, NcodiN has demonstrated proof-of-concept nanolasers with record energy efficiency below 0.1pJ/bit, integrated nanodetectors, and full optical links, all on silicon. In parallel, it established an independent cleanroom that now serves as a hub for rapid prototyping and joint development with industry partners.

To strengthen its foundation, NcodiN has expanded its network of strategic advisors, welcoming, among others, Eli Yablonovitch, Gus Yeung and Peter de Dobbelaere.

Physicist Yablonovitch (professor in the Graduate School at UC Berkeley) is a pioneer of photonic crystals, and cofounder of Luxtera, Ethertronics, Luminescent, and Alta Devices. Yeung previously served as general manager at ARM, where he spent almost 20 years helping it to grow and establishing ARM as the reference design platform for today's CPUs. He also served as CTO at Intel Foundry Services, driving the organizational and technological transformation required to serve world-class external customers. de Dobbelaere is a seasoned silicon photonics engineer, who played a central role in Luxtera's rise as the first major success story in this industry.

"NcodiN is addressing the next big opportunity in silicon photonics, the silicon photonic interposer, which permits high-bandwidth communication in a multi-chip system, particularly for AI and machine learning," says Yablonovitch. "To do this, they embed high-performance nanolasers in silicon, thereby combining physics elegance with manufacturability. This has the likelihood of revolutionizing all future large-scale cyber systems," he adds.

"NcodiN is working at the center of the AI infrastructure market, a sector experiencing rapid, significant growth driven by the surging demand for generative AI, the proliferation of big data, advancements in specialized hardware like GPUs, and the widespread adoption of cloud computing," says Dr Oliver Kahl, principal at MIG Capital. "The company's ambitious team is shaping and empowering the future of computing to drive innovation across multiple industries," he adds.

"At Elaia, we've been proud backers of NcodiN since it's early days when it was a CNRS spin-off," notes Clément Vanden Driessche, a partner at Elaia. "While copper interconnects struggle to keep up, NcodiN is rewriting the rules with the world's smallest laser and a revolutionary optical network. This isn't just innovation; it's the key to unlocking the next leap in AI and hyperscale performance."

**www.ncodin.com**

# GlobalFoundries acquires Advanced Micro Foundry to expand silicon photonics AI infrastructure portfolio

## GF to establish silicon photonics R&D center of excellence in Singapore, partnering with A*STAR

GlobalFoundries of Malta, NY (GF, the only US-based pure-play foundry with a global manufacturing footprint, including facilities in the USA, Europe and Singapore) has announced the acquisition of commercial pure-play specialty silicon photonics foundry Advanced Micro Foundry Pte Ltd (AMF) — a spin-off of the Institute of Microelectronics (IME), a research institute of Singapore's Agency for Science, Technology and Research (A*STAR) — marking what is described as a pivotal step in GF's strategy to advance innovation in silicon photonics. The acquisition will expand GF's silicon photonics technology portfolio, production capacity and R&D in Singapore, complementing its existing technology capabilities in the USA and unlocking new market opportunities with a broader set of data-center and communication technologies.

The acquisition brings together AMF's manufacturing assets, extensive intellectual property and skilled labor to significantly expand GF's silicon photonics technology and establish it as the largest silicon photonics pure-play foundry by revenue. Leveraging over 15 years of AMF's manufacturing expertise, GF will address demands in long-haul optical communications, computing, LiDAR and sensing on AMF's 200mm platform in Singapore, with plans to scale to 300mm as market needs grow, ensuring reliable global supply for AI data centers, communications and next-generation applications.

As GF continues to expand its US manufacturing capacity for silicon photonics in New York, the acquisition accelerates the ramp of GF's Singapore operation, enhancing supply chain resilience and enabling customers to source secure, differentiated solutions from multiple geographies.

"Silicon photonics technology is essential for AI infrastructure. As data moves faster and workloads grow more complex, the ability to move information with greater speed, precision and power efficiency is now fundamental to AI data centers and advanced telecom networks," says GF's CEO Tim Breen. "Acquiring AMF enables GF to deliver an expanded, and differentiated, decade-long roadmap for pluggable transceivers and co-packaged optics, while accelerating growth of photonics into adjacent markets such as automotive and quantum computing."

In line with the acquisition, GF plans to establish a silicon photonics R&D center of excellence (CoE) in Singapore. This will partner with A*STAR to advance GF's innovation roadmap by focusing on next-generation materials for ultra-fast data transfer at 400Gbps speed. This collaboration should enhance the company's silicon photonics platform to provide high-performance, secure data-transfer solutions to customers worldwide.

"AMF and GF share a vision of innovation and close customer partnerships to deliver differentiated solutions," says AMF's CEO Jagadish CV. "With complementary technology portfolios, we are proud to join forces with a trusted manufacturer with global reach and, together, look forward to advancing silicon photonics technology for a broader range of markets and customers."

**www.advmf.com**
**www.gf.com**

# Sivers details strategic partnership with POET to deliver light engines for AI infrastructure

## Collaboration combines DFB lasers with Optical Interposer to deliver scalable, energy-efficient light sources

Sivers Semiconductors AB of Kista, Sweden has announced additional details on the strategic partnership with POET Technologies Inc of Toronto, Ontario, Canada.

As AI data-center connectivity scales from 800Gbps toward 6.4Tbps and beyond, traditional pluggables based on externally modulated lasers (EMLs) are reaching their performance limits, note the firms. In parallel, next-generation GPU architectures are driving demand for co-packaged optics (CPO) supported by external light sources (ELS).

"The resources needed to enable future high-speed connectivity have shifted the balance toward innovative technologies like CW [continuous wave] lasers, driving the evolution of pluggables, as well as the revolution of CPO," says Sivers' CEO Vickram Vathulya. "With our differentiated laser portfolio, Sivers is well-positioned to capture opportunities in a vastly expanded serviceable market," he reckons. "Partnering with POET strengthens our technical roadmap and integration capabilities, delivering 'plug-and-play' light engine sub-systems that help customers increase time to market and scale efficiently as AI demands continue to grow."

Sivers' latest collaboration combines its distributed feedback (DFB) laser technology with POET's Optical Interposer platform to deliver high-performance, scalable light engine solutions deployable for future generations of pluggable transceivers and enabling external light sources (ELS) for CPO-based solutions.

"We're excited to collaborate with Sivers Semiconductors to combine two complementary technologies that address the growing demands of AI and hyperscale data centers," says POET's chairman & CEO Dr Suresh Venkatesan. "By pairing our Optical Interposer platform with Sivers' lasers, we can deliver highly integrated, scalable and energy-efficient light sources to meet the connectivity demands of the rapidly evolving AI data-center market."

The strategic partnership positions Sivers Semiconductors and POET Technologies to address the rapidly growing AI optical connectivity market. Prototypes are expected to be demonstrated to customers in first-half 2026, with production readiness targeted for the end of 2026.

**www.poet-technologies.com/technology**
**www.sivers-semiconductors.com/sivers-photonics/device-types**

# Oxford Instruments' plasma processing equipment enabling Coherent to ramp up 6-inch InP fabs

UK-based Oxford Instruments says that it is playing a key role to support the industry's first fully automated 6-inch indium phosphide (InP) wafer fabrication capability for photonic devices, led by compound semiconductors and optical networking solutions provider Coherent Corp of Saxonburg, PA, USA.

The firm says that its plasma processing equipment is central to Coherent ramping up 6-inch InP fabs in Sherman, Texas, and Järfälla, Sweden, which will play a pivotal role in driving advancements in AI data-center, telecoms and sensing applications. Coherent's transition to 6-inch wafers is set to deliver significant benefits, including a substantial increase in capacity, lower die cost and more than four times the number of devices per wafer.

Oxford Instruments has supplied fully automated, high-throughput 6-inch InP processing equipment, enabling Coherent to achieve the productivity gains. The equipment is designed to support the transition from 800G to 1.6T products, a key requirement to meet the growing demands of AI interconnects and optical communications.

"We have been the leading supplier of InP plasma etch equipment to the datacom market, and Coherent, for many years," says Matt Kelly, managing director, Oxford Instruments Plasma Technology (OIPT) of Yatton, near Bristol, UK. "Our technology, with the quality, throughput and reliability that we have developed alongside excellent service, is ideally positioned to support the current device demand inflection we are seeing with the release of generative AI applications… We look forward to continuing to develop and release innovative and valuable plasma processing solutions," he adds.

"Coherent's move to 6-inch InP wafer fabrication marks a transformative milestone for the industry," says Dr Beck Mason, executive VP – semiconductor devices at Coherent. "Oxford Instruments' expertise in plasma processing has been essential in enabling our Sherman and Järfälla fabs to reach world-class performance," he adds. "Together, we are advancing InP technology to support faster networks, greater efficiency, and the new applications that will define the future of connectivity."

**www.Coherent.com**
**www.plasma.oxinst.com**

# Ascent Solar and CisLunar team to bring longer-lasting power solutions to US space market

## CIGS PV technology to be paired with high-efficiency power conversion technology

Ascent Solar Technologies Inc of Thornton, CO, USA – which designs and makes lightweight, flexible copper indium gallium diselenide (CIGS) thin-film photovoltaic (PV) panels that can be integrated into consumer products, off-grid applications and aerospace applications – has signed a teaming agreement with CisLunar Industries of Loveland, CO, USA, which develops scalable hardware and embedded control software for power conversion and conditioning.

The agreement aims to bring each of the Colorado-based companies' technologies together to achieve mutually beneficial spaceflight goals that support their competitive positioning for current and future space missions with various US space organizations including NASA, the Department of Defense, Space Force and other national security space stakeholders.

Ascent's thin-film PV technology, paired with CisLunar's high-efficiency power conversion technology, will support durable, long-lasting power solutions intended to keep space vehicles functional longer, thus increasing the potential mission length for commercial, civil and defense space missions. The technological union comes at a crucial time when US space organizations are actively seeking out shipment-ready, energy-efficient power solutions to bolster mission length and efficiency in a timely fashion.

"Our nation's space leaders continue to seek out viable power solutions that they can rely on to remain functional in the face of both the punishing, natural elements of space, and the growing defense threats from foreign adversaries," says Ascent Solar's CEO Paul Warley. "The combination of our two technologies offers superior power systems that meet the needs of today's space market by offering distributed power solutions that lead to improved vehicle and mission longevity," he adds.

"By leveraging each other's technological capabilities, industry expertise, and production capacity, CisLunar Industries and Ascent Solar offer a hungry space market a highly advantageous power solutions package," believes CisLunar Industries' CEO Gary Calnan. "This agreement allows each of our companies to bring a wider, more robust array of offerings to potential customers while maintaining our focus on energy efficiency and swift delivery capabilities."

**www.AscentSolar.com**
**www.cislunarindustries.com**

# Ascent provides space company with PV modules for power generation testing in cislunar space

## Preliminary findings show promising results

Ascent Solar says that it recently provided test modules to a leading space company.

The modules are currently being tested for their ability to generate power for spacecraft in cislunar space, the region of space between the Earth and the moon. Preliminary findings have shown promising results for the technology's capabilities.

Reaching the moon requires significantly more energy than achieving low Earth orbit for space vehicles. Ascent's solar power generation products are being evaluated in trade studies like these and others to help maximize space vehicle mission capabilities without adding mass that could weigh vehicles down.

"Equipping a spacecraft with Ascent's thin-film solar arrays that can endure the extreme radiation found in deep space enables mission designs that can go farther, accomplish more, and operate longer on the lunar surface and beyond," says CEO Paul Warley. "Our manufacturing processes have been continuously refined for over a decade, allowing us to meet rapid delivery deadlines for customers looking to make swift decisions," he adds. "We're meeting the customer's needs with a high-efficiency, durable technology that is ready to be delivered right when they need it."

# First Solar inaugurates $1.1bn AI-enabled Louisiana manufacturing facility

## US-based annual production capacity to rise to 14GW in 2026 then 17.7GW in 2027

Cadmium telluride (CdTe) thin-film photovoltaic (PV) module maker First Solar Inc of Tempe, AZ, USA has inaugurated its new fully vertically integrated manufacturing facility in Iberia Parish, Louisiana. The $1.1bn facility, which spans about 2.4 million square feet and is about 11 times the size of the New Orleans Superdome, currently employs over 700 people and is expected to have 826 staff by the end of the year. Once fully ramped, it is expected to add 3.5GW of annual nameplate capacity, taking First Solar's American manufacturing footprint to 14GW in 2026, and 17.7GW in 2027, when a recently announced production facility in South Carolina is expected to be fully ramped.

The Iberia Parish facility began production in July, several months ahead of schedule. The accelerated timeline is said to have been driven by the passage of the One Big Beautiful Bill Act and the Trump administration's trade policies, both of which catalyzed demand for American-made solar technology that is fully compliant with anticipated Foreign Entities of Concern (FEOC) guidance. The facility, which has no dependencies on Chinese crystalline silicon supply chains, produces First Solar's Series 7 modules using American materials including glass from Illinois and Ohio, and steel produced in Mississippi and fabricated into backrails in Louisiana.

"First Solar's investment is already delivering real results for Iberia Parish and the surrounding region with hundreds of good-paying jobs and new opportunities for Louisiana workers and businesses," says Louisiana Governor Jeff Landry.

According to an economic impact analysis conducted by the University of Louisiana at Lafayette and commissioned by the Iberia Economic Development Authority (IEDA), the new facility is forecast to grow Iberia Parish's Gross Domestic Product (GDP) by 4.4% in its first full year of operations at capacity. Manufacturing roles at the facility offer an average compensation package of $90,000 per year, more than three times the per capita income in Iberia Parish.

**First Solar's new fully vertically integrated manufacturing facility in Iberia Parish, Louisiana.**

The factory is enabled by artificial intelligence (AI), using computer vision and deep learning to automatically detect defects in solar panels during production, while technicians and operators leverage AI-powered tools to make operating adjustments and guide decision making.

"Along with its sister facilities in Ohio and Alabama, this factory demonstrates how AI can be harnessed to help American factory workers reach their full potential," says chief manufacturing officer Kuntal Kumar Verma. "Our fleet offers proof that AI can help realize productivity gains that allow us to out-innovate the competition and run our operations smarter, better, and faster."

**Spanning about 2.4 million square feet,... once fully ramped, it is expected to add 3.5GW of annual nameplate capacity**

The Louisiana facility is part of what is already the largest solar technology manufacturing and R&D footprint in the Western Hemisphere and includes three fully vertically integrated manufacturing facilities in Ohio, and one in Alabama, along with R&D centers in Ohio and California.

On 14 November, the firm announced an investment in a new production line in Gaffney, South Carolina, to onshore final production processes for Series 6 modules initiated by its international fleet. Altogether, the firm, which expects to directly employ over 5500 people in the USA by the end of 2026, will have invested about $4.5bn in American manufacturing and R&D infrastructure since 2019.

Having manufactured in the USA since 2002, First Solar is the country's leading PV solar technology and manufacturing company and the only one of the world's largest solar manufacturers to be headquartered in the USA. By 2027, the firm expects to support over 30,000 direct, indirect, and induced jobs across the country, estimated to represent more than $3bn in labor income.

**www.firstsolar.com**

# First Solar selects South Carolina for new US production facility

## US-made CdTe PV capacity to expand by 3.7GW to 17.7GW in 2027, taking US capital investment to $4.5bn

First Solar is to establish a new facility in Gaffney, Cherokee County, South Carolina, to onshore final production processes for Series 6 Plus modules initiated by the company's international fleet. The firm expects to spend about $330m to establish the new facility, which is scheduled to begin commercial operation in second-half 2026. The facility is forecasted to create more than 600 new jobs with an average manufacturing salary of $74,000 per year, approximately twice the per capita income in Cherokee County.

First Solar says that the South Carolina facility — which will directly support American energy affordability goals — was catalyzed by demand for domestically produced energy technology created by the One Big Beautiful Bill Act, signed into law in July. The facility is expected to increase First Solar's capacity to produce US-made solar technology that is fully compliant with anticipated Foreign Entities of Concern (FEOC) guidance, by 3.7GW, reaching 17.7GW of annual nameplate capacity in 2027.

"We expect that this new facility will enable us to serve the US market with technology that is compliant with the Act's stringent provisions, within timelines that align with our customers' objectives," says First Solar's CEO Mark Widmar.

