

# Photonics

## Weekly Intelligence Report

2026-08-09 | 43 articles | 10 countries

troy-technical.jp

This Week's Keyword

## AI Photonics Supply

Geopolitics & CPO drive market shifts

43

articles

Total Articles Analyzed

10

countries

Source Countries

\$15B+

USD

NVIDIA Photonics Invest

\$154B

USD

AI Optical Market (2028)

### All 43 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

| #   | Article Title             | Type               | Tech Novelty                                                       | Market Proximity                                                   | Market Impact                                                      | Data Reliability                                                   | US/EU Relevance                                                    | Summary                                                                                                                        |
|-----|---------------------------|--------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| #01 | US Mulls Ban on Chinese   | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | US considers ban on Chinese optical transceivers for AI data centers, boosting US suppliers and signaling supply chain shifts. |
| #02 | Photonics Challenge 2026  | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Japanese Photonics Challenge showcases diverse light-tech business plans for healthcare, agriculture, and environment.         |
| #03 | Nokia to Acquire NXP Fab  | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Nokia to acquire NXP's Arizona fab by 2029, boosting US optical comms chip manufacturing for AI/cloud.                         |
| #04 | Tokyo Electron Highlights | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Tokyo Electron highlights CPO as critical for AI data centers, with NVIDIA and Broadcom already adopting.                      |
| #05 | China's Zhongji Innolight | Market Overview    | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Zhongji Innolight's record IPO highlights AI optics demand, but deepens indium phosphide shortage for 1.6T transceivers.       |
| #06 | Major Foundries Advance   | New Product        | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Major foundries advance CPO roadmaps, with NVIDIA and Broadcom launching CPO-enabled products for AI.                          |
| #07 | NTT Achieves Record Q1    | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | NTT reports record revenue, accelerating global IOWN expansion with APN in Chile and PEC-2 switches in India.                  |
| #08 | All-Photonics Networks    | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | All-Photonics Networks will redefine AI data center locations, enabling distributed, energy-efficient deployments.             |
| #09 | NVIDIA Commits Over \$15B | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | NVIDIA invests over \$15B in US photonics firms (Lumentum, Marvell, Coherent, Corning) to secure AI supply chain.              |
| #10 | AI Photonic Interconnect  | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | AI photonic interconnect startup Lumilens raises \$700M Series C to accelerate chip-to-chip data transfer for AI.              |
| #11 | Lightmatter & Qualcomm    | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Lightmatter and Qualcomm achieve 1.6 Tbps/fiber CPO chiplet with 16-wavelength DWDM, resolving AI training bottlenecks.        |
| #12 | CoreWeave to Construct    | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | CoreWeave to build three AI data centers in Indonesia by 2028, expanding into APAC and boosting AI storage demand.             |

| #   | Article Title             | Type               | Tech Novelty                                                       | Market Proximity                                                   | Market Impact                                                      | Data Reliability                                                   | US/EU Relevance                                                    | Summary                                                                                                                                      |
|-----|---------------------------|--------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| #13 | Arista Networks Achieves  | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Arista Networks reports record revenue, forecasts 40% growth for 2026, and advances open CPO strategy with 1.6T trials.                      |
| #14 | Marvell Technology Enters | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Marvell Technology enters S&P; 500, stock triples on strong AI data center revenue from optical modules and Ethernet switches.               |
| #15 | Ayar Labs' TeraPHY        | New Product        | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Ayar Labs' UCie-compatible TeraPHY optical I/O engine enables AI scale-up beyond the rack, strengthening ecosystem partnerships.             |
| #16 | Thin-Film Lithium Niobate | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Thin-Film Lithium Niobate (TFLN) modulators emerge as core tech for next-gen photonics, offering ultra-high bandwidth and low power.         |
| #17 | Sumitomo Electric Raises  | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Sumitomo Electric raises profit forecast on surging AI data center optics demand, with Q1 operating profit up 61%.                           |
| #18 | USI Reports Optical       | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | USI reports optical transceivers evolving to 800G/1.6T, eyeing 3.2T to alleviate AI cluster data bottlenecks.                                |
| #19 | Lumentum CEO Flags InP    | Market Overview    | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Lumentum CEO warns of indium phosphide shortage; US considers banning Chinese optical transceivers, benefiting US firms.                     |
| #20 | Broadcom Unveils 400G/L   | New Product        | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Broadcom unveils 'Taurus,' the first 400G/lane optical DSP, enabling cost-effective 1.6T transceivers for the AI era.                        |
| #21 | Facebook Declares Photon  | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Facebook declares photonic interconnects critical for next-gen AI and data centers, overcoming electrical link limits.                       |
| #22 | Novel Photonic AI Accel   | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Novel photonic AI accelerator achieves 70% power reduction over GPUs for edge AI, fusing light and logic.                                    |
| #23 | Photonic Computing Poised | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Photonic computing poised to outperform silicon, dramatically boosting AI performance and energy efficiency by using light.                  |
| #24 | Optical Computing Redef   | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Optical computing redefines AI limits; China accelerates industrialization with innovations like photonic LLMs and in-situ training.         |
| #25 | Marvell Unveils Photonic  | New Product        | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Marvell unveils Photonic Fabric products post-Celestial AI acquisition, fortifying AI memory infrastructure with shared memory across racks. |
| #26 | UC Berkeley Develops      | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | UC Berkeley develops ultra-low-loss, low-power SiPh MEMS optical switch with zero-change foundry process.                                    |
| #27 | Scientists Develop Photo  | Research           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Scientists develop photonic chip with quad-lane optical highway, dramatically boosting data transfer capacity and efficiency.                |
| #28 | GlobalFoundries Acceler   | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | GlobalFoundries accelerates next-gen SiPh, while Taiwan foundries establish competitive edge, critical for AI.                               |
| #29 | Photonics & Optics Stocks | Market Overview    | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | Photonics & optics stocks surge due to AI data center boom, but concerns rise over intensifying overseas competition.                        |
| #30 | CPO Shipments Intensify   | Analysis           | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | CPO shipments intensify as TSMC, Intel, Samsung, and GlobalFoundries pursue diverse optical integration strategies.                          |
| #31 | PsiQuantum Secures \$125M | Corporate Strategy | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | <div><div></div><div></div><div></div><div></div><div></div></div> | PsiQuantum secures \$125M DARPA contract to validate its silicon photonics fault-tolerant quantum computer design.                           |