First Solar's investment in Cherokee County will "greatly strengthen the local economy and help advance America's energy independence," notes South Carolina's Governor Henry McMaster.

The onshored processes will transform thin-film solar cells produced by First Solar's international fleet into fully completed modules. The new facility expands the firm's footprint in South Carolina, which currently includes a distribution center in Duncan, Spartanburg County, and a longstanding partnership with Inland Port Greer. The Gaffney plant will be part of what is already the largest solar technology manufacturing and R&D footprint in the Western Hemisphere and includes three fully vertically integrated manufacturing facilities in Ohio, and one each in Alabama and Louisiana, along with R&D centers in Ohio and California. Altogether, First Solar, which expects to directly employ over 5500 people in the USA by the end of 2026, will have invested $4.5bn in US-based manufacturing and R&D infrastructure since 2019.

Having manufactured in the USA since 2002, First Solar is the country's leading PV solar technology and manufacturing company and the only one of the world's largest solar manufacturers to be headquartered in the USA. By 2027, the firm will support over 30,000 direct, indirect and induced jobs USA-wide, estimated to represent more than $3bn in labor income.

**www.firstsolar.com**

# Ascent Solar & NovaSpark to team on lightweight power solutions for drones and terrestrial defense applications

Ascent Solar Technologies Inc of Thornton, CO, USA – which designs and makes lightweight, flexible copper indium gallium diselenide (CIGS) thin-film photovoltaic (PV) panels that can be integrated into consumer products, off-grid applications and aerospace applications – has signed a teaming agreement with Louisiana- and Texas-based NovaSpark Energy, which designs and manufactures mobile hydrogen generation systems for fueling long-range drones and powering critical infrastructure.

The agreement brings the two companies' technologies together to achieve mutually beneficial goals. It packages Ascent's lightweight thin-film PV with NovaSpark's mobile hydrogen generation systems, allowing customers to airdrop NovaSpark equipment into a battlefield or disaster zone to power terrestrial applications including drones and other military devices for the US Army, Marines, Navy, as well as other national security stakeholders.

"Our thin-film solar technology is now being deployed everywhere: land, sea, air and space," notes Ascent Solar's CEO Paul Warley. "The need for lightweight, durable and reliable solar technology spans a vast spectrum of applications in both the defense and commercial sectors, both of which are considered high growth for emerging technologies. We're meeting their needs with a proven solution that is ready for scalable production and delivery at rapid speeds," he adds.

"Ascent's lightweight solar technology helps make our mobile hydrogen generation systems nimble, air-droppable, and easily deployable whenever and wherever needed," notes NovaSpark Energy's CEO Rick Harlow. "This capability not only enables defense providers to deliver clean, reliable power to the edge of operations with minimal effort but also allows rapid deployment for disaster recovery and mobile hydrogen production across commercial and critical infrastructure applications."

**www.AscentSolar.com**

# Hidden powerhouse: South Wales, at the heart of the global compound semiconductor industry

**Howard Rupprecht, managing director of CSconnected, highlights the global role of the South Wales-based compound semiconductor cluster.**

South Wales is home to the world's first compound semiconductor cluster, a complete ecosystem spanning epitaxy, wafer and device fabrication, packaging, equipment manufacturing, and end-use applications. Few places globally can match this breadth, which enables the region to serve the entire value chain from prototyping to high-volume manufacturing.

Including gallium nitride (GaN), indium phosphide (InP) and gallium arsenide (GaAs), compound semiconductors are the enabling materials behind today's most advanced technologies—powering 5G networks, photonics, power electronics, and emerging quantum systems.

While global attention often gravitates towards Asia or Silicon Valley, South Wales has quietly established itself as a hidden powerhouse. The cluster not only delivers critical technologies into global supply chains but also drives regional transformation through high-value careers, skills development, and long-term economic growth.

## The rise of the South Wales compound semiconductor cluster

South Wales's transition from traditional industries (such as steel) into advanced technologies was anchored by academic excellence at Cardiff University and Swansea University. In 2015, this talent base formed the world's first compound semiconductor cluster under the CSconnected brand umbrella.

Key players include IQE, KLA, Vishay, and Microchip. This has also given way for scale-ups such as MicroLink Devices, Kubos Semiconductors, and Ffotoneg.

Support from the UKRI Strength in Places Fund (SIPF) and Cardiff Capital Region (CCR) has helped to develop strategic infrastructure, skills pipelines, and investment in local supply chains. These efforts reinforce the cluster's success not just as a co-location, but as a purpose-aligned ecosystem uniting academia, government and industry, collaborating on innovation, productivity and global leadership.

## Strategic global importance of the cluster

The global contribution of the cluster extends across the value chain, from next-generation chip materials to device manufacturing and integration.

In a geopolitical climate dominated by supply chain fragility and strategic recalibration, the resilience of the South Wales cluster stands out. The region now exports over 90% of its output, totalling around £466m in 2024. These exports support the UK trade and industrial strategy, reinforcing domestic supply chain independence.

This integrated ecosystem is built on firms ranging from global leaders to innovative scale-ups. Among them, IQE stands out as a flagship: a Cardiff-headquartered company whose epitaxial wafer technologies underpin devices used worldwide

## IQE — pioneering epitaxial wafer foundry services

As the world's leading independent supplier of advanced compound semiconductor wafers, IQE epitomizes the South Wales cluster's global importance. The company has a global footprint but is headquartered in Cardiff. IQE provides epiwafer foundry services to many of the world's largest semiconductor manufacturers. These epitaxial layers are the enabling building blocks for devices powering 5G infrastructure, smartphones, data centers, photonics, and high-performance computing.

From a technical perspective, IQE's expertise spans multiple material platforms including GaAs, InP, and GaN. Each plays a distinct role in meeting market demand:

- GaAs for high-efficiency power amplifiers in smartphones and wireless networks;
- InP for high-speed optical devices that underpin cloud computing and AI data flows;
- GaN for high-power, high-frequency devices essential to both radio frequency applications and next-generation power electronics.

Strategically, IQE's roadmap demonstrates how South Wales is aligning with global megatrends. For example, the extension of GaN-on-silicon technology from well-established radio frequency applications into power semiconductors positions IQE to support the rapid growth of electric vehicles (EVs). Today, many EV power electronics rely on silicon carbide (SiC); IQE's work on GaN-on-Si offers the potential for devices with higher efficiency, lower cost, and easier scaling.

This dual lens — technical innovation, coupled with market alignment — highlights the South Wales cluster's global relevance. IQE's ability to adapt material science breakthroughs into commercial wafer platforms mirrors the region's wider strength: combining academic excellence with industrial scale to anticipate and serve the needs of tomorrow's technologies.

**Cleanroom at IQE's Newport facility. (Photo courtesy of IQE.)**

## Economic and social impact on South Wales

As the representing body of the cluster, CSconnected's mission is to support the growth of the Welsh compound semiconductor industry. The cluster supported 1806 direct jobs across core firms and 2748 jobs across the Welsh economy in 2024; a 28% increase in direct employment since 2021.

In addition, cluster jobs are highly skilled and well paid; reflecting the value of this high-productivity sector. This is a high-value, knowledge-intensive industry creating so-called 'sticky jobs' – roles that are deeply rooted in place, due to the enormous capital investment and long lead-times involved in setting up a semiconductor fab. For instance, Vishay (formerly Newport Wafer Fab) has been operational in the region since 1982 and is still thriving more than four decades later. These aren't throwaway gigs, they're resilient, future-focused careers.

Globally, the semiconductor industry is facing a talent shortage of 250,000 to 300,000 people by 2030. And this is where Wales thrives. There are two excellent universities across Cardiff and Swansea, producing high-level graduates every year in relevant fields like material science and physics.

CSconnected is also building out the vocational and apprenticeship pipeline for skilled technical roles. And critically, offering a lifestyle that's hard to beat; affordable living, beautiful landscapes, and a growing tech ecosystem with multiple employers clustered together, reducing risk and offering long-term career pathways.

While the US is pouring money into fabs, it may struggle to find talent due to tightening immigration and a lack of domestic graduates. Wales has a unique offer: a place where people want to live, work, and build careers. This strength in attracting and retaining talent doesn't just support the industry itself, it underpins a broader economic ripple effect.

With this level of impact already achieved, the opportunity now is to scale it further. It is clear that the cluster's contribution to regional prosperity is substantial: cumulative gross value-added (GVA) reached £255m in 2024. This wealth is typically reinvested into regeneration, high-value career creation, and economic diversification, which is particularly transformational in communities previously dependent on declining industries.

To build on this success, the UK must treat the compound semiconductor industry as a strategic priority. Sustained investment and commitment will help to fuel the skills development and infrastructure needed to maintain momentum. A prime example is the £250m investment by Vishay Intertechnology into Newport Wafer Fab, the UK's largest semiconductor facility, which is set to bring skilled job opportunities across a broad range of skills (including manufacturing and engineering) to South Wales. Vishay's investment is expected to directly support over 500 high-value, high-skilled jobs in the region and indirectly support hundreds more in the wider supply chain.

This kind of long-term industrial commitment is being matched by growing government ambition. Recently, the UK Government has pledged to grow its annual R&D spending by £2.26bn annually by 2030, with funding into the compound semiconductor industry

anticipated. There has also been a commitment of an £86bn boost to science and technology, which should give regions the power to carry out important and innovative research.

While this is an encouraging step, to unlock the potential of this investment it must flow across the entire lifecycle of semiconductors including manufacture and the accompanying supply chain. One example of this kind of targeted support is the Supply Chain Development Programme, launched by CSconnected and supported by Cardiff Capital Region — see **https://businessnewswales.com/building-a-thriving-ecosystem-within-south-wales-semiconductor-supply-chain-initiative**. The initiative is already helping to strengthen critical links in South Wales' semiconductor ecosystem by funding collaborative projects that enhance manufacturing capabilities and supply chain resilience.

## Innovation and R&D leadership

Capabilities in the region go beyond manufacturing. The region hosts world-class R&D infrastructure: Cardiff University's Institute for Compound Semiconductors, Swansea University's Centre for Integrative Semiconductor Materials, the Compound Semiconductor Applications Catapult (CSA Catapult), and the translational facilities across the cluster.

CSA Catapult alone has engaged in over 156 projects between 2019 and May 2024. It has supported 1325 FTE jobs created and 3393 jobs safeguarded, with R&D revenue reaching nearly £4.5m in 2023–2024 (see csa.catapult.org.uk).

These success stories underscore an ecosystem where academic innovation is rapidly commercialized. Collaborative R&D accelerates technology readiness, creates high-quality jobs, and offers firms direct access to world-leading facilities and expertise.

## Looking ahead

South Wales has emerged as a global leader in compound semiconductors — not through scale, but through a purpose-built, innovation-driven cluster. Anchored by companies like IQE, world-class research institutions, and infrastructure powered by SIPF and CCR, the region delivers technologies vital to connectivity, clean energy, and advanced computing.

With high-value jobs, £255m GVA, £466m in exports, and rising employment, the cluster is an economic anchor. Continued investment, collaboration and regional supply chain integration will be essential to sustain this trajectory. As global demand for compound semiconductors accelerates, South Wales stands not only as a region transformed — it stands as the hidden powerhouse shaping tomorrow's technologies. ■

***Author**: Howard Rupprecht, managing director, CSconnected*

Howard Rupprecht was appointed managing director of CSconnected in March 2024. With over 35 years of experience in the global electronics and semiconductor sectors, he combines deep technical expertise with strategic insight into investment, supply chain development, and stakeholder engagement.

Rupprecht's career began in electronics manufacturing at Lucas Electronics, before moving into international sales, marketing and business development for advanced production equipment in Silicon Valley. He later held senior leadership roles at VTT Technical Research Centre of Finland, where he specialized in technology commercialization and ran the Micronova R&D fab, Northern Europe's largest semiconductor research facility.

Returning to the UK, Rupprecht joined Rockley Photonics to build semiconductor supply chain capabilities and now supports cluster growth at CSconnected — helping to attract investment, promoting local, regional and national economic impact, and raising awareness of the semiconductor industry's importance.

# The CSconnected compound semiconductor cluster

CSconnected is a £43m project focused on expanding the South Wales compound semiconductor industry. As the world's first compound semiconductor cluster, CSconnected brings together a unique community of academic institutions, prototyping facilities, and global high-volume manufacturing capabilities. This collaboration fosters cutting-edge research, innovation and global leadership, positioning Wales and the UK to compete globally in critical sectors such as 5G communications, autonomous and electric vehicles, advanced medical devices, sustainable technology and next-generation consumer electronics.

Through strategic collaborations and continuous investment in research and development, CSconnected is committed to maintaining Wales's position at the forefront of the global semiconductor industry, driving economic growth and technological innovation.

**www.csconnected.com**
**LinkedIn: CSconnected**

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

## www.semiconductor-today.com

**Join our LinkedIn group: Semiconductor Today**

**Follow us on Twitter: Semiconductor_T**

## Choose *Semiconductor Today* for . . .


### MAGAZINE

Accurate and timely coverage of the compound semiconductor and advanced silicon industries

Targeted 107,000+ international circulation

Published 10 times a year and delivered by e-mail and RSS feeds


### WEB SITE

Average of over 28,000 unique visitors to the site each month

Daily news updates and regular feature articles

Google-listed news source


### E-BRIEF

Weekly round-up of key business and technical news

E-mail delivery to entire circulation

Banner and text marketing opportunities available

# P-type layer etch for enhanced deep UV LEDs

**Researchers have achieved a 10.9% increase in light output power.**

Researchers in China have reported on the potential for enhancing the performance of aluminium gallium nitride (AlGaN) deep ultraviolet (DUV) light-emitting diodes (LEDs) by etching away DUV-absorbing portions of the hole injection structures [Hualiang Qiu et al, J. Appl. Phys., v138, p145702, 2025)].

DUV LEDs are being developed to replace mercury DUV sources for applications such as sterilization, medical treatment, and biological detection. The hope is to develop more efficient, compact, robust and environmentally friendly DUV sources.

Presently, DUV LEDs suffer from low wall-plug efficiency (WPE) due at least in part from low light-extraction efficiency (LEE). One of the main culprits for absorbing DUV is the p-type layers needed for hole injection into the light-emitting regions for recombination with electrons to produce DUV light.