| #   | Article Title              | Type               | Tech Novelty | Market Proximity | Market Impact | Data Reliability | US/EU Relevance | Summary                                                                                                                                              |
|-----|----------------------------|--------------------|--------------|------------------|---------------|------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #32 | Former Intel CEO Lauds     | Corporate Strategy | ●●●●●<br>●   | ●○○○○<br>○       | ●●○○○<br>○    | ●●●○○<br>○       | ●●●●●<br>●      | Former Intel CEO Patrick Gelsinger praises PsiQuantum's \$125M DARPA contract for silicon photonics quantum computing as 'transformative.'           |
| #33 | Multifunctional FMCW LiDAR | Research           | ●●●●●<br>●   | ●●○○○<br>○       | ●●●○○<br>○    | ●●●●●<br>●       | ●●●○○<br>○      | Multifunctional FMCW LiDAR proposed for NEVs, enabling simultaneous 3D imaging and multi-parameter sensing for autonomous driving.                   |
| #34 | Hamamatsu Photonics EU     | Corporate Strategy | ●●○○○<br>○   | ●●●●●<br>●       | ●●○○○<br>○    | ●●●○○<br>○       | ●●●●●<br>○      | Hamamatsu Photonics Europe enhances imaging solutions by promoting acquired Fairchild high-performance CMOS image sensor technology to EU customers. |
| #35 | Hamamatsu Photonics New    | New Product        | ●●○○○<br>○   | ●●●●●<br>●       | ●●○○○<br>○    | ●●●●●<br>○       | ●●●○○<br>○      | Hamamatsu Photonics unveils new industrial and scientific sensor products, including CMOS line image sensors and high-speed photodiodes.             |
| #36 | IMEC & OAE Announce        | Research           | ●●●●●<br>○   | ●●○○○<br>○       | ●●○○○<br>○    | ●●●●●<br>○       | ●●●●●<br>●      | IMEC announces breakthrough in integrated optical routing for optogenetic probes, using MZI-MMI arrays and dual-color emitters.                      |
| #37 | Lightmatter Challenges     | Analysis           | ●●○○○<br>○   | ●●●○○<br>○       | ●●●○○<br>○    | ●●○○○<br>○       | ●●●●●<br>●      | Lightmatter faces the challenge of balancing performance and cost for its enterprise optical computing solutions.                                    |
| #38 | PsiQuantum Seeks Engin     | Corporate Strategy | ●●●●●<br>●   | ●○○○○<br>○       | ●●○○○<br>○    | ●●○○○<br>○       | ●●●●●<br>●      | PsiQuantum seeks integrated photonics engineers for silicon photonics quantum computers, emphasizing fault tolerance and scalability.                |
| #39 | A*STAR Accelerates CPO     | Research           | ●●●○○<br>○   | ●●○○○<br>○       | ●●●○○<br>○    | ●●○○○<br>○       | ●●●○○<br>○      | A*STAR accelerates advanced optical interconnect development for CPO in Singapore, focusing on package-level integration.                            |
| #40 | 3D Heterogeneous Integr    | Analysis           | ●●●●●<br>○   | ●●○○○<br>○       | ●●●●●<br>○    | ●●○○○<br>○       | ●●●●●<br>●      | 3D heterogeneous integration with photonic waveguides in glass substrates addresses AI data center power crisis.                                     |
| #41 | New Market Pitch Compares  | Comparison         | ●●●○○<br>○   | ●●●●●<br>○       | ●●●●●<br>○    | ●●●○○<br>○       | ●●●●●<br>●      | New Market Pitch analyzes Marvell's Celestial AI acquisition and compares chip-to-chip interconnect startups, highlighting market consolidation.     |
| #42 | 36kr Analyzes Optical      | Analysis           | ●●○○○<br>○   | ●●●●●<br>○       | ●●●●●<br>○    | ●●●○○<br>○       | ●●●●●<br>○      | 36kr analyzes optical chip industry trends, highlighting foundry strategies for SiPh, InP, TFLN, and Taiwan's advantage.                             |
| #43 | CSIS Report Highlights     | Analysis           | ●○○○○<br>○   | ●●●●●<br>●       | ●●●●●<br>○    | ●●●●●<br>○       | ●●●●●<br>●      | CSIS report highlights regional networks like AIM Photonics as critical for 21st-century industrial policy and US photonics competitiveness.         |