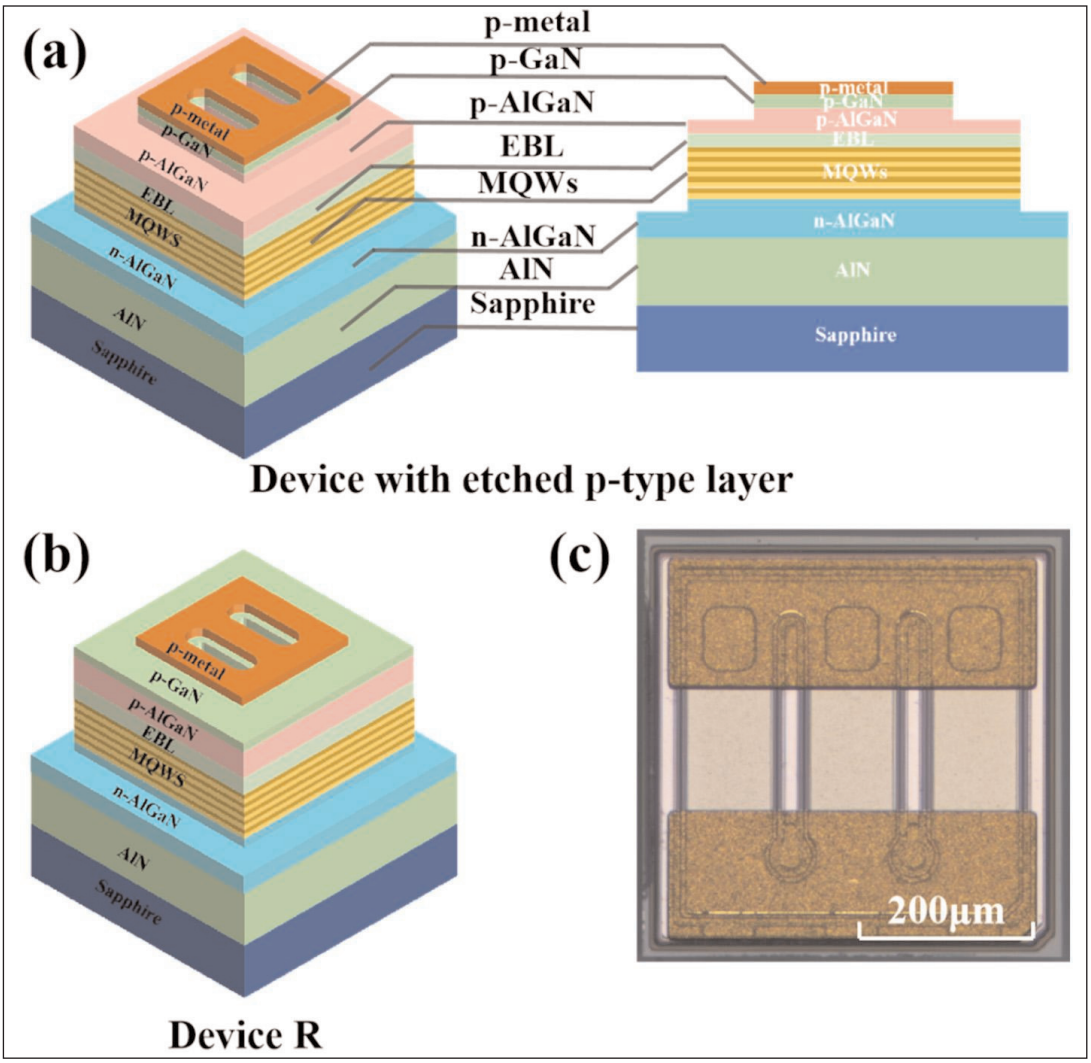



**Figure 1. (a) Three-dimensional and cross-sectional schematics of DUV-LEDs with etched p-type layer (devices 1–3). (b) Three-dimensional schematic of conventional DUV-LEDs, reference 'device R'. (c) Microscope image of conventional DUV-LED.**

The ohmic contact with metal electrodes needs p-GaN rather than p-AlGaN for hole injection. Unfortunately, p-GaN is highly absorbing of DUV, due to its bandgap energy (of order 3.4eV) being less than the DUV photon energy (280–200nm, 4.4–6.2eV).

Etching away the DUV-absorbing material can increase LEE, but at the cost of reducing the internal quantum efficiency (IQE) as a result of etching defects, and increased series resistance.

The team from Shanxi University, Hebei University of Technology, Institute of Semiconductors, University of Chinese Academy of Sciences, Advanced Ultraviolet Optoelectronics Co Ltd, and North University of China, comment: "The optimal p-type etching process for DUV-LEDs with an ultra-thin p-type layer must balance the enhanced LEE against the reduced IQE and carrier injection efficiency."

The AlGaN material for the DUV-LEDs (Figure 1) was grown using metal-organic chemical vapor deposition on sapphire. The active region was a five-period

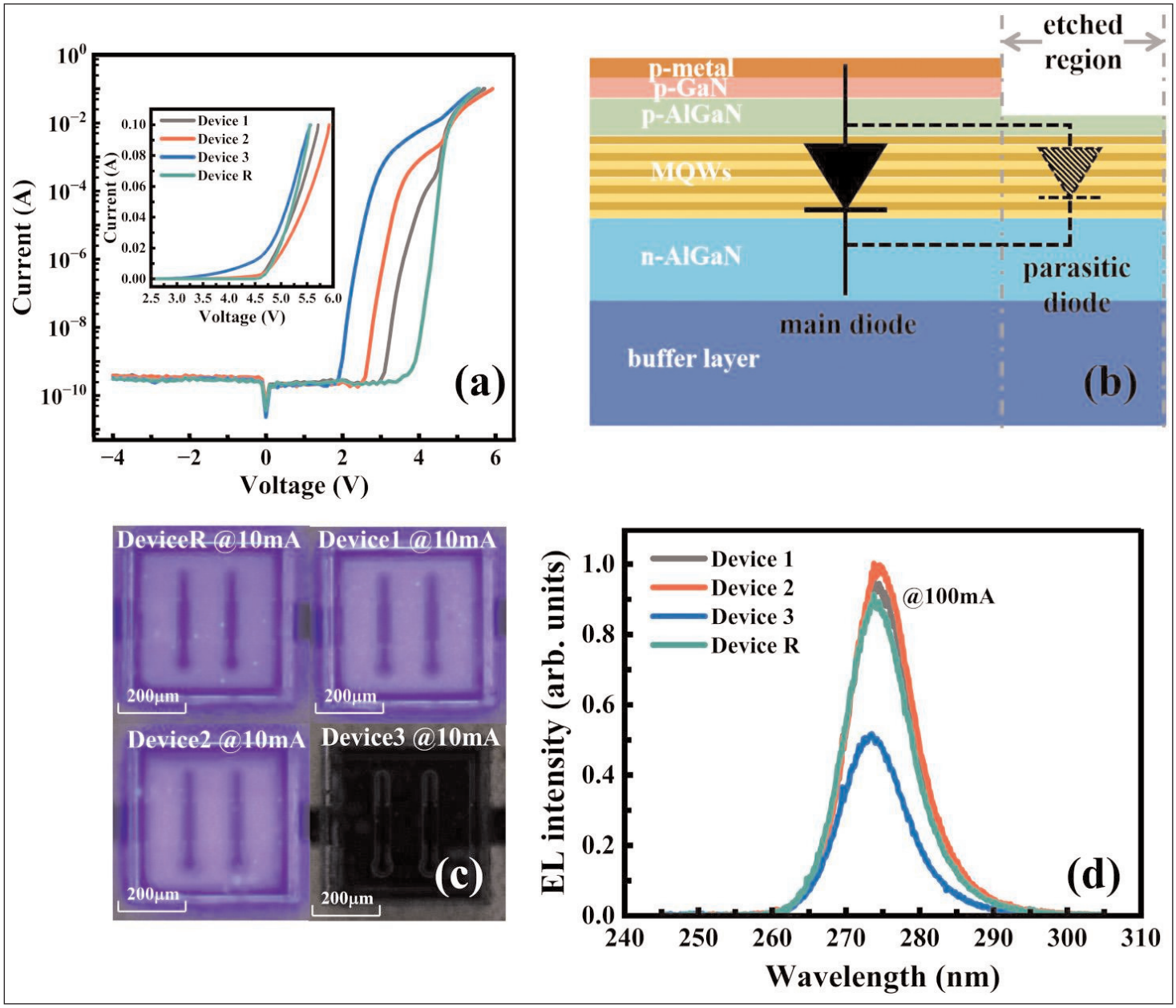



**Figure 2. (a) Current–voltage curves of each device. (b) Schematic diagram of equivalent diode for p-GaN etched devices. (c) Luminescence photographs of devices at 10mA injection. (d) Electroluminescence (EL) spectra of device at 100mA injection.**

multiple quantum well (MQW) consisting of 3nm $Al_{0.45}Ga_{0.55}N$ wells separated by 12nm $Al_{0.56}Ga_{0.44}N$ barriers.

The magnesium-doped p-type layers were 40nm p-$Al_{0.8}Ga_{0.2}N$ for the electron-blocking layer (EBL), 20nm AlGaN graded from 0.75% to 0.35% Al, and 2nm p-GaN. The researchers comment: "The entire p-type layer has a thickness of approximately 62nm, which is significantly thinner than typical values reported in studies on etched p-type layers."

The DUV-LED began with patterning and inductively coupled plasma (ICP) etching of the device mesas. ICP etching was also used to remove part of the p-type layers in the non-contact region, aiming to increase the light output. The etch depth was varied by the etch durations: 2s, 3s and 6s for devices 1–3, respectively. Surface defects from the etching were removed using potassium hydroxide (KOH) solution.

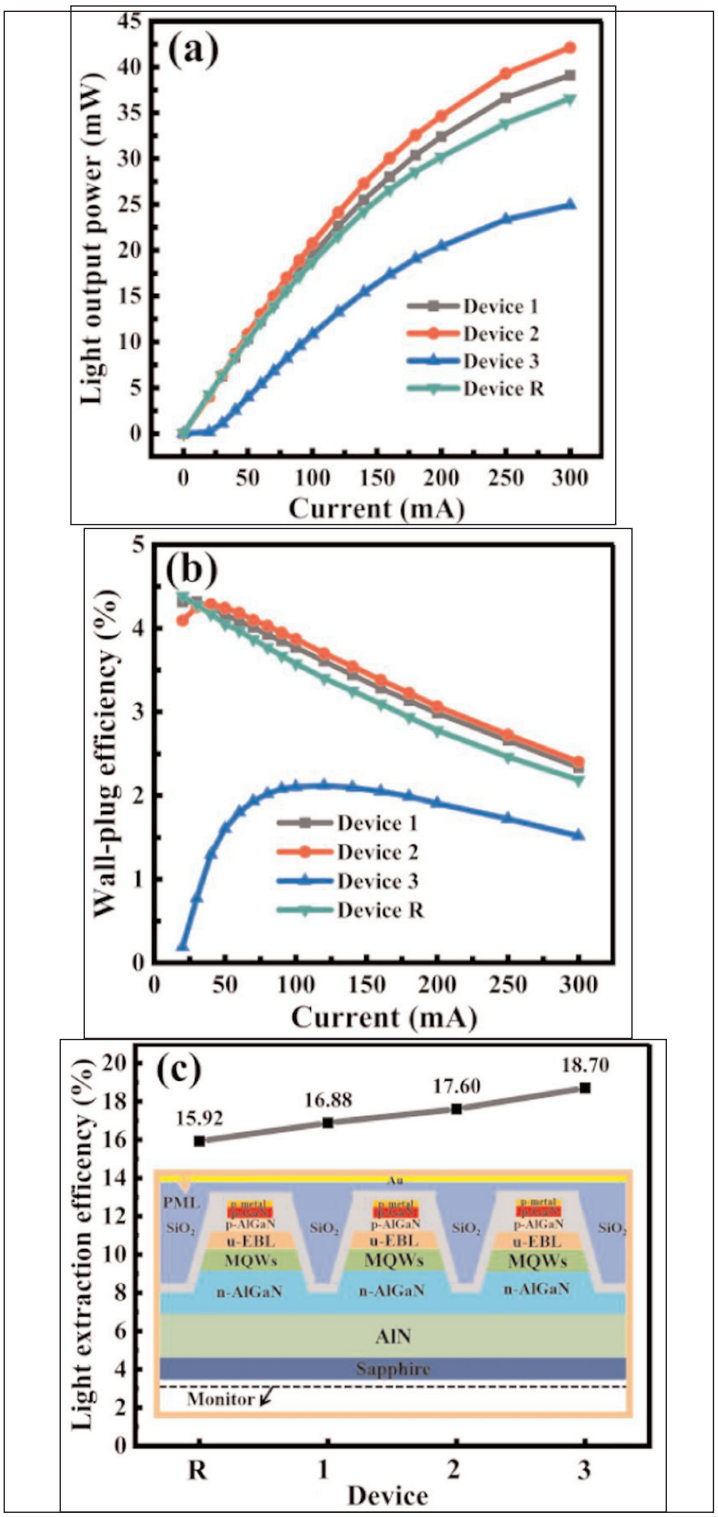
The n- and p-metal electrodes were titanium/aluminium/nickel/gold and nickel/rhodium/nickel/gold, respectively. The p-ohmic contact was then annealed at 600°C for 13 minutes. A final metal sequence of aluminium/titanium/gold was formed into a reflector and to enhance current spreading.

The final steps were sapphire thinning to 400μm, and device separation into 20milx20mil (0.5mmx0.5mm) chips by laser stealth dicing. A conventional device without p-layer etching was also fabricated for reference (R) purposes.

Various measurements were made such as transmittance to DUV, and atomic force microscopy (AFM) p-layer etch depth and root-mean-square (RMS) etch

**Table 1. Optical, structural, and electrical performances.**

| Characteristic | R | 1 | 2 | 3 |
|---|---|---|---|---|
| Transmittance (274nm wavelength) | 77.81% | 85.53% | 89.31% | 90.92% |
| Etch depth | 0nm | 7.5nm | 12nm | 18nm |
| Surface roughness of etched region | 9.36nm | 10.7nm | 11.0nm | 12.7nm |
| Voltage at 100mA current | 5.55V | 5.71V | 5.92V | 5.58V. |
| Series resistance | 6.83Ω | 9.06Ω | 11.92Ω | 8.14Ω |
| Premature turn-on | — | 4.1V | 3.7V | 3.3V |
| LOP at 100mA | 18.71mW | 19.49mW | 20.75W | 10.82mW |
| WPE at 100mA | 3.77% | 3.87% | 2.10% | 3.58% |




surface roughness (Table b).

Electrical characterization was derived from current–voltage measurement (Figure 2). The degraded electrical performance of the p-etched devices was attributed to the reduced conductive volume from the p-etching. The premature turn-on was blamed on a parasitic diode with lower barrier height relative to the desired LED behavior under the p-etched region.

The 18nm p-etching in device 3 did not even light up at 10mA injection due to the current leakage through the parasite. At 100mA, the light from device 3 was about half that of the others. The researchers also believe that the etch defects affect the internal quantum efficiency of the MQW active light-emission region, increasing the non-radiative Shockley–Read–Hall recombination mechanism rate, hence reducing IQE.

The team comments: "For the DUV-LEDs with an ultra-thin p-type layer, it is crucial to carefully control the etching of p-type layer to prevent the introduction of etching-induced defects into the active region."

The light output power of device 2 showed the best performance while, for lower currents, device 1 had better wall-plug efficiency (Figure 3).

The researchers comment: "It is evident that etching-induced defects propagate from the p-type layer surface into the active region with increased etching depth. These defects within the p-type layer adversely affect hole injection efficiency. Therefore, the degradation in WPE for device 3 can be attributed to the combined reduction of both IQE and hole injection efficiency. In addition, the highest WPE of device 2 is due to a high LEE and few etching defects in the active region." ■

https://doi.org/10.1063/5.0291142

*Author: Mike Cooke*

**Figure 3.**
**(a) Light output power (LOP) and**
**(b) wall-plug efficiency (WPE) versus current.**
**(c) Light extraction efficiency (LEE) versus etching depth, based on two-dimensional finite-difference time-domain (2D-FDTD) simulations.**

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

## www.semiconductor-today.com

**Join our LinkedIn group: Semiconductor Today**

**Follow us on Twitter: Semiconductor_T**

## Choose *Semiconductor Today* for . . .


### MAGAZINE

Accurate and timely coverage of the compound semiconductor and advanced silicon industries

Targeted 107,000+ international circulation

Published 10 times a year and delivered by e-mail and RSS feeds


### WEB SITE

Average of over 28,000 unique visitors to the site each month

Daily news updates and regular feature articles

Google-listed news source


### E-BRIEF

Weekly round-up of key business and technical news

E-mail delivery to entire circulation

Banner and text marketing opportunities available

# Benefits of hexagonal mesa for micro-LEDs

**Devices demonstrate enhanced current diffusion and uniformity.**

Xiamen University in China has reported on the advantages of using hexagonal mesas in indium gallium nitride (InGaN) micro green light-emitting diodes (LEDs) [Zelong Huang et al, Optics Express, v33, p42747, 2025].

The researchers comment: "The hexagonal structure benefits from six uniformly distributed vertices, which minimize the maximum distance from the electrode to the mesa boundary. This design not only provides better current uniformity than the circular mesa but also avoids the current crowding at the vertices observed in the square mesa. Consequently, the hexagonal mesa improves current diffusion efficiency along the edges, reduces localized low-current-density regions, and ultimately enhances overall current uniformity."