●●●●● High ●●●○○ Med-High ●●○○○ Med ●○○○○ Low | Yellow highlight = featured article

## Three Questions That Demand Your Decision This Week

### ❶ Is your AI supply chain exposed to geopolitical risks?

US considers banning Chinese optical transceivers, while China accelerates its own optical computing industrialization. Assess reliance on specific regions/suppliers for critical components like InP and CPO.

### ❷ Are you investing enough in Co-Packaged Optics (CPO)?

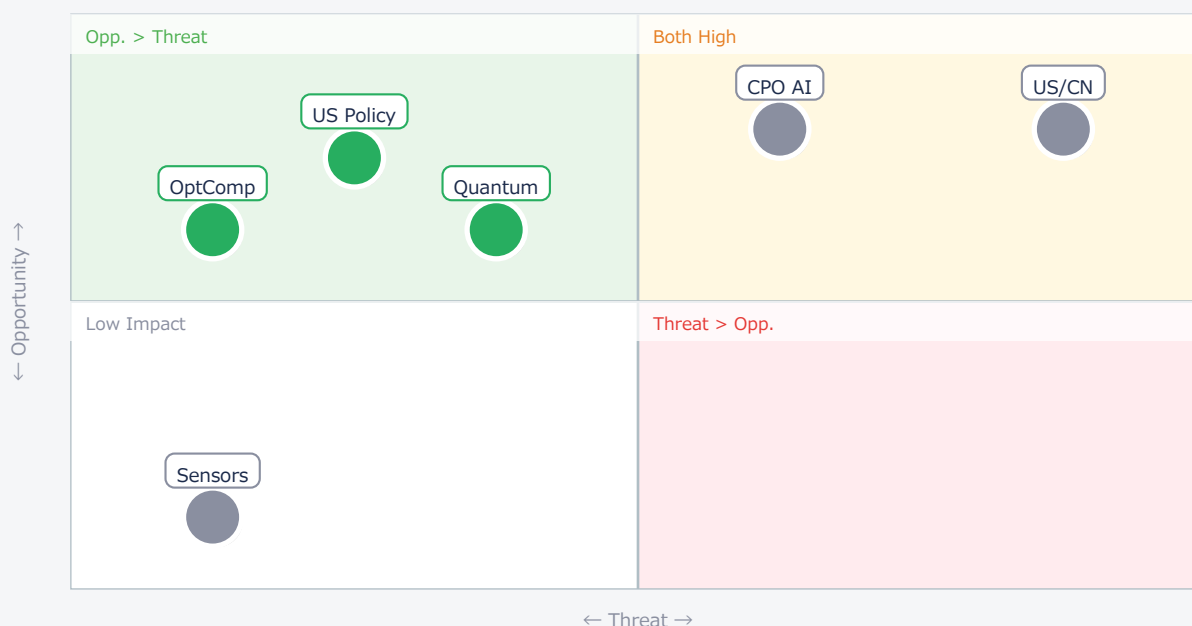
Major foundries (TSMC, Intel, Samsung, GlobalFoundries) and tech giants (NVIDIA, Broadcom, Marvell) are rapidly advancing CPO. Evaluate your roadmap for 1.6T/3.2T optical modules and CPO integration.

### ❸ How will optical & quantum computing impact your R&D;?

Photonic AI accelerators promise 70% power reduction, and PsiQuantum secured a \$125M DARPA contract for silicon photonics quantum computers. Identify potential disruptive technologies and allocate R&D; resources.

## Opportunities vs. Threats for US/European Companies

### Opportunity vs. Threat Matrix for US/European Companies



| Item        | Quadrant | ↑ Opportunity      | ↓ Threat            |
|-------------|----------|--------------------|---------------------|
| ● US/CN     | Critical | US/EU market share | Supply chain risk   |
| ● CPO AI    | Critical | AI infra market    | Intense competition |
| ● OptComp   | Opp.     | New AI paradigms   | Long R&D; cycle     |
| ● Quantum   | Opp.     | Future computing   | High R&D; cost      |
| ● Sensors   | Ref.     | Niche markets      | Limited scale       |
| ● US Policy | Opp.     | Domestic growth    | Trade barriers      |

## Deep Dive ① — Geopolitical Shifts Reshape AI Optics Supply

#01 | 2026/08/04 | Investing.com | Tech Novelty●○○○○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

The US government is reportedly considering a ban on Chinese-made optical transceivers for AI data centers, prompting FCC to prepare new regulations. This move targets a market where Chinese firms hold ~2/3 of the 800G optical module segment.