The team sees micro-LEDs as particularly important for

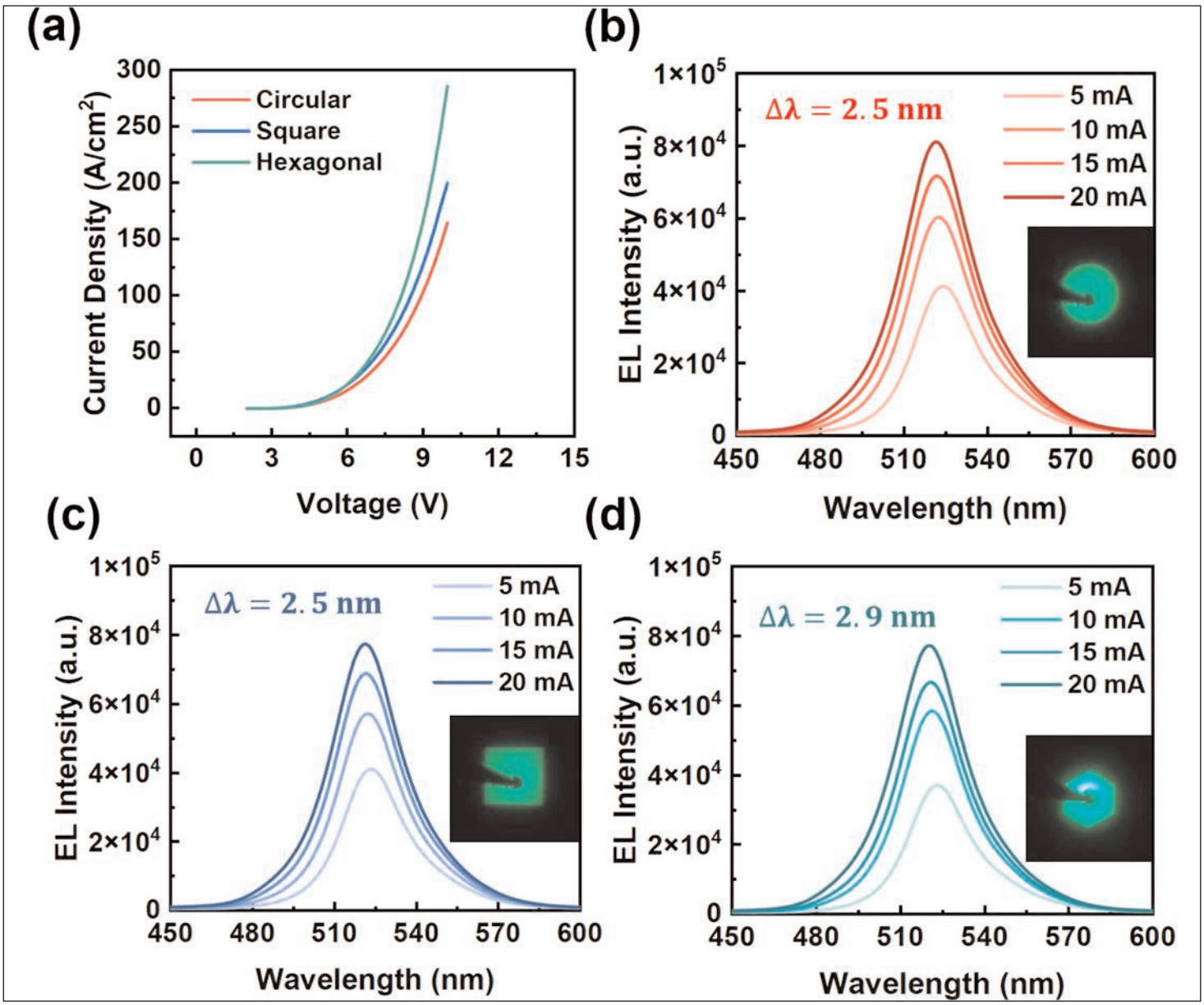



**Figure 1. (a) Current density–voltage curves of three mesa-geometric micro-LEDs. (b)–(d) Electroluminescence (EL) spectra with insets of luminescence patterns for circular (b), square (c), hexagonal (d) mesas under continuous wave (CW) operation.**

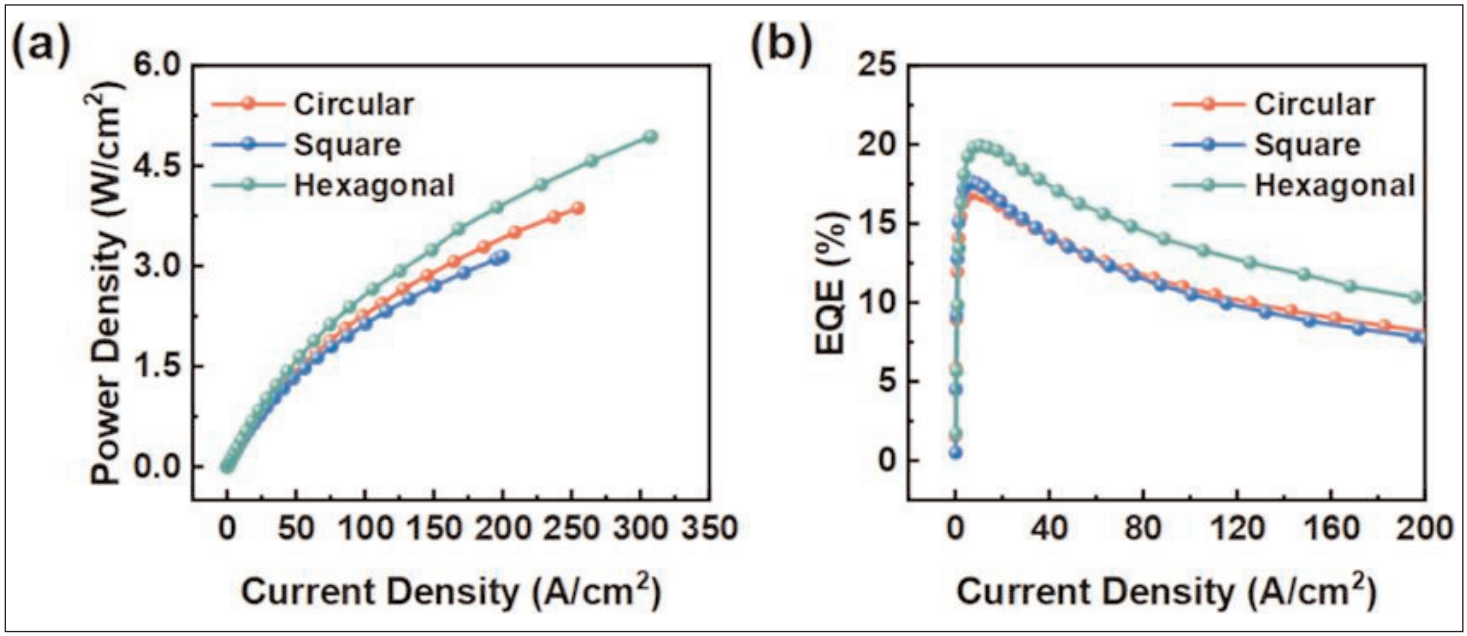



**Figure 2. (a) Optical output power density and (b) external quantum efficiency (EQE) of circular, square and hexagonal green micro-LEDs as a function of injected current density.**

full-color displays, augmented/virtual reality (AR/VR), visible light communication, wearable devices, and phototherapy. "Green micro-LEDs are particularly critical for high-fidelity color reproduction due to their emission wavelength within the human eye's peak sensitivity range," the researchers explain.

The III-N heterostructure was grown on patterned sapphire substrate by metal-organic chemical vapor deposition (MOCVD). The active light-emitting region consisted of 10 periods of 2nm $In_{0.3}Ga_{0.7}N$ separated by 8nm GaN barriers. Mesa LEDs were fabricated using this material, etched into circular, square and hexagonal patterns, samples A–C, respectively, using laser-direct write photolithography. The mesa etching was by inductively coupled plasma reactive ions and wet buffered oxide etching, and cleaning steps. The perimeter surfaces were passivated with plasma-enhanced chemical vapor deposited silicon dioxide, aimed at mitigating etching-induced damage and enhancing device stability and performance.

The annealed p- and n-metal electrodes consisted of titanium/aluminium/titanium with lift-off carried out in acetone with low-power ultrasonic agitation. The p-electrodes were 50μm-diameter circles placed in the center of the LED. The LEDs were arrayed in a square lattice at 200μm pitch in orthogonal x,y directions.

The perimeters of the mesas were such that the hexagonal mesa was least (Table c). In micro LEDs, the mesa perimeter tends to be where non-radiative recombination occurs, wasting electrical energy. In particular, the LEDs are thought to suffer from increased Shockley–Read–Hall recombination through defects arising from damage due to the (usually plasma) etching process.

**Table 1. Perimeter/p-electrode area (P/A) for the different mesa shapes with 50μm p-electrode.**

| Parameter | Circular | Square | Hexagonal |
|---|---|---|---|
| P | 2πx50μm | 4x100μm | 6x50μm |
| P/A | 0.16/μm | 0.20/μm | 0.15/μm |
| Maximum distance to perimeter | 25μm | 45.7μm | 25μm |
| Minimum distance to perimeter | 25μm | 25μm | 18.3μm |

The turn-on voltages of the final LEDs were stable about 3.3V (Figure 1). The hexagonal mesa LED achieves higher current density at a given voltage. At 10V bias, the current densities were 164.7A/cm$^2$, 199.9A/cm$^2$ and 285.8A/cm$^2$ for the circular, square and hexagonal mesa LEDs, respectively. The hexagon device had a larger wavelength blue-shift of 2.9nm ($\Delta\lambda$) between 5mA and 20mA current injection.

The researchers comment: "This larger blue-shift in the hexagonal device can be attributed to more efficient carrier injection and uniform distribution in its active region, consistent with its optimized P/A ratio and confirming its superior optoelectronic performance."

The optical power density reached 3.86W/cm$^2$, 3.14W/cm$^2$ and 4.94W/cm$^2$ for circular, square and hexagonal micro-LEDs, respectively, at 200A/cm$^2$ injection (Figure 2). The corresponding peak EQE points were at 8.94A/cm$^2$, 7.13A/cm$^2$ and 10.41A/cm$^2$ injection, achieving EQEs of 16.9%, 17.6% and 19.9%, respectively. The EQE droops between the peak and 200A/cm$^2$ were 52.4%, 56.1% and 48.2% for circular, square and hexagonal micro-LEDs, respectively. ■

**https://doi.org/10.1364/OE.575731**

*Author: Mike Cooke*

# Inverting Ga-polar LEDs for N-polar benefit

**Structure enables around 1000x light output over comparable N-polar LED.**

The Institute of High Pressure Physics and the University of Warsaw in Poland have compared the performance of light-emitting diodes (LEDs) composed of opposite polarity III–nitride crystal structures but with the built-in electric field pointing in the more favorable direction usually provided by nitrogen-polar GaN [Tara Brstilo et al, Semicond. Sci. Technol., v40, p105010, 2025].

This was achieved by inverting the LED structure (iLED) with the p-type hole injection layers being grown before the active indium gallium nitride (InGaN) light-emitting region and the n-type electron injector. The Ga-polar iLED achieved around three orders of magnitude (1000x) better light output than the comparison N-polar device.

The researchers comment: "The significantly lower emission intensity obtained for N-polar grown LEDs is most likely associated with the higher incorporation of point defects for growth along this direction."

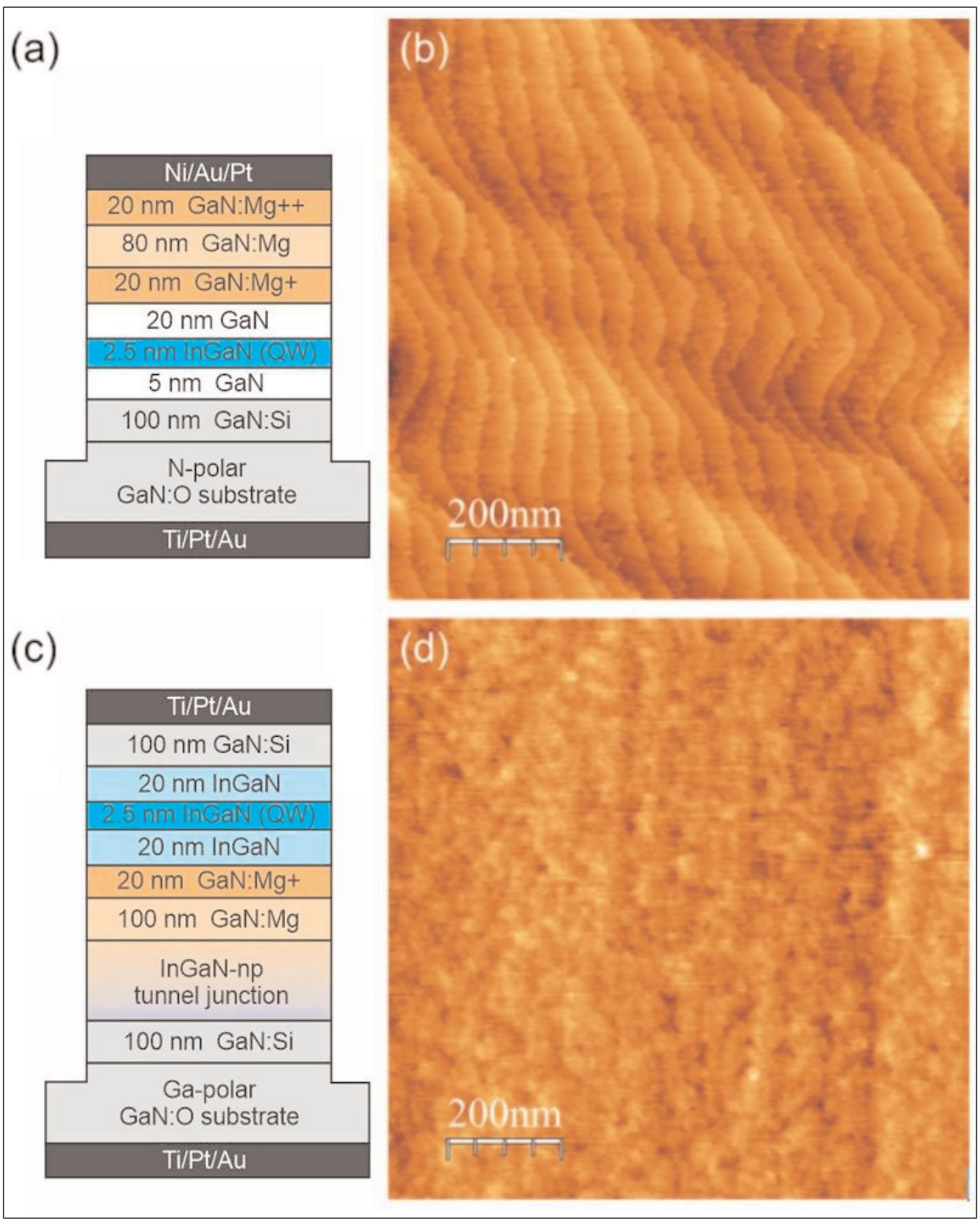



**Figure 1. Schematic structures of (a) N-polar LED and (c) Ga-polar iLED. (b,d) Corresponding atomic force microscope images obtained before contact deposition.**

Since GaN substrates have electron majority carriers, the team used a tunnel junction to enable hole injection from the buried p-type layers. The team writes: "This work proves that a bottom tunnel junction construction

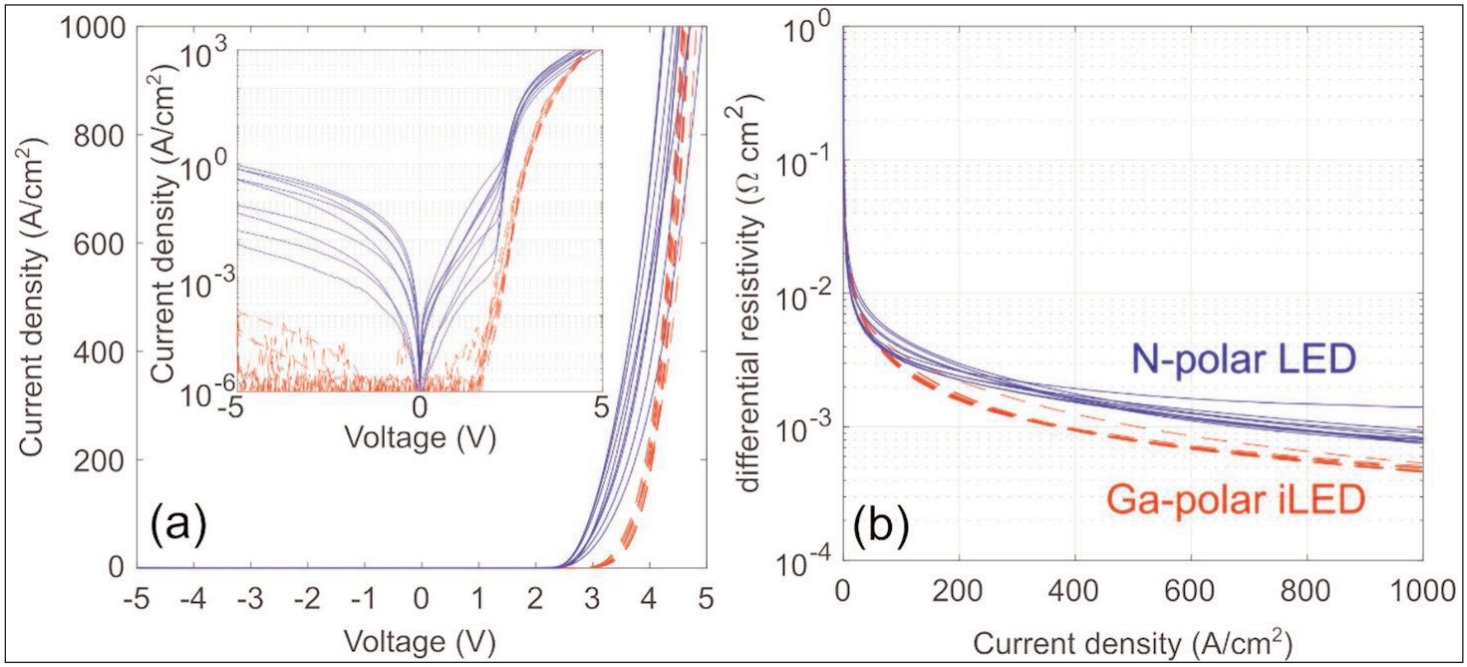



**Figure 2. Electrical characterization of representative N-polar (solid blue) and Ga-polar (dashed red) LEDs. (a) Current density versus voltage characteristics, with inset semi-logarithmic scale version. (b) Differential resistance versus current density, derived from data in (a).**

is a reliable way of obtaining LEDs that benefit from an N-polar-like built-in field while using more chemically stable Ga-polar substrate."

The researchers grew single quantum well (QW) structures for an N-polar LED and Ga-polar iLED by plasma-assisted molecular beam epitaxy (PAMBE) on correspondingly oriented GaN substrates (Figure 1). The use of MBE avoids the presence of hydrogen that tends to passivate p-GaN material.

The presence of hydrogen is unavoidable in the more industrially popular metal-organic chemical vapor deposition process. MOCVD p-type layers need to be activated to remove the hydrogen passivation, typically by high-temperature annealing. This makes it difficult to achieve the iLED structure since the hydrogen would be trapped in the buried layer. This is one of the reasons that p-GaN layers are typically grown last.

The root-mean-square (RMS) roughness of the N- and Ga-polar material surfaces were 0.15nm and 0.3nm, respectively. Post-growth cleaning for the N-polar structure used a cold piranha (sulfuric acid in hydrogen peroxide) solution to avoid hydrochloric acid damage.

For the iLED an InGaN tunnel junction was used to enable vertical current flow between the titanium/platinum/gold metal electrodes suitable for n-type ohmic contact with GaN. The tunnel junction interfaced between the electron and hole majority carrier transport regions to give hole injection into the QW. The n-side of the junction was germanium-doped, while the p-side doping was magnesium.

The InGaN QW was clad by InGaN for the iLED rather than GaN, as for the N-polar LED. "Low-indium-content InGaN barriers were used here instead of GaN to prevent any gallium accumulation during indium-rich growth," the team explains.

The p-contact electrode for the N-polar LED was nickel/gold/platinum.

The N-polar LED photolithography process used a silicon dioxide protection layer to avoid chemical damage from the photoresist developer solution. This protection was not considered necessary for the iLED. The final devices were 100μm-sided squares.

The Ga-polar iLED had a higher turn-on voltage than the N-polar device (Figure 2). This may be due to the voltage-penalty of the tunnel junction, according to the researchers. However, the N-polar device suffered from a high differential resistance, due to significant current leakage. There was also greater variation in current–voltage performance across different N-polar devices.

The team comments: "This pronounced discrepancy between the characteristics of devices on different parts of the wafer could be indicative of the important role of impurity incorporation, such as background oxygen, which can be non-uniform and can partially passivate p-type conductivity. Additionally, the lower chemical stability of the N-polar surface led to the creation of leakage paths during processing."

The N-polar devices reached 200A/cm$^2$ current density between 3V and 3.5V bias, while the iLEDs needed 4V. The lower differential resistance of the iLEDs was likely due to lower contact resistance from the n-type GaN with the metal electrodes, compared with p-GaN.

The Ga-polar iLED achieved much higher estimated external quantum efficiency and measured light output

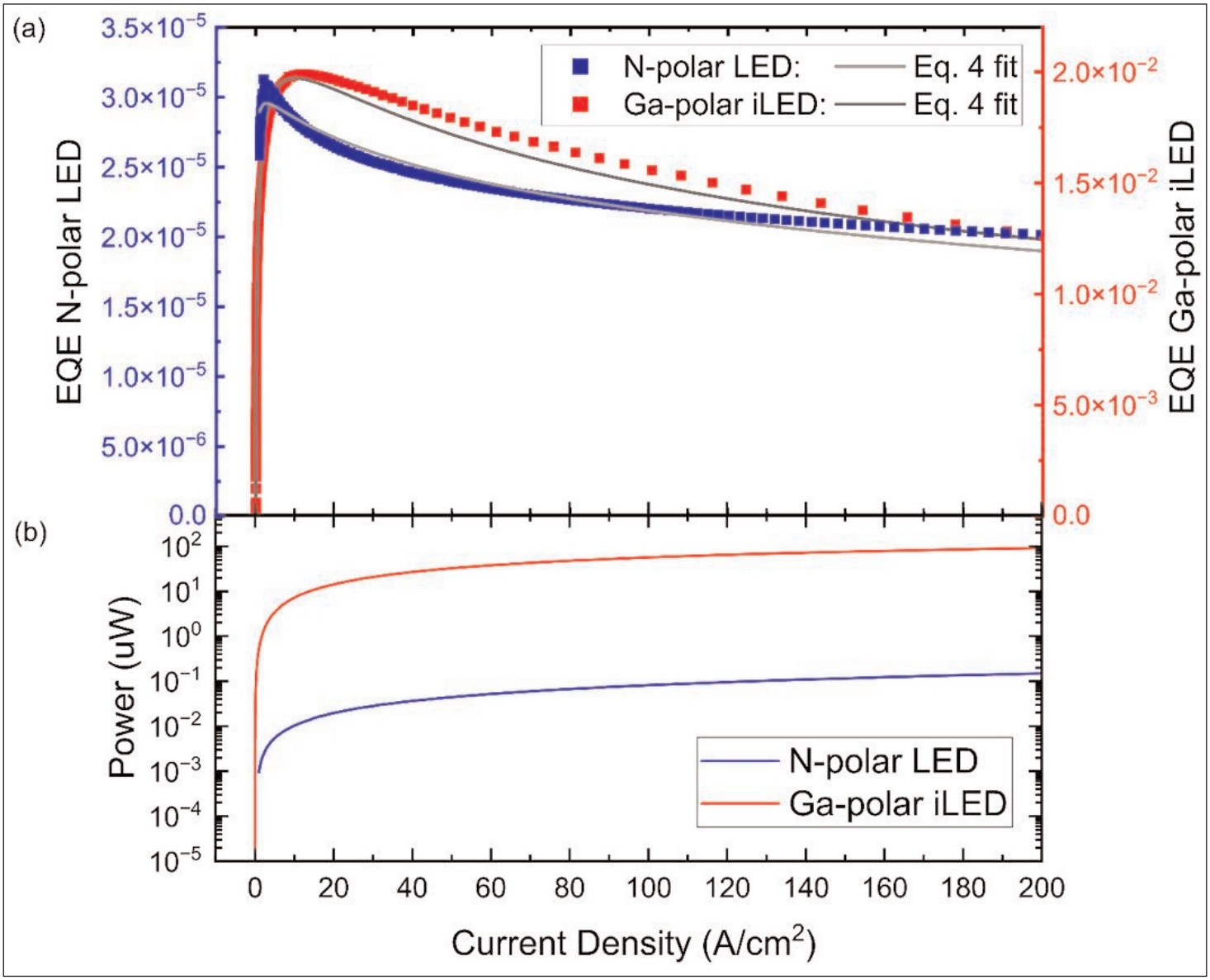



**Figure 3. (a) Calculated EQE versus current density for N-polar (left axis) and Ga-polar (right axis) devices and (b) measured optical power variation for same devices.**

power than the N-polar LED (Figure 3). For the output power, the difference was around three orders of magnitude (1000x). ■

https://doi.org/10.1088/1361-6641/ae0e45
*Author:*
*Mike Cooke*

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

## www.semiconductor-today.com

**Join our LinkedIn group: Semiconductor Today**

**Follow us on Twitter: Semiconductor_T**

## Choose *Semiconductor Today* for . . .


### MAGAZINE

Accurate and timely coverage of the compound semiconductor and advanced silicon industries

Targeted 107,000+ international circulation

Published 10 times a year and delivered by e-mail and RSS feeds


### WEB SITE

Average of over 28,000 unique visitors to the site each month

Daily news updates and regular feature articles

Google-listed news source


### E-BRIEF

Weekly round-up of key business and technical news

E-mail delivery to entire circulation

Banner and text marketing opportunities available

# Nitrogen-polar III-N HFETs on 200mm sapphire substrates

**Researchers demonstrate MOCVD growth with a view to industrial cost-effective, large-scale production.**

RWTH Aachen University and Aixtron SE in Germany have reported metal-organic chemical vapor deposition (MOCVD) growth of nitrogen-polar III-nitride layers on 200mm-diameter sapphire substrates, along with the fabrication of heterostructure field-effect transistors (HFETs) [Liubou Padzialioshkina et al, Appl. Phys. Lett., v127, p173302, 2025]

N-polar HFETs are expected to provide performance and scaling advantages over devices fabricated on metal-polar materials. MOCVD is the preferred industrial III-nitride growth method over molecular beam epitaxy to provide materials for cost-effective, large-scale fabrication. Previous N-polar growth reports have been limited to substrate sizes only up to 100mm.

Gallium nitride (GaN) in Ga-polar crystal orientation is simpler to grow at high quality and with superior chemical stability. Despite this, "more recent development efforts have been directed toward N-polar GaN growth, since HFETs with such inverted crystal orientation promise further performance and scaling advantages over Ga-polar ones," the RWTH/AIXTRON team reports.

The inverted N-polar structure places the aluminium gallium nitride (AlGaN) layer below the gallium nitride channel layer, with the conducting two-dimensional electron gas (2DEG) just above the barrier, improving carrier confinement and blocking current leaks into the buffer. The ohmic source/drain contacts can be made directly with the narrower-bandgap GaN, rather than with AlGaN, reducing contact resistance. With the channel layer rather than the barrier on top, the gate can be brought closer to the 2DEG channel, improving electrostatic control. N-polar HFETs have been reported with cut-off frequencies up to 132GHz.

The researchers used AIXTRON's G5+C 5x200mm Planetary MOCVD reactor to perform N-polar III-nitride growth on 200mm-diameter sapphire substrates, offcut 2° towards the m-plane (Figure 1). The substrate was 1.3mm thick. The GaN channel thickness was varied on different wafers: 15nm, 25nm and 35nm.