This policy shift has already triggered significant stock surges for US optical component manufacturers like Lumentum (+35%) and AAOI (+18%), while Lumentum's CEO warns of a potential indium phosphide (InP) supply shortage.

### ► Strategic Analyst's Perspective

[Opportunity] for US/EU optical component suppliers (Lumentum, Coherent, AAOI) to capture significant market share and accelerate domestic manufacturing. This could de-risk critical AI supply chains. [Threat] for US/EU AI giants (NVIDIA, Google, Meta, Microsoft) facing increased costs and potential supply disruptions due to reliance on Chinese 800G modules and the InP shortage. [Next Actions] [Procurement] Identify critical Chinese optical transceiver suppliers and assess alternative US/EU sources by end of month. [Strategy] Evaluate long-term InP supply chain resilience and potential for domestic/allied production partnerships by next quarter.

## Deep Dive ② — Foundries Accelerate Co-Packaged Optics for AI

#06 | 2026/08/03 | Tom's Hardware | Tech Novelty●●●●○ Proximity●●●●○ Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

Major foundries (TSMC, Intel, Samsung, GlobalFoundries) are aggressively advancing Co-Packaged Optics (CPO) roadmaps to address AI cluster connectivity bottlenecks. CPO integrates optical engines closer to processors, reducing power and increasing bandwidth.

NVIDIA has initiated mass production of CPO for its Spectrum-X Ethernet Photonics switch, and Broadcom unveiled the industry's first 400G/lane optical DSP, "Taurus BCM83640," optimized for 1.6T transceivers.

### ► Strategic Analyst's Perspective

[Opportunity] for US/EU semiconductor and packaging firms to lead in CPO manufacturing and design, leveraging advanced packaging and silicon photonics expertise. Early adoption by NVIDIA/Broadcom validates market. [Threat] for companies not rapidly integrating CPO, risking being left behind in AI data center performance and energy efficiency. High R&D; and capital investment are barriers. [Next Actions] [R&D;] Benchmark CPO integration capabilities against leading foundries (TSMC, Intel, Samsung, GF) and define internal CPO roadmap by end of quarter. [Business Dev] Explore partnerships with CPO ecosystem players (foundries, optical component suppliers) to accelerate adoption.

## Deep Dive ③ — China's Push in Optical Computing for AI

#24 | 2026/08/03 | LINIOBATE | Power Next Gen Photon | Tech Novelty●●●●○ Proximity●●○○○ Market Impact●●●●● Data Reliability●●●○○ US/EU Relevance●●●●●

Optical computing is redefining AI limits by overcoming power and memory walls. Innovations include Lightmatter's photonic AI accelerator (1/9 energy of electronics) and Neurophos' 10,000x smaller modulators.

China is rapidly industrializing this sector, with the Wuxi photonic chip pilot line, NanZhi Optoelectronics' "OptoChat AI" (China's first photonic LLM), and Tsinghua University's "Taiji-II" achieving in-situ training on optical chips.

### ► Strategic Analyst's Perspective

[Opportunity] for US/EU research institutions and startups to push fundamental breakthroughs in optical computing architectures and materials, potentially leading to new AI hardware paradigms. [Threat] of China gaining a strategic advantage in next-generation AI hardware through aggressive state-led industrialization and rapid commercialization of optical computing. This could impact long-term tech leadership. [Next Actions] [R&D;] Initiate competitive intelligence on Chinese optical computing advancements, focusing on industrialization timelines and performance benchmarks by end of month. [Strategy] Evaluate potential for government-backed R&D; initiatives in optical computing to counter foreign industrial policy by next quarter.

## Other Notable Articles

NVIDIA Commits Over \$15 Billion in Strategic Investments to Lumentum, Marvell, Coherent, and Corning to Secure and Expand Photonics Supply Chain for AI Infrastructure (HRM Outlook)

Tech Novelty●●○○○ Proximity●●●●● Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

NVIDIA's massive investment secures US photonics supply chain, highlighting critical shift from compute to connectivity.

Lightmatter and Qualcomm Collaborate to Develop 1.6 Tbps/Fiber CPO Chiplet, Resolving AI Training's Electrical Bottleneck (alchedek)

Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●●○ Data Reliability●●●●○ US/EU Relevance●●●●●

Lightmatter/Qualcomm's 1.6 Tbps/fiber CPO chiplet is a major leap for AI training, using 16-wavelength DWDM.

Thin-Film Lithium Niobate Modulators Emerge as Core Technology for Next-Gen Photonic Systems, Delivering Ultra-High Bandwidth and Low Power Consumption (Liobate)

Tech Novelty●●●●○ Proximity●●○○○ Market Impact●●●○○ Data Reliability●●●○○ US/EU Relevance●●●●○

TFLN modulators offer superior bandwidth and low power, critical for future 1.6T/3.2T optical transceivers.

PsiQuantum Secures \$125M DARPA Quantum Computing Contract to Validate Silicon Photonics Design (PostQuantum.com)

Tech Novelty●●●●● Proximity●○○○○ Market Impact●●○○○ Data Reliability●●●●○ US/EU Relevance●●●●●

PsiQuantum's DARPA contract validates silicon photonics for fault-tolerant quantum computing, a long-term game changer.

CSIS Report Highlights Critical Role of Regional Networks in 21st-Century Industrial Policy: Featuring AIM Photonics (CSIS)

Tech Novelty●○○○○ Proximity●●●●● Market Impact●●●●○ Data Reliability●●●●○ US/EU Relevance●●●●●

CSIS report emphasizes AIM Photonics' role in US industrial policy, bridging research to manufacturing for photonics.

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## Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

### ■ Immediate (this week)

- [Procurement] Identify critical Chinese optical transceiver suppliers in your AI data center supply chain and assess immediate exposure to potential US bans.
- [R&D;] Initiate competitive intelligence on Chinese optical computing advancements, focusing on industrialization timelines and performance benchmarks.

### ■ Short-term (1 month)

- [Strategy] Conduct a detailed risk assessment of indium phosphide (InP) supply chain vulnerabilities for high-speed optical modules.
- [R&D;] Benchmark internal CPO integration capabilities against leading foundries (TSMC, Intel, Samsung, GlobalFoundries) and define internal CPO roadmap.
- [Business Dev] Explore partnerships with CPO ecosystem players (foundries, optical component suppliers) to accelerate adoption of 1.6T/3.2T solutions.

### ■ Medium-long term (quarter+)

- [Strategy] Evaluate potential for government-backed R&D; initiatives in optical computing to counter foreign industrial policy and secure long-term tech leadership.
- [R&D;] Investigate thin-film lithium niobate (TFLN) modulators as a core technology for next-generation photonic systems, overcoming silicon photonics limitations.
- [Executive] Develop a long-term strategy for engagement with quantum computing R&D;, particularly silicon photonics, to prepare for future disruptive capabilities.

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[troy-technical.jp/en](https://troy-technical.jp/en) | Original curation. Article copyrights belong to respective authors. | Gemini API + Claude | 2026-08-09

# Photonics — Selected Articles

Date: 2026-08-09

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- #10 AI Photonic Interconnect Startup Lumilens Raises Over \$700 Million in Series C to Accelerate Chip-to-Chip Data Transfer for AI
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- #16 Thin-Film Lithium Niobate Modulators Emerge as Core Technology for Next-Gen Photonic Systems, Delivering Ultra-High Bandwidth and Low Power Consumption

- #17 Sumitomo Electric Raises Full-Year Profit Forecast on Surging AI Data Center Optics Demand, Q1 Operating Profit Jumps 61%
- #18 USI Reports Optical Transceivers Evolving to 800G/1.6T and Eyeing 3.2T to Alleviate AI Cluster Data Bottlenecks
- #19 Lumentum CEO Flags Indium Phosphide Wafer Shortage; US Regulators Consider Banning Chinese Optical Transceivers, Potentially Benefiting Coherent and Other US Firms
- #20 Broadcom Unveils Industry's First 400G/Lane Optical DSP 'Taurus' at OFC 2026, Paving Way for 200T AI Era with Cost-Effective 1.6T Transceivers
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- #24 Optical Computing Redefines AI's Physical Limits; China Accelerates Industrialization with Key Innovations
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- #26 UC Berkeley Develops Ultra-Low-Loss, Low-Power Silicon Photonics MEMS Optical Switch with Zero-Change Foundry Process
- #27 Scientists Develop Photonic Chip with Quad-Lane Optical Highway, Dramatically Boosting Data Transfer Capacity
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# #01 US Mulls Ban on Chinese Optical Transceivers, Lumentum Stock Surges Over 35% with Strong Revenue Forecast, AAOI Jumps 18%

Published August 04, 2026 Investing.com, 動區動趨 USA, Taiwan, Japan



## OVERVIEW

The U.S. government is reportedly considering a ban on Chinese-made optical transceivers for AI data centers, prompting the FCC to prepare new regulations. This potential move, aimed at securing critical AI infrastructure, has ignited a rally in U.S. optical component stocks like Lumentum and Applied Optoelectronics (AAOI), which have seen significant surges. While offering opportunities for domestic suppliers to capture market share from Chinese firms—who currently dominate the 800G module segment—the ban could also create substantial supply chain disruptions for major AI companies.