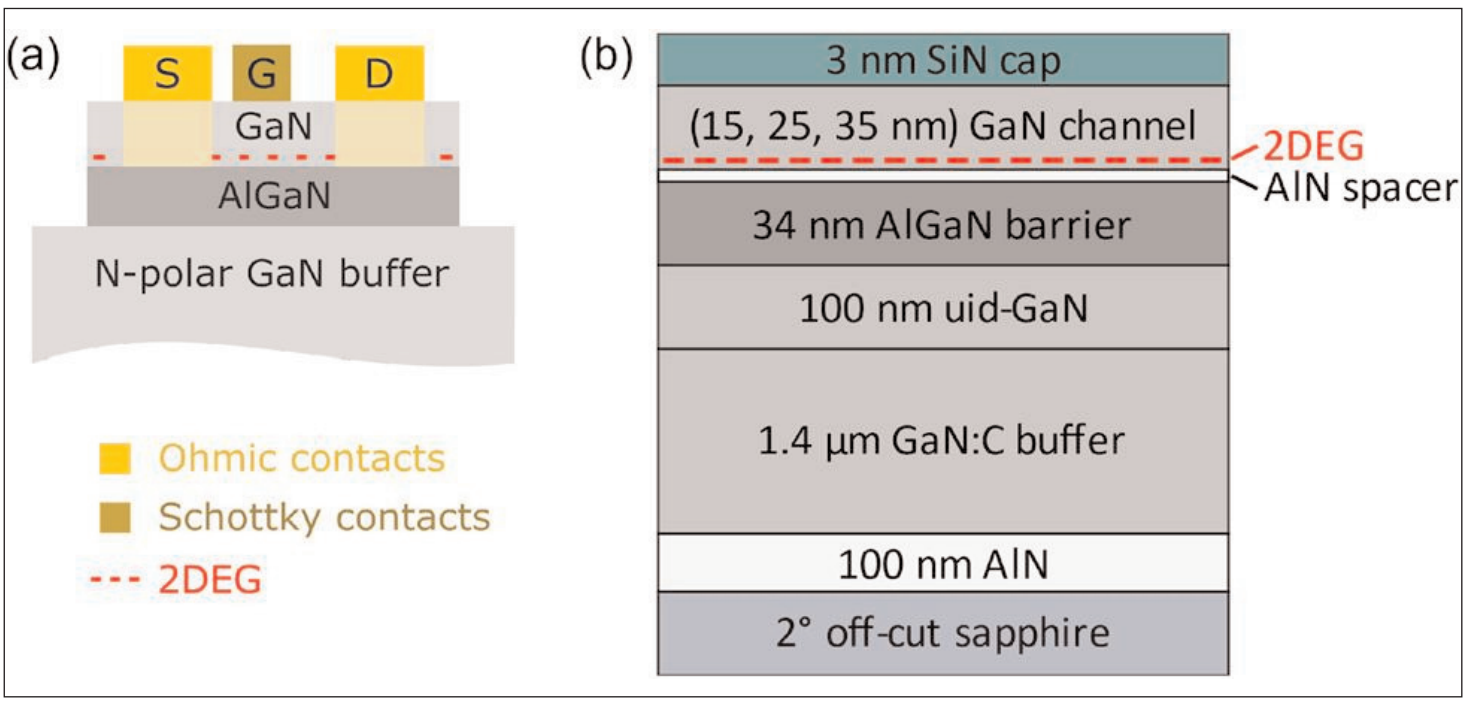



**Figure 1. (a) Simple N-polar HFET scheme. (b) Investigated N-polar MOCVD layer stack.**

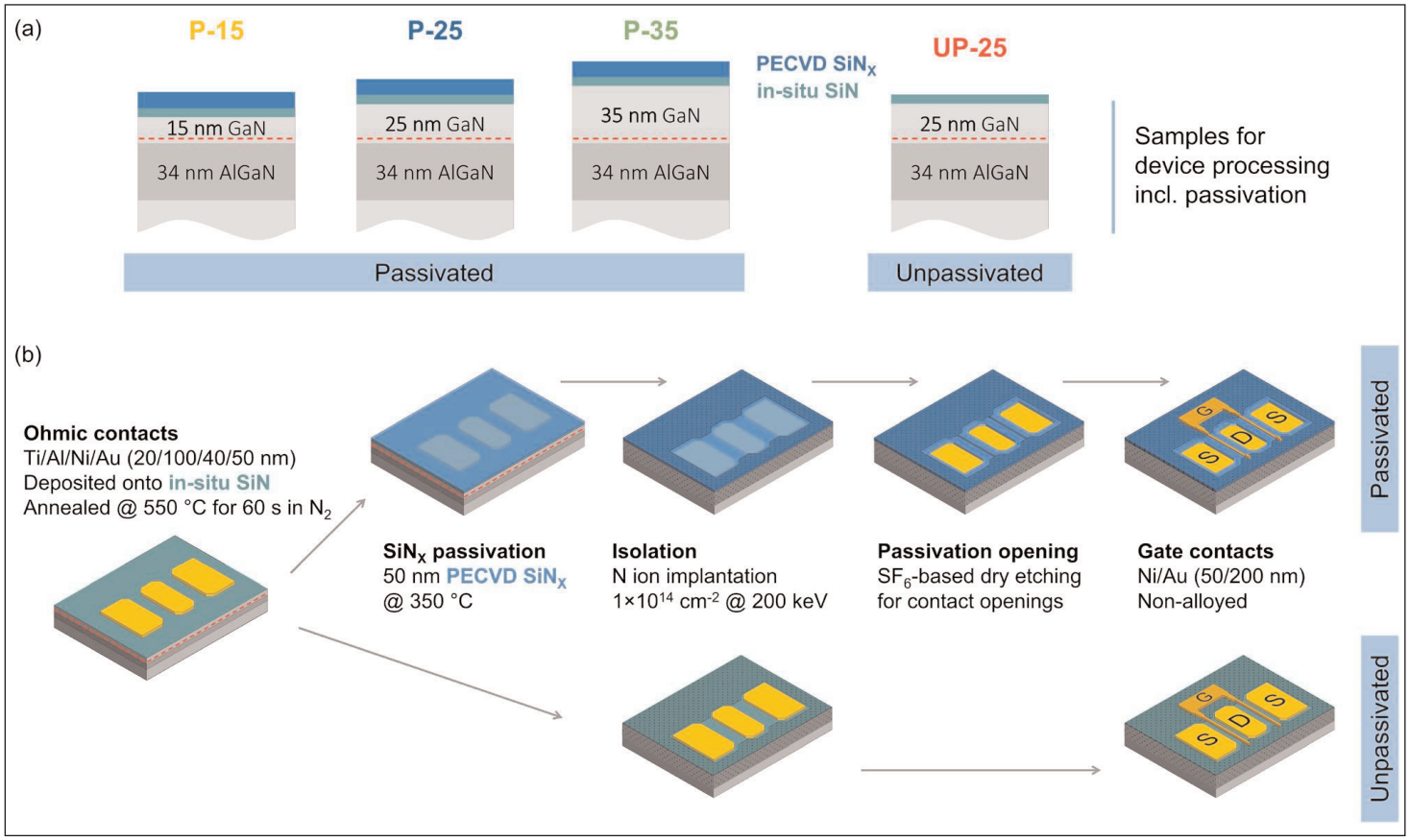



**Figure 2. (a) Overview of samples and (b) fabrication sequence chart.**

The buffer layer was doped with carbon (C) with a view to compensate for background impurities, such as silicon (Si) and oxygen (O). Oxygen incorporation is a particular problem in N-polar MOCVD growth. The AlGaN layer was grown on an unintentionally doped (uid) GaN layer, designed to isolate the C acceptors in the buffer from the active region of the device. The pseudomorphic (fully strained) barrier layer contained 32% Al.

The structure was capped with in-situ silicon nitride (SiN). The researchers comment: "Wafers without in-situ SiN exhibit a non-coalesced surface likely originating from H2-induced GaN etching during the cooldown process. In-situ SiN passivation ensures smooth topology of the wafers and is, therefore, featured in all processed samples."

Double-finger HFETs were fabricated (Figure 2). Most of the devices included ex-situ plasma-enhanced CVD (PECVD) SiN. Patterning used optical lithography.

The ex-situ passivation was found to be necessary to yield high channel layer mobilities of around 1000cm$^2$/V-s in the P-25 and P-35 samples. Without passivation, the UP-25 sample had a factor-of-three reduction in mobility at 300cm$^2$/V-s.

The researchers report: "Corresponding sheet resistance values extracted from the Hall measurement are on average 5000Ω/sq, 550Ω/sq, 500Ω/sq and 2500Ω/sq for P-15, P-25, P-35 and UP-25, respectively."

The ohmic contacts, titanium/aluminium/nickel/gold (Al/Ti/Ni/Au), were annealed at the relatively low temperature of 550°C, which has been found to yield the lowest contact resistance on N-polar structures, according to previous work by the team. The ex-situ passivation was performed before gate formation to avoid unintentional annealing of the gate contact. Device isolation was by nitrogen ion implantation.

The gate width was 2x50μm, and the 1μm-long gate was placed at 1.5μm from the source contact, and 2.5μm from the drain.

The researchers comment: "It should be noted that, due to a high surface roughness, sufficient photoresist adhesion and uniform exposure during the lithography process remain challenging. This potentially results in deviations from the nominal gate length and distance values from device to device."

The ex-situ passivation increased the average peak transconductance ($g_m$) for 25nm thick channel layers from 100mS/mm to 130mS/mm (Figure 3). The best P-25 device reached 150mS/mm. The researchers mainly attribute this to the much lower sheet resistance of the P-25 material: 550Ohm/square compared with 2500Ohm/square.

The researchers report that "the reverse-bias gate leakage currents are rather high in fabricated HFETs, as expected from the lower Schottky barrier height (SBH) values." Even the best devices only manage a $10^3$ on/off current ratio.

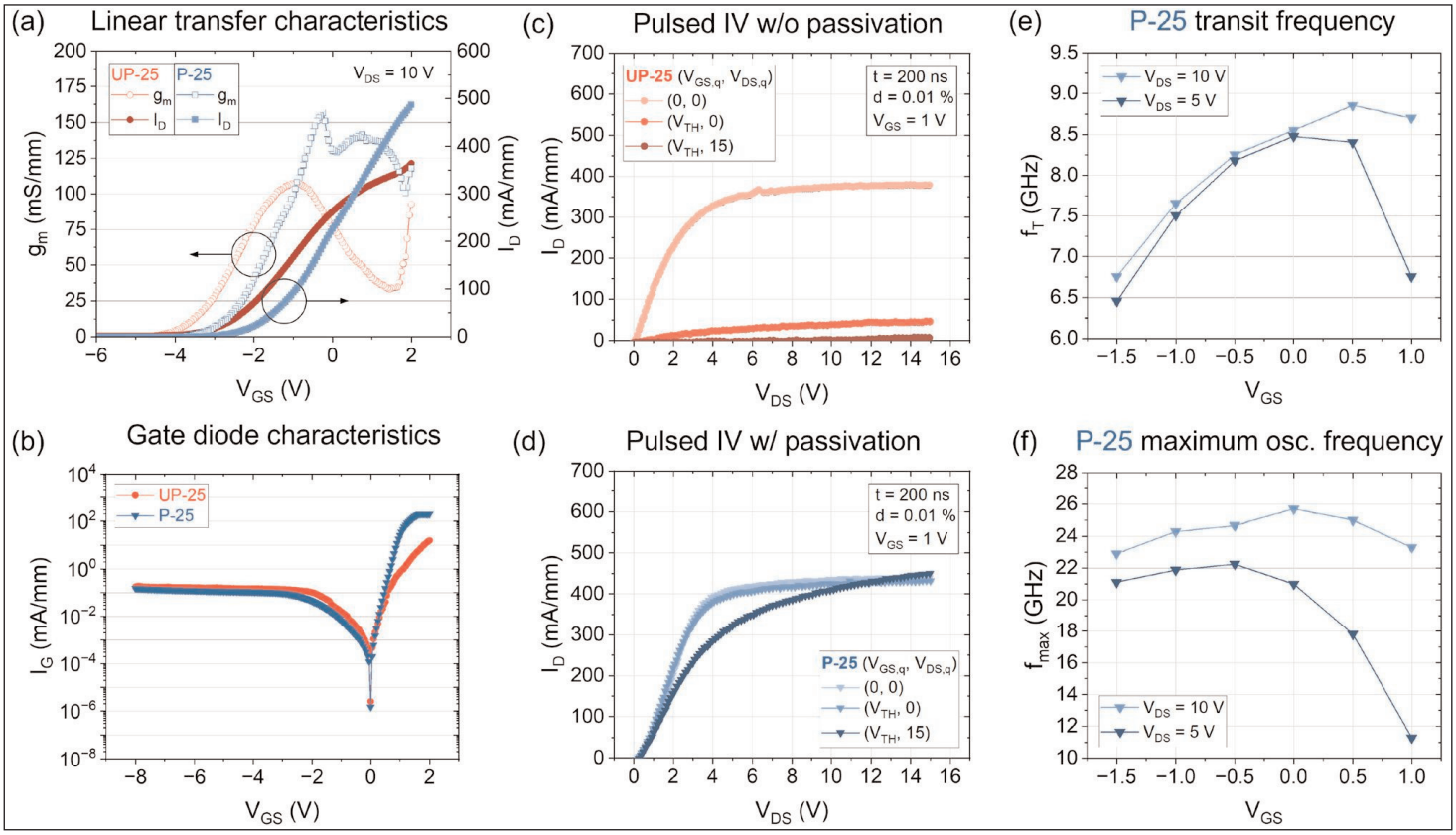



**Figure 3. Representative linear transfer characteristics (a) and gate diode current–voltage (IV) characteristics (b) of unpassivated (UP-25) and passivated (P-25) HFETs at 10V drain bias ($V_{DS}$). Pulsed-IV output characteristics for UP-25 (c) and P-25 (d) HFETs at 1V gate potential ($V_{GS}$). Transit (e) and maximum oscillation frequency (f) extracted from small-signal measurements of P-25 HFET.**

Ex situ passivation also reduced current collapse under pulsed operation, from 97% to 7%. The team concludes that "in-situ SiN is not sufficient for passivation, while ex-situ $SiN_X$, including ammonia ($NH_3$) plasma treatment, effectively passivates the surface trap states responsible for the DC–RF dispersion."

Small-signal frequency measurements resulted in transit ($f_T$) and maximum oscillation (fmax) frequencies up to 9GHz and 26GHz, respectively, for P-25 HFETs.

The team comments: "Considering the nominal gate-length value of 1μm, the transit-frequency x gate-length product is calculated to be $f_T$ x $L_G$ = 9GHzxμm. Typically reported values for N-polar HFETs start from 8GHzxμm, with the state-of-the-art short-channel devices reaching as high as 16GHzxμm."

Looking to the future, the researchers comment: "Further optimization of N-polar epitaxial quality is required to improve uniformity, minimize surface roughness, and reduce leakage currents." ■

https://doi.org/10.1063/5.0299401

*Author:*
*Mike Cooke*

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

## www.semiconductor-today.com

**Join our LinkedIn group: Semiconductor Today**

**Follow us on Twitter: Semiconductor_T**

## Choose *Semiconductor Today* for . . .


### MAGAZINE

Accurate and timely coverage of the compound semiconductor and advanced silicon industries

Targeted 107,000+ international circulation

Published 10 times a year and delivered by e-mail and RSS feeds


### WEB SITE

Average of over 28,000 unique visitors to the site each month

Daily news updates and regular feature articles

Google-listed news source


### E-BRIEF

Weekly round-up of key business and technical news

E-mail delivery to entire circulation

Banner and text marketing opportunities available

# Global IP dynamics highlight surging GaN innovation activity in Q3/2025

**Of 599 new patent families, 70% originate from Chinese players, notes KnowMade.**

KnowMade has released its 'Q3 2025 GaN Patent Monitor', which highlights major gallium nitride (GaN) innovation trends in third-quarter 2025, the evolving competitive IP landscape, and the technological advances shaping future power and RF electronics.

The Q3/2025 patent landscape confirms GaN's accelerating industrial expansion. During the quarter, 599 new patent families were published, maintaining a high innovation pace. Notably, 70% of these originated from Chinese players, demonstrating China's continued drive to lead GaN development.

A detailed application-based breakdown reveals strong momentum in power electronics:

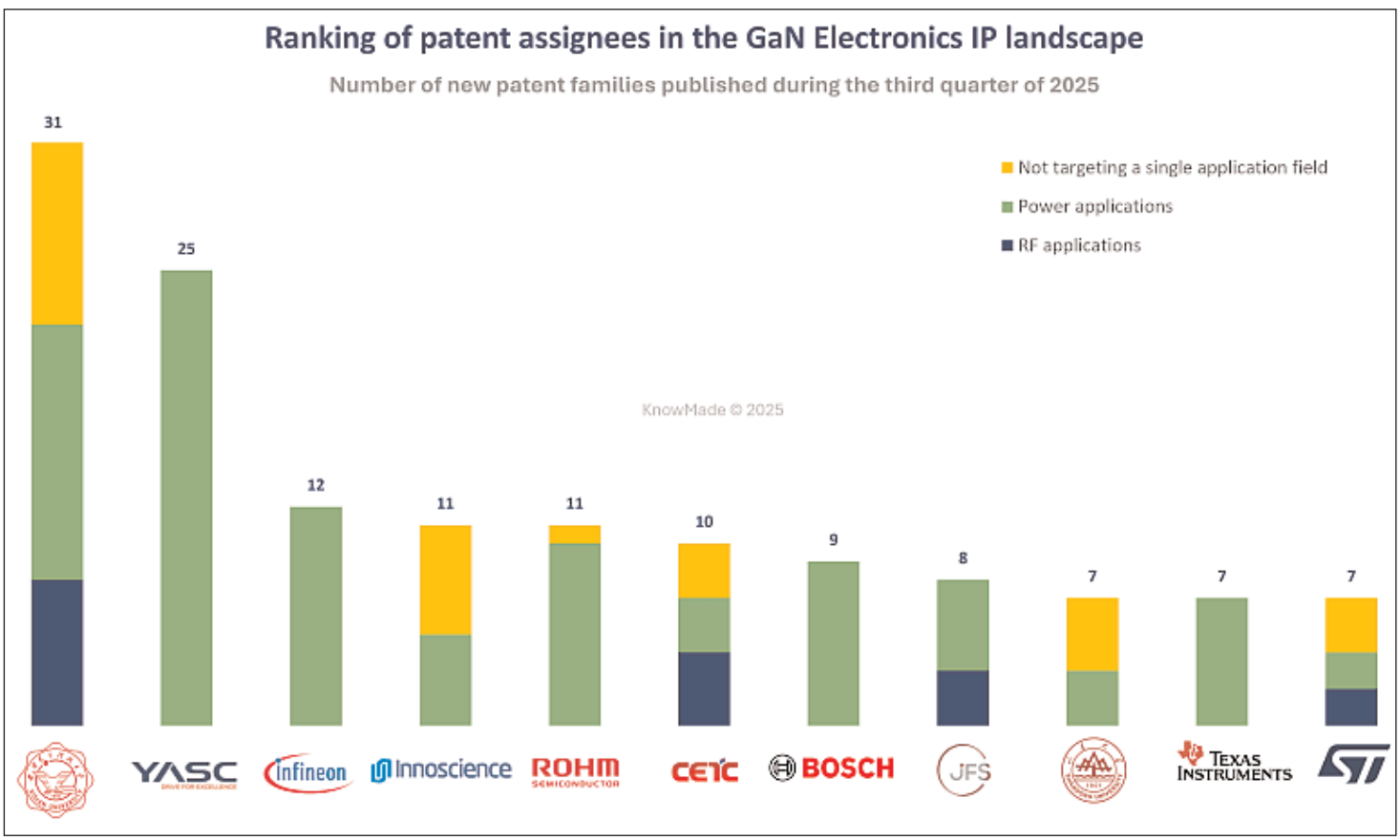
- 376 new patent families targeted power applications, significantly outpacing RF technologies;
- 107 patent families focused on RF applications;
- over 110 patent families addressed multiple application fields, reflecting the transversal relevance of GaN materials and devices.

This sustained IP flow illustrates the robust global interest in GaN technologies across energy efficiency, fast-charging systems, electric vehicle (EV) powertrains, telecom infrastructure, and high-frequency components, all central drivers of Q3/2025 GaN innovation.