### Background

The potential U.S. import ban on Chinese optical transceivers is a strategic continuation of the government's broader efforts to bolster national security and maintain technological supremacy, particularly within critical infrastructure like advanced AI data centers. The rapid expansion of AI applications underscores the necessity of robust and secure optical communication infrastructure, elevating the supply chain for key components like transceivers to a strategic concern. Reports indicate the Trump administration, via the U.S. Federal Communications Commission (FCC), is considering regulations to restrict Chinese data center hardware, specifically optical transceivers for AI. This initiative follows precedents set by prior actions against Chinese tech giants such as Huawei, signifying a sustained drive to de-risk critical supply chains and foster domestic manufacturing capabilities.

## Key Findings

Reports of a potential U.S. ban on Chinese-made optical transceivers for AI data centers have spurred significant market reactions. Lumentum Holdings Inc. shares surged pre-market, with Mizuho Securities projecting over 35% quarter-over-quarter revenue growth for the September quarter and maintaining a \$1,100 price target. Similarly, Applied Optoelectronics, Inc. (AAOI) shares spiked 18% in pre-market trading, reflecting a 70% increase over five trading days, as investors anticipate a surge in demand for U.S.-based optical component manufacturers. This policy targets the critical 800G optical module market, where Chinese firms currently command approximately two-thirds of the global supply. Lumentum's CEO has highlighted the severity of potential supply chain issues, specifically warning that an indium phosphide (InP) shortage could surpass the challenges of the current memory market crisis, thereby emphasizing the value of vertically integrated capabilities. While this ban presents a substantial market opportunity for U.S. and allied suppliers like Lumentum, Coherent, and AAOI to capture significant market share, it also poses challenges for major AI companies. These firms may face increased costs and the necessity to diversify sourcing from established Chinese suppliers. The global optical transceiver supply chain could experience considerable disruption and potential shortages, particularly for high-performance modules, given the current reliance on Chinese manufacturing. The industry is closely monitoring the scope and implementation timeline of these potential regulations.

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Source: <https://m.jp.investing.com/news/stock-market-news/article-93CH-1630209?ampMode=1>

Collected: August 07, 2026 | Automated Research System (Gemini API)

# #02 Photonics Challenge 2026 Finals Showcase 12 Innovative Light-Technology Business Plans, Including Photonic Foot Care for Seniors and PhotoMag "Light Nutrition Farming"

Published July 30, 2026 光産業創成大学院大学 Japan



## OVERVIEW

The 7th Photonics Challenge 2026 Finals, held on July 30, showcased 12 groundbreaking light-technology ventures selected nationwide. Innovations ranged from photonic foot care for seniors and 'PhotoMag' light nutrition farming to Raman spectroscopy-based surgical navigation systems. These diverse proposals earned high praise for their potential to address critical challenges in healthcare, agriculture, and environmental science.



### Background

Photonic technology holds immense promise across a wide array of industrial sectors, including healthcare, agriculture, communication, environmental science, and manufacturing, consistently delivering innovative solutions in areas like sensing, imaging, and processing. The Photonics Challenge serves as a critical platform to unlock the untapped potential of such technologies and accelerate their societal implementation. Faced with pressing contemporary issues such as an aging society, food security concerns, and increasing demands for advanced medical care, the role of photonic technology is becoming ever more crucial.

### Key Findings

The "7th Photonics Challenge 2026 Final Selection Committee," hosted by the Graduate School for the Creation of New Photonics Industries, took place on July 30, 2026. Twelve finalist teams, selected from across Japan, presented innovative business plans applying photonic technologies aimed at solving societal challenges and creating new value. Noteworthy proposals included the development of photonic foot care devices for the elderly, "PhotoMag" light nutrition farming designed to overcome biological limitations through optical means, and a surgical navigation system leveraging Raman spectroscopy for enhanced precision.

### Technical & Clinical Details

The photonic foot care device aims to maintain and improve the foot health of seniors using specific wavelengths of light, offering a non-invasive solution for home use that could enhance quality of life and potentially reduce healthcare costs. "PhotoMag" light nutrition farming seeks to optimize nutrient absorption and accelerate the growth of specific crops by maximizing light properties, an approach difficult with conventional methods. This offers a novel pathway to address food security issues and promote sustainable agriculture. The Raman spectroscopy surgical navigation system, by analyzing the chemical composition of biological tissues in real-time, is expected to significantly improve the accuracy of distinguishing between tumor and normal tissue, thereby enhancing the safety and efficacy of surgical procedures.



## Strategic Significance & Outlook

These business plans are not merely technical ideas but are deeply rooted in addressing concrete market needs and societal challenges, making their future viability and growth highly anticipated. The Graduate School for the Creation of New Photonics Industries is committed to vigorously promoting the creation of new photonic technology innovations through such challenges, aiming to shape future society. Investors and corporations are keenly observing how these early-stage projects will potentially transform various industries.

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Source: <https://www.gpi.ac.jp/social/pc/2026tokusetsu/>

Collected: August 07, 2026 | Automated Research System (Gemini API)

# #04 Nokia to Acquire NXP Arizona Wafer Fab Campus by Q1 2029, Boosting U.S. Optical Communications Chip Manufacturing for AI and Cloud Markets

Published August 07, 2026 moomooコミュニティ フィンランド, USA



## OVERVIEW

Nokia announced plans to significantly expand its U.S. optical communications chip manufacturing capabilities through the lease and eventual acquisition of NXP Semiconductors' Arizona wafer fab campus by Q1 2029. This strategic investment, revealed during its Q3 2026 earnings call, aims to strengthen Nokia's competitive edge in the rapidly expanding AI and cloud sectors. While robust AI and cloud-related orders are reported, the company anticipates that restructuring costs and substantial capital expenditures will temporarily impact profitability.

### Background

The global technology landscape has recently been defined by increasing geopolitical risks and pronounced vulnerabilities within international supply chains, driving a worldwide imperative to fortify domestic manufacturing capabilities for critical components. This trend is particularly evident in the semiconductor industry, where governments, including the U.S., have actively incentivized significant domestic investment. Simultaneously, the relentless expansion of artificial intelligence (AI) and cloud computing has led to an unprecedented surge in data traffic, necessitating robust, high-performance optical communication infrastructure and thereby catalyzing substantial investments in this sector.

### Key Findings

Nokia has unveiled an ambitious strategy to substantially bolster its U.S. optical communications chip manufacturing footprint through the lease and eventual acquisition of NXP Semiconductors' wafer fabrication campus in Arizona. This pivotal strategic maneuver, with full acquisition slated for Q1 2029, is designed to enhance Nokia's competitive standing within the rapidly expanding AI and cloud computing markets, while simultaneously strengthening its supply chain resilience. The company formalized these significant investment plans during its Q3 2026 earnings announcement on July 23, 2026.

Central to this acquisition is Nokia's aim to significantly augment its vertical integration capabilities, specifically in the production of photonic integrated circuits (PICs) and associated high-frequency chips indispensable for advanced optical communication systems. By gaining greater control over the manufacturing processes, particularly for components utilizing advanced materials such as indium phosphide (InP), Nokia anticipates achieving superior product performance, enhanced cost efficiencies, and robust supply stability. The burgeoning demand from AI data centers and the continuous evolution of 5G/6G networks are fueling an exponential need for high-performance, low-power optical communication chips, underscoring the strategic imperative for in-house manufacturing capacity to maintain a competitive edge.

Nokia reports strong order volumes within its AI and cloud-related business segments, positioning this manufacturing expansion as a cornerstone of its long-term growth trajectory. Nevertheless, the substantial restructuring costs and significant capital expenditures associated with the NXP fab lease and subsequent acquisition are projected to exert near-term pressure on the company's profitability. Industry observers will closely monitor the ramifications of this strategic investment on Nokia's financial performance and market share, with the full realization of its value anticipated following the complete acquisition in 2029. This bold maneuver is expected to solidify Nokia's position as a critical innovator and supplier in the global optical communications market.

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Source: <https://www.moomoo.com/ja/community/feed/nokia-oyj-nok-us-chatgpt-told-me-yes-your-understanding-117048079286277>

Collected: August 07, 2026 | Automated Research System (Gemini API)

# #05 Tokyo Electron Highlights Co-Packaged Optics as Key to AI Data Center Performance, Reducing Power and Bottlenecks; NVIDIA and Broadcom Adopt Technology

Published August 01, 2026 東京エレクトロン Japan



## OVERVIEW

Tokyo Electron highlights Co-Packaged Optics (CPO) as a pivotal technology for next-generation AI data centers, significantly reducing power consumption and mitigating communication bottlenecks. CPO achieves ultra-high-speed, low-latency data transfer by integrating optical and electrical signal conversion directly within a single package. Industry leaders like NVIDIA and Broadcom are already deploying CPO-enabled chips, underscoring its rapid adoption and transformative potential for AI infrastructure.



### Background

The burgeoning complexity and scale of AI models have driven an exponential increase in data movement within modern data centers. Traditional electrical signaling over copper interconnects is rapidly approaching its fundamental limits in terms of bandwidth, latency, and power efficiency. Co-Packaged Optics (CPO) emerges as a transformative solution designed to overcome this critical 'data movement wall.' Optical signals inherently offer superior speed, extended reach, and immunity to electromagnetic interference, rendering them indispensable for next-generation AI supercomputing and high-performance cloud infrastructures. This shift from conventional electrical to advanced optical interconnects at the package level represents a fundamental paradigm change in data center architecture.

### Key Findings

Tokyo Electron's analysis underscores the critical role of Co-Packaged Optics (CPO) technology in significantly advancing AI data center performance. CPO achieves dramatic improvements by integrating electrical-to-optical signal conversion directly within the processing package itself, which substantially mitigates communication bottlenecks and drastically reduces overall system power consumption compared to traditional pluggable optical modules. This intimate integration facilitates ultra-high-speed, energy-efficient data transfer—a crucial requirement for increasingly dense and demanding AI processing workloads.