## Newcomers joining GaN IP landscape

Q3/2025 saw a high number of IP newcomers filing their first GaN-electronics-related patents, most of them being Chinese companies. Several notable non-Chinese new entrants introduced meaningful contributions:

- Alpsemi (in France) disclosed a high-voltage high-electron-mobility transistor (HEMT) epitaxial structure dedicated to advanced power conversion;



- Soth Korea-based SK Foundry introduced a GaN transistor structure designed to mitigate current collapse, improving device reliability;
- Atomera (in USA) unveiled a superlattice structure enabling enhanced stress and strain control in GaN-on-silicon epitaxy while facilitating self-separation from the growth substrate — a key manufacturing advantage.

## Breakthrough collaborative innovation

A highlight of Q3/2025 GaN innovation is a prominent US-based academic–military collaboration between the University of California, University of Maryland, University of Virginia, and the US Navy. The partners introduced carbide 'phonon bridge layers', engineered to reduce thermal boundary resistance between an integrated diamond heat spreader and an aluminium gallium nitride (AlGaN) HEMT. This development could unlock dramatic improvements in GaN device thermal management.

## Strengthening IP positions among established players

Confirming the competitive consolidation of the GaN ecosystem, Q3/2025 also recorded 426 patent families being granted for the first time, including:

- over 230 newly granted families concerned power applications, versus 90 for RF;
- about 100 newly granted families covered multi-application inventions.

Among the power GaN market players, Infineon stands out as the quarter's strongest GaN IP performer, securing 15 newly granted patent families, well ahead of Innoscience (7) and Rohm (3). Infineon's newly granted patents span GaN transistors, manufacturing methods, low-inductance packaging, power ICs, and DC/DC converter-based systems.

Major foundries also reinforced their IP position:

- UMC obtained eight granted patents;
- TSMC and GlobalFoundries each strengthened their IP portfolios with three additional granted patent families.

This competitive dynamic underscores a rapidly maturing industry in which both integrated device manufacturers (IDMs) and foundries are investing heavily in foundational GaN technologies, concludes KnowMade. ■

**www.knowmade.com/patent-analytics-services/patent-monitor/semiconductor-patent-monitor/gan-power-rf-patent-monitor**

# suppliers' directory

# Index



**To have your company listed in this directory, e-mail details (including categories) to mark@semiconductor-today.com**
**Note: advertisers receive a free listing. For all other companies, a charge is applicable.**

## 1 Bulk crystal source materials

**Vital Materials Co Ltd (head office)**
Floor 49, International Metropolitan Plaza,
68 Huacheng Avenue,
Tianhe District,
Guangzhou, Guangdong,
China 510623
Tel: +86 020-83511906
Fax: +86 020-83511907
E-mail: Sales@vitalchem.com
**www.vitalchem.com**
Vital Materials is the world's leading producer of rare metals as well as the first Chinese manufacturer to deliver G11 rotary ITO target. Vital is also one of the world's three major supplier of infrared materials, a key supplier of compound semiconductor substrates, and a strategic partner of the world's largest thin film solar manufacturer.

**United Mineral & Chemical Corp**
1100 Valley Brook Avenue,
Lyndhurst, NJ 07071, USA
Tel: +1 201 507 3300
Fax: +1 201 507 1506
**www.umccorp.com**

## 2 Bulk crystal growth equipment

**Cyberstar**
109 Rue Hilaire de Chardonnet — Technisud,
38100 Grenoble,
France
Tel: +33 (0)4 76 49 65 60
E-mail: cyberstar@cyberstar.fr
**www.cyberstar.fr**

## 3 Substrates

**AXT Inc**
4281 Technology Drive,
Fremont,
CA 94538, USA
Tel: +1 510 438 4700
Fax: +1 510 683 5901
**www.axt.com**

**Crystal IS Inc**
70 Cohoes Avenue,
Green Island,
NY 12183,
USA
Tel: +1 518 271 7375
Fax: +1 518 271 7394
**www.crystal-is.com**

**CS Microelectronics Co Ltd (Vital Materials subsidiary)**
Gaofeng Park,
Wanzhou Economic-Technological Development Area,
Chongqing,
China 404040
Tel: +86 023-58879888
E-mail: csm_sales@vitalchem.com
**www.cs-micro.com**
Vital Materials is the world's leading producer of rare metals as well as the first Chinese manufacturer to deliver G11 rotary ITO target. Vital is also one of the world's three major supplier of infrared materials, a key supplier of compound semiconductor substrates, and a strategic partner of the world's largest thin film solar manufacturer.

**Freiberger Compound Materials**
Am Junger Loewe Schacht 5,
Freiberg, 09599,
Germany
Tel: +49 3731 280 0
Fax: +49 3731 280 106
**www.fcm-germany.com**

**Kyma Technologies Inc**
8829 Midway West Road,
Raleigh, NC, USA
Tel: +1 919 789 8880
Fax: +1 919 789 8881
www.kymatech.com

**MARUWA CO LTD**
3-83, Minamihonjigahara-cho,
Owariasahi, Aichi 488-0044, Japan
Tel: +81 572 52 2317
www.maruwa-g.com/e/products/ceramic

**sp3 Diamond Technologies**
2220 Martin Avenue,
Santa Clara, CA 95050, USA
Tel: +1 877 773 9940
Fax: +1 408 492 0633
www.sp3inc.com

**Sumitomo Electric Semiconductor Materials Inc**
7230 NW Evergreen Parkway,
Hillsboro, OR 97124, USA
Tel: +1 503 693 3100 x207
Fax: +1 503 693 8275
www.sesmi.com

**The Fox Group Inc**
200 Voyageur Drive, Montreal,
Quebec H9R 6A8, Canada
Tel: +1 925 980 5645
Fax: +1 514 630 0227
www.thefoxgroupinc.com

**III/V-Reclaim**
Wald 10, 84568 Pleiskirchen,
Germany
Tel: +49 8728 911 093
Fax: +49 8728 911 156
www.35reclaim.de

**TECDIA Inc**
2700 Augustine Drive, Suite 110,
Santa Clara, CA 95054 , USA
Tel: +1 408 748 0100
Fax: +1 408 748 0111
Contact Person: Cathy W. Hung
E-mail: sales@tecdia.com
www.tecdia.com

**Wafer Technology Ltd**
34 Maryland Road, Tongwell,
Milton Keynes, Bucks, MK15 8HJ, UK
Tel: +44 (0)1908 210444
Fax: +44 (0)1908 210443
www.wafertech.co.uk
Wafer Technology Ltd is a UK based producer of III-V materials and epitaxy-ready substrates offering the widest product range in the business.

**Wafer World Inc**
1100 Technology Place, Suite 104,
West Palm Beach,
FL 33407,
USA
Tel: +1-561-842-4441
Fax: +1-561-842-2677
www.waferworld.com

## 4 Epiwafer foundry

**Albemarle Cambridge Chemical Ltd**
Unit 5 Chesterton Mills,
French's Road, Cambridge CB4 3NP,
UK
Tel: +44 (0)1223 352244
Fax: +44 (0)1223 352444
www.camchem.co.uk

**Intelligent Epitaxy Technology Inc**
1250 E Collins Blvd,
Richardson, TX 75081-2401,
USA
Tel: +1 972 234 0068
Fax: +1 972 234 0069
www.intelliepi.com

**IQE**
Cypress Drive,
St Mellons,
Cardiff
CF3 0EG, UK
Tel: +44 29 2083 9400
Fax: +44 29 2083 9401
www.iqep.com
IQE is a leading global supplier of advanced epiwafers, with products covering a diverse range of applications within the wireless, optoelectronic, photovoltaic and electronic markets.

**OMMIC**
2, Chemin du Moulin B.P. 11,
Limeil-Brevannes, 94453,
France
Tel: +33 1 45 10 67 31
Fax: +33 1 45 10 69 53
www.ommic.fr

**Soitec**
Parc Technologique des Fontaines,
Chemin des Franques, 38190
Bernin, France
Tel: +33 (0)4 76 92 75 000
www.soitec.com

**The Fox Group Inc**
200 Voyageur Drive, Montreal,
Quebec H9R 6A8, Canada
Tel: +1 925 980 5645
Fax: +1 514 630 0227
www.thefoxgroupinc.com

## 5 Deposition materials

**Materion Advanced Materials Group**
2978 Main Street,
Buffalo, NY 14214,
USA
Tel: +1 716 837 1000
Fax: +1 716 833 2926
www.williams-adv.com

**Matheson Tri-Gas**
6775 Central Avenue,
Newark, CA 94560, USA
Tel: +1 510 793 2559
Fax: +1 510 790 6241
www.mathesontrigas.com

**Nouryon Functional Chemicals B.V.**
Zutphenseweg 10, 7418 AJ
Deventer,
The Netherlands
Tel. +31 652 478554
https://hpmo.nouryon.com

**Praxair Electronics**
542 Route 303,
Orangeburg, NY 10962,
USA
Tel: +1 845 398 8242
Fax: +1 845 398 8304
www.praxair.com/electronics

**Vital Thin Film Materials (Guangdong) Co Ltd (Vital Materials subsidiary)**
18G, 18th Floor, Shenzhen Free
Trade Centre, No.111 Taizi Road,
Nanshan District,
Shenzhen, Guangdong, China 518067
Tel: (+86) 0755-21651348
sales@vitaltfm.com

www.vitaltfm.com
Vital Materials is the world's leading producer of rare metals as well as the first Chinese manufacturer to deliver G11 rotary ITO target. Vital is also one of the world's three major supplier of infrared materials, a key supplier of compound semiconductor substrates, and a strategic partner of the world's largest thin film solar manufacturer.

## 6 Deposition equipment

**AIXTRON SE**
Dornkaulstr. 2,
52134 Herzogenrath,
Germany
Tel: +49 2407 9030 0
Fax: +49 2407 9030 40
www.aixtron.com

**ETC (LPE subsidiary)**
Via Falzarego, 820021 Baranzate (Mi),
Italy
Tel: +39 02 383 41 51
Fax: +39 02 383 06 118
www.lpe-epi.com

**Evatec AG**
Hauptstrasse 1a,
CH-9477 Trübbach,
Switzerland
Tel: +41 81 403 8000
Fax: +41 81 403 8001
www.evatecnet.com

**FHR Anlagenbau Gmbh**
**(Vital Materials subsidiary)**
Am Hügel 2, D-01458
Ottendorf-Okrilla,
Germany
Tel: +49 35205 520-0
E-mail: sales@fhr.de
E-mail: sales@vitalchem.com
www.fhr.biz
Vital Materials is the world's leading producer of rare metals as well as the first Chinese manufacturer to deliver G11 rotary ITO target. Vital is also one of the world's three major supplier of infrared materials, a key supplier of compound semiconductor substrates, and a strategic partner of the world's largest thin film solar manufacturer.

**LPE S.p.A.**
Via Falzarego, 8
20021 Baranzate (Mi), Italy
Tel: +39 02 383 41 51
Fax: +39 02 383 06 118
www.lpe-epi.com

**PLANSEE High Performance Materials**
6600 Reutte,
Austria
Tel: +43 5672 600 2422
info@plansee.com
www.plansee.com

**Plasma-Therm LLC**
10050 16th Street North,
St. Petersburg, FL 33716,
USA
Tel: +1 727 577 4999
Fax: +1 727 577 7035
www.plasmatherm.com

**Riber**
31 rue Casimir Périer, BP 70083,
95873 Bezons Cedex,
France
Tel: +33 (0) 1 39 96 65 00
Fax: +33 (0) 1 39 47 45 62
www.riber.com

**SVT Associates Inc**
7620 Executive Drive,
Eden Prairie, MN 55344,
USA
Tel: +1 952 934 2100
Fax: +1 952 934 2737
www.svta.com

**Temescal, a division of Ferrotec**
4569-C Las Positas Rd,
Livermore, CA 94551,
USA
Tel: +1 925 245 5817
Fax: +1 925 449-4096
www.temescal.net

**Veeco Instruments Inc**
100 Sunnyside Blvd.,
Woodbury, NY 11797,
USA
Tel: +1 516 677 0200
Fax: +1 516 714 1231
www.veeco.com

## 7 Wafer processing materials

**Kayaku Advanced Materials Inc**
200 Flanders Road,
Westborough, MA 01581,
USA
Tel: +1 617 965 5511
www.kayakuam.com

**Praxair Electronics**
(see section 5 for full contact details)

**Versum Materials**
8555 S. River Parkway,
Tempe, AZ 85284,
USA
Tel: +1 602 282 1000
www.versummaterials.com

## 8 Wafer processing equipment

**Evatec AG**
Hauptstrasse 1a,
CH-9477 Trübbach,
Switzerland
Tel: +41 81 403 8000
Fax: +41 81 403 8001
www.evatecnet.com

**EV Group**
DI Erich Thallner Strasse 1,
St. Florian/Inn, 4782,
Austria
Tel: +43 7712 5311 0
Fax: +43 7712 5311 4600
www.EVGroup.com
EV Group is a technology and market leader for wafer processing equipment. Worldwide industry standards for aligned wafer bonding, resist processing forthe MEMS, nano and semiconductor industry.

**Logitech Ltd**
Erskine Ferry Road,
Old Kilpatrick, near Glasgow G60 5EU,
Scotland, UK
Tel: +44 (0) 1389 875 444
Fax: +44 (0) 1389 879 042
www.logitech.uk.com

**Plasma-Therm LLC**
(see section 6 for full contact details)

**SAMCO International Inc**
532 Weddell Drive,
Sunnyvale, CA, USA
Tel: +1 408 734 0459
Fax: +1 408 734 0961
**www.samcointl.com**

**SPTS Technology Ltd**
Ringland Way, Newport NP18 2TA,
Wales, UK
Tel: +44 (0)1633 414000
Fax: +44 (0)1633 414141
**www.spts.com**

**SUSS MicroTec AG**
Schleißheimer Strasse 90,
85748 Garching, Germany
Tel: +49 89 32007 0
Fax: +49 89 32007 162
**www.suss.com**

**Synova SA**
Ch. de la Dent d'Oche,
1024 Ecublens,
Switzerland
Tel +41 21 694 35 00
Fax +41 21 694 35 01
**www.synova.ch**

**TECDIA Inc**
2700 Augustine Drive, Suite 110,
Santa Clara, CA 95054 ,
USA
Tel: +1-408-748-0100
Fax: +1-408-748-0111
Contact Person: Cathy W. Hung
Email: sales@tecdia.com
**www.tecdia.com**

**Veeco Instruments Inc**
**(see section 6 for full contact details)**

## 9 Materials & metals

**Goodfellow Cambridge Ltd**
Ermine Business Park, Huntingdon,
Cambridgeshire PE29 6WR, UK
Tel: +44 (0) 1480 424800
Fax: +44 (0) 1480 424900
**www.goodfellow.com**

**PLANSEE High Performance Materials**
6600 Reutte,
Austria
Tel: +43 5672 600 2422
info@plansee.com
**www.plansee.com**

**TECDIA Inc**
2700 Augustine Drive, Suite 110,
Santa Clara, CA 95054,
USA
Tel: +1 408 748 0100
Fax: +1 408 748 0111
**www.tecdia.com**

## 10 Gas and liquid handling equipment

**Cambridge Fluid Systems**
12 Trafalgar Way, Bar Hill,
Cambridge CB3 8SQ,
UK
Tel: +44 (0)1954 786800
Fax: +44 (0)1954 786818
**www.cambridge-fluid.com**

**CS CLEAN SOLUTIONS GmbH**
Fraunhoferstrasse 4,
Ismaning, 85737,
Germany
Tel: +49 89 96 24000
Fax: +49 89 96 2400122
**www.csclean.com**

**Entegris Inc**
129 Concord Road,
Billerica, MA 01821, USA
Tel: +1 978 436 6500
Fax: +1 978 436 6735
**www.entegris.com**

**IEM Technologies Ltd**
Fothergill House, Colley Lane,
Bridgwater, Somerset TA6 5JJ, UK
Tel: +44 (0)1278 420555
Fax: +44 (0)1278 420666
**www.iemtec.com**

**Vacuum Barrier Corporation**
4 Barton Lane,
Woburn, MA 01801,
USA
Tel: +1 781 933 3570
Fax: +1 781 933 9428
**www.vacuumbarrier.com**

VACUUM BARRIER VBC CORPORATION

Vacuum Barrier's vacuum-jacketed dynamic and sealed SEMIFLEX LN2 pipe delivers LN2 at bulk tank pressure in two-phase condition for on-demand supply. Our liquid/vapor phase separators deliver low-pressure LN2 to each use point for on-demand supply. Combine with SEMIFLEX Triax LN2 pipe eliminates two-phase flow to all use points.

**Versum Materials**
8555 S. River Parkway,
Tempe, AZ 85284, USA
Tel: +1 602 282 1000
**www.versummaterials.com**

## 11 Process monitoring and control

**Conax Technologies**
2300 Walden Avenue,
Buffalo, NY 14225,
USA
Tel: +1 800 223 2389
Tel: +1 716 684 4500
**www.conaxtechnologies.com**

**k-Space Associates Inc**
2182 Bishop Circle
East, Dexter, MI 48130,
USA
Tel: +1 734 426 7977
Fax: +1 734 426 7955
**www.k-space.com**

**KLA-Tencor**
One Technology Dr,
1-2221I, Milpitas,
CA 95035, USA
Tel: +1 408 875 3000
Fax: +1 408 875 4144
**www.kla-tencor.com**

**LayTec AG**
Seesener Str. 10–13,
10709 Berlin,
Germany
Tel: +49 30 89 00 55 0
Fax: +49 30 89 00 180
**www.laytec.de**

LAYTEC Knowledge is key

LayTec develops and manufactures optical in-situ and in-line metrology systems for thin-film processes with particular focus on compound semiconductor and photovoltaic applications. Its know-how is based on optical techniques: reflectometry, emissivity corrected pyrometry, curvature measurements and reflectance anisotropy spectroscopy.

**Vacuum Barrier Corporation**
4 Barton Lane, Woburn, MA 01801, USA
Tel: +1 781 933 3570
Fax: +1 781 933 9428
**www.vacuumbarrier.com**

VACUUM BARRIER VBC CORPORATION

Vacuum Barrier's vacuum-jacketed dynamic and sealed SEMIFLEX LN2 pipe delivers $LN_2$ at bulk tank pressure in two-phase condition for on-demand supply. Our liquid/vapor phase separators deliver low-pressure $LN_2$ to each use point for on-demand supply. Combine with SEMIFLEX Triax $LN_2$ pipe eliminates two-phase flow to all use points.

**WEP (Ingenieurbüro Wolff für Elektronik- und Programmentwicklungen)**
Bregstrasse 90,
D-78120 Furtwangen im Schwarzwald,
Germany
Tel: +49 7723 9197 0
Fax: +49 7723 9197 22
**www.wepcontrol.com**

## 12 Inspection equipment

**Bruker**
Oestliche Rheinbrueckenstrasse 49,
Karlsruhe, 76187, Germany
Tel: +49 (0)721 595 2888
Fax: +49 (0)721 595 4587
**www.bruker.com**

**KLA–Tencor**
160 Rio Robles, Suite 103D,
San Jose, CA 94538-7306,
USA
Tel: +1 408 875-3000
Fax: +1 510 456-2498
**www.kla-tencor.com**

## 13 Characterization equipment

**J.A. Woollam Co. Inc.**
645 M Street Suite 102,
Lincoln, NE 68508, USA
Tel: +1 402 477 7501
Fax: +1 402 477 8214
**www.jawoollam.com**

**Lake Shore Cryotronics Inc**
575 McCorkle Boulevard,
Westerville, OH 43082, USA
Tel: +1 614 891 2244
Fax: +1 614 818 1600
**www.lakeshore.com**

## 14 Chip test equipment

**Riff Company Inc**
1484 Highland Avenue, Cheshire,
CT 06410, USA
Tel: +1 203-272-4899
Fax: +1 203-250-7389
**www.riff-co.com**

**Tektronix Inc**
14150 SW Karl Braun Drive,
P.O.Box 500, OR 97077, USA
**www.tek.com**

## 15 Assembly/packaging materials

**ePAK International Inc**
4926 Spicewood Springs Road,
Austin, TX 78759, USA
Tel: +1 512 231 8083
Fax: +1 512 231 8183
**www.epak.com**

**Gel-Pak**
31398 Huntwood Avenue,
Hayward, CA 94544, USA
Tel: +1 510 576 2220
Fax: +1 510 576 2282
**www.gelpak.com**

**Wafer World Inc**
**(see section 3 for full contact details)**

**Materion Advanced Materials Group**
2978 Main Street,
Buffalo, NY 14214, USA
Tel: +1 716 837 1000
Fax: +1 716 833 2926
**www.williams-adv.com**

## 16 Assembly/packaging equipment

**CST Global Ltd**
4 Stanley Boulevard,
Hamilton International
Technology Park,
Blantyre, Glasgow G72 0BN, UK
Tel: +44 (0) 1698 722072
**www.cstglobal.uk**

**Kulicke & Soffa Industries**
1005 Virginia Drive,
Fort Washington,
PA 19034,
USA
Tel: +1 215 784 6000
Fax: +1 215 784 6001
**www.kns.com**

**Palomar Technologies Inc**
2728 Loker Avenue West,
Carlsbad, CA 92010,
USA
Tel: +1 760 931 3600
Fax: +1 760 931 5191
**www.PalomarTechnologies.com**

**PI (Physik Instrumente) L.P.**
16 Albert St . Auburn ,
MA 01501, USA
Tel: +1 508-832-3456,
Fax: +1 508-832-0506
**www.pi.ws**
**www.pi-usa.us**

**TECDIA Inc**
2700 Augustine Drive, Suite 110,
Santa Clara, CA 95054,
USA
Tel: +1 408 748 0100
Fax: +1 408 748 0111
**www.tecdia.com**

## 17 Assembly/packaging foundry

**Quik-Pak**
10987 Via Frontera,
San Diego, CA 92127, USA
Tel: +1 858 674 4676
Fax: +1 8586 74 4681
**www.quikicpak.com**

## 18 Chip foundry

**CST Global Ltd**
4 Stanley Boulevard, Hamilton International Technology Park,
Blantyre, Glasgow, G72 0BN,
UK
Tel: +44 (0) 1698 722072
**www.cstglobal.uk**

**United Monolithic Semiconductors**
Route departementale 128,
BP46, Orsay, 91401,
France
Tel: +33 1 69 33 04 72
Fax: +33 169 33 02 92
www.ums-gaas.com

## 19 Facility equipment

**RENA Technologies NA**
3838 Western Way NE,
Albany, OR 97321, USA
Tel: +1 541 917 3626
www.rena-na.com

**Vacuum Barrier Corporation**
4 Barton Lane, Woburn, MA 01801,
USA
Tel: +1 781 933 3570
Fax: +1 781 933 9428
www.vacuumbarrier.com

VACUUM BARRIER VBC CORPORATION

Vacuum Barrier's vacuum-jacketed dynamic and sealed SEMIFLEX LN2 pipe delivers $LN_2$ at bulk tank pressure in two-phase condition for on-demand supply. Our liquid/vapor phase separators deliver low-pressure $LN_2$ to each use point for on-demand supply. Combine with SEMIFLEX Triax $LN_2$ pipe eliminates two-phase flow to all use points.

## 20 Facility consumables

**PLANSEE High Performance Materials**
6600 Reutte,
Austria
Tel: +43 5672 600 2422
info@plansee.com
www.plansee.com

**W.L. Gore & Associates**
401 Airport Rd, Elkton,
MD 21921-4236,
USA
Tel: +1 410 392 4440
Fax: +1 410 506 8749
www.gore.com

## 21 Computer hardware & software

**Crosslight Software Inc**
121-3989 Henning Dr.,
Burnaby, BC, V5C 6P8,
Canada
Tel: +1 604 320 1704
Fax: +1 604 320 1734
www.crosslight.com

**Semiconductor Technology Research Inc**
10404 Patterson Ave.,
Suite 108, Richmond,
VA 23238,
USA
Tel: +1 804 740 8314
Fax: +1 804 740 3814
www.semitech.us

## 22 Used equipment

**Brumley South Inc**
422 North Broad Street,
Mooresville,
NC 28115,
USA
Tel: +1 704 664 9251
Email: sales@brumleysouth.com
www.brumleysouth.com

BSI

As an ISO 9001 registered global leader in the remanufacturing of wafer inspection systems, Brumley South Inc specializes in designing, installing and supporting upgrades for ADE, Nanometrics, Dryden and KLA-Tencor Surfscan tools, polysterene latex sphere calibration standards, particle deposition systems, and semiconductor parts and service.

**Class One Equipment Inc**
5302 Snapfinger Woods Drive,
Decatur, GA 30035,
USA
Tel: +1 770 808 8708
Fax: +1 770 808 8308
www.ClassOneEquipment.com

## 23 Services

**Riff Company Inc**
1484 Highland Avenue,
Cheshire, CT 06410,
USA
Tel: +1 203-272-4899
Fax: +1 203-250-7389
www.riff-co.com

**TECDIA Inc**
2700 Augustine Drive, Suite 110,
Santa Clara,
CA 95054 ,
USA
Tel: +1-408-748-0100
Fax: +1-408-748-0111
Contact Person: Cathy W. Hung
www.tecdia.com

## 24 Resources

**Al Shultz Advertising Marketing for Advanced Technology Companies**
1346 The Alameda,
7140 San Jose, CA 95126, USA
Tel: +1 408 289 9555
www.alshuktz.com

**SEMI Global Headquarters**
San Jose, CA 95134,
USA
Tel: +1 408 943 6900
www.semi.org

**Yole Développement**
69006 Lyon,
France
Tel: +33 472 83 01 86
www.yole.fr

# event calendar

**If you would like your event listed in *Semiconductor Today*'s Event Calendar, then please e-mail all details to the Editor at mark@semiconductor-today.com**

**6–10 December 2025**
**71st annual IEEE International Electron Devices Meeting (IEDM 2025)**
Hilton San Francisco Union Square Hotel, San Francisco, CA, USA
**E-mail**: iedm-info@ieee.org
**www.ieee-iedm.org**

**17–19 December 2025**
**SEMICON Japan 2025**
Tokyo Big Sight, Tokyo, Japan
**E-mail**: semicon2025@operation-desk.jp
**www.semiconjapan.org**

**17–22 January 2026**
**SPIE Photonics West 2026**
Moscone Center, San Francisco, CA, USA
**E-mail**: customerservice@spie.org
**www.spie.org/conferences-and-exhibitions/photonics-west**

**4–6 February 2026**
**Asia Photonics Expo (APE 2026)**
Level 1, Sands Expo & Convention Centre (Marina Bay Sands), Singapore
**E-mail**: visitors-ape@informa.com
**www.asiaphotonicsexpo.com**

**11–13 February 2026**
**SEMICON Korea 2026**
Korea World Trade Tower, Seoul, South Korea
**E-mail**: semiconkorea@semi.org
**www.semiconkorea.org/en**

**15–19 February 2026**
**2026 IEEE International Solid- State Circuits Conference (ISSCC 2026)**
San Francisco, CA USA
**E-mail**: Issccinfo@yesevents.com
**www.isscc.org**

**15–19 March 2026**
**OFC 2026 (Optical Fiber Communication Conference and Exhibition)**
Los Angeles Convention Center, Los Angeles, CA, USA
**E-mail**: custserv@optica.org
**www.ofcconference.org**

**22–26 March 2026**
**IEEE Applied Power Electronics Conference and Exposition (APEC 2026)**
San Antonio, TX, USA
**E-mail**: apec@apec-conf.org
**www.apec-conf.org**

**22–24 April 2026**
**OPIE'26 (OPTICS & PHOTONICS International Exhibition)**
Pacifico Yokohama, Japan
**E-mail**: event@optronics.co.jp
**www.opie.jp**

**28–30 April 2026**
**29th annual Components for Military & Space Electronics conference & exhibition (CMSE 2026)**
Renaissance Los Angeles Airport Hotel, CA, USA
**E-mail**: info@tjgreenllc.com
**www.tjgreenllc.com/cmse**

# advertisers' index

**3–8 May 2026**
**SID Display Week 2026**
Los Angeles, CA, USA
**E-mail**: registration@sid.org
**www.displayweek.org**

**17–21 May 2026**
**2026 Conference on Lasers & Electro-Optics (CLEO)**
Charlotte, NC, USA
**E-mail**: info@cleoconference.org
**www.cleoconference.org**

**24–28 May 2026**
**WOCSDICE–EXMATEC 2026:**
**49th Workshop on Compound Semiconductor Devices and Integrated Circuits (WOCSDICE)**
**20th Expert Evaluation and Control of Compound Semiconductor Materials and Technologies (EXMATEC)**
Gdansk, Poland
**E-mail**: we2026@unipress.waw.pl
**https://wocsdice-exmatec-2026.syskonf.pl/**

**26–29 May 2026**
**IEEE 76th Electronic Components and Technology Conference (ECTC 2026)**
JW Marriott & Ritz-Carlton Grande Lakes Resort, Orlando, FL, USA
**E-mail**: borabal@ieee.org
**www.ectc.net**

**31 May–4 June 2026**
**International Power Electronics Conference (IPEC-Nagasaki 2026- ECCE Asia)**
Dejima Messe Nagasaki, Nagasaki, Japan
**E-mail**: ipec2026@or.knt.co.jp
**www.ipec2026.org**

**7–12 June 2026**
**2026 IEEE/MTT-S International Microwave Symposium (IMS 2026)**
Boston, MA, USA
**E-mail**: exhibits@horizonhouse.com
**www.ims-ieee.org/about-ims/past-and-future-ims**

**9–11 June 2026**
**PCIM 2026 (Expo & Conference on Power Electronics, Intelligent Motion, Renewable Energy and Energy Management)**
Nuremberg, Germany
**E-mail**: pcim_visitors@mesago.com
**www.mesago.de/en/PCIM/main.htm**

**14–18 June 2026**
**2026 IEEE/JSAP Symposium on VLSI Technology & Circuits**
Hilton Hawaiian Village, Honolulu, HI, USA
**E-mail**: vlsi@vlsisymposium.org
**www.vlsisymposium.org**

**28 June – 1 July 2026**
**ALD/ALE 2026: AVS 26th International Conference on Atomic Layer Deposition (ALD 2026), featuring the 13th International Atomic Layer Etching Workshop (ALE 2026)**
Tampa, FL, USA
**E-mail**: della@avs.org
**https://ald2026.avs.org**

**20–21 July 2026**
**Global Summit on Optics, Photonics and Laser Technologies (GPOL 2026)**
Paris, France
**E-mail**: optics@intellimeetings.org
**https://optics.intelliglobalconferences.com**

**26–28 August 2026**
**PCIM Asia Shenzhen 2026 (International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management)**
Shenzhen, China
**E-mail**: pcimasia@china.messefrankfurt.com
**https://pcimasia-shanghai.cn.messefrankfurt.com**

**4–9 September 2026**
**29th European Microwave Week (EuMW 2026)**
ExCel, London, UK
**E-mail**: eumwreg@itnint.com
**www.eumweek.com**

**14–18 September 2026**
**Energy Conversion Congress & Expo Europe (ECCE Europe 2026)**
Valencia, Spain
**E-mail**: info@ecce-europe.org
**https://ipec2026.org/ecce-europe/**

**4–8 October 2026**
**IEEE Energy Conversion Congress & Expo (ECCE 2026)**
Vancouver, British Columbia, Canada
**E-mail**: info@ieee-ecce.org
**www.ieee-ecce.org/2026**

**13–15 October 2026**
**SEMICON West 2026**
Moscone Center, San Francisco, CA, USA
**E-mail**: semiconwest@semi.org
**www.semiconwest.org**

# semiconductorTODAY

COMPOUNDS & ADVANCED SILICON

## www.semiconductor-today.com

**Join our LinkedIn group: Semiconductor Today**

**Follow us on Twitter: Semiconductor_T**

## Choose *Semiconductor Today* for . . .


### MAGAZINE

Accurate and timely coverage of the compound semiconductor and advanced silicon industries

Targeted 107,000+ international circulation

Published 10 times a year and delivered by e-mail and RSS feeds


### WEB SITE

Average of over 28,000 unique visitors to the site each month

Daily news updates and regular feature articles

Google-listed news source


### E-BRIEF

Weekly round-up of key business and technical news

E-mail delivery to entire circulation

Banner and text marketing opportunities available