### Technical Details

The core innovation of CPO lies in co-locating the optical transceivers in close proximity to high-bandwidth processing chips, such as CPUs or GPUs. This minimized physical distance drastically reduces the path electrical signals must traverse on the printed circuit board (PCB), thereby mitigating signal degradation and parasitic power loss. By executing optical conversion closer to the processor, CPO inherently eliminates the substantial power draw and latency penalties associated with conventional pluggable transceivers. Leading industry players like NVIDIA and Broadcom have already introduced CPO-enabled chips, deploying them in state-of-the-art AI accelerators and high-performance network switches, unequivocally demonstrating the technology's maturity and readiness for widespread practical application.

## Strategic Significance & Outlook

The widespread adoption of CPO technology is poised to revolutionize AI data center architecture, enabling the construction of significantly higher-density and more energy-efficient systems. This architectural shift will directly accelerate AI model training cycles and enhance the deployment of real-time inference capabilities. Beyond traditional data centers, CPO is expected to find compelling applications in other demanding sectors, including advanced edge computing and high-performance computing (HPC) environments, where extreme speed, ultra-low latency, and minimal power consumption are paramount. Tokyo Electron's active engagement in CPO manufacturing process development underscores its commitment to supporting the industrialization of this breakthrough technology, positioning it as a fundamental enabler for the future of digital infrastructure.

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Source: [https://www.tel.co.jp/museum/magazine/report/202608\\_01/](https://www.tel.co.jp/museum/magazine/report/202608_01/)

Collected: August 07, 2026 | Automated Research System (Gemini API)

# #05 China's Zhongji Innolight Secures \$6.81 Billion in Record Hong Kong IPO Amid Deepening Indium Phosphide Shortage for AI Optics

Published August 03, 2026   TrendForce   Taiwan



## OVERVIEW

Zhongji Innolight, a leading Chinese optical transceiver manufacturer, raised HK\$53.41 billion (\$6.81 billion) in Hong Kong's largest IPO of 2026, aiming to expand its high-speed optical module business for major AI data center clients like NVIDIA. Concurrently, the industry faces a severe shortage of indium phosphide (InP) substrates, critical for next-generation 1.6T optical transceivers, threatening to bottleneck the growth of the AI optical interconnect market. The IPO funds will fuel R&D into 1.6T, 2.4T, 3.2T optical modules and Co-Packaged Optics (CPO)/Near-Packaged Optics (NPO) architectures.



### Key Findings

Zhongji Innolight, a prominent Chinese optical transceiver manufacturer, successfully completed a HK\$53.41 billion (approximately US\$6.81 billion) Initial Public Offering (IPO) on the Hong Kong Stock Exchange (HKEX) on July 30, 2026, marking it as Hong Kong's largest IPO of the year. While the listing reflected robust investor confidence in the booming demand for high-speed optical modules in data center and AI infrastructure, the stock experienced a decline shortly after its debut. Crucially, as the company transitions to mass production and validation of 1.6T optical transceivers, a severe shortage of indium phosphide (InP) substrate material—essential for high-end laser chips—is emerging as a critical bottleneck for the entire AI optical interconnect market.

### Technical & Business Details

- Zhongji Innolight serves global AI data center operators and hyperscalers, including NVIDIA, Google, Meta, and Microsoft, as a leading provider of high-speed optical modules. Its core products are optical transceivers used in AI clusters within data centers, offering high-speed and energy-efficient data transmission solutions vital for escalating AI workloads.
- Proceeds from the IPO are primarily allocated to accelerate research and development (R&D) and enhance manufacturing capabilities for next-generation optical modules. Specific focus areas include 1.6 Terabit (T), 2.4T, and 3.2T optical modules, as well as the development of Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) architectures. These technologies are considered indispensable for managing the exponential growth in data traffic and reducing power consumption driven by advancements in AI processing.
- However, the ambitious push towards 1.6T optical transceiver mass production faces a significant hurdle: the industry-wide shortage of indium phosphide (InP) substrates. InP is a foundational material for the high-performance laser chips used in optical interconnects, and its scarcity is now predicted to surpass DRAM and NAND as the primary bottleneck in AI data center optical interconnection. This material constraint could lead to increased manufacturing costs and supply delays, potentially affecting the pace of AI infrastructure deployment.

## Background & Context

The increasing complexity and scale of AI models necessitate ever-faster and lower-latency interconnectivity within and between data centers, with optical communication technology at its core. GPU manufacturers, led by NVIDIA, and cloud service providers are rapidly adopting ultra-high-speed optical modules like 800G and 1.6T to efficiently handle AI workloads. Chinese companies such as Zhongji Innolight have established themselves as key players in this market, and its IPO reflects the capital market's validation of this growth trajectory. The supply chain for these advanced components is global yet fragile, as highlighted by the InP shortage.

## Strategic Significance & Outlook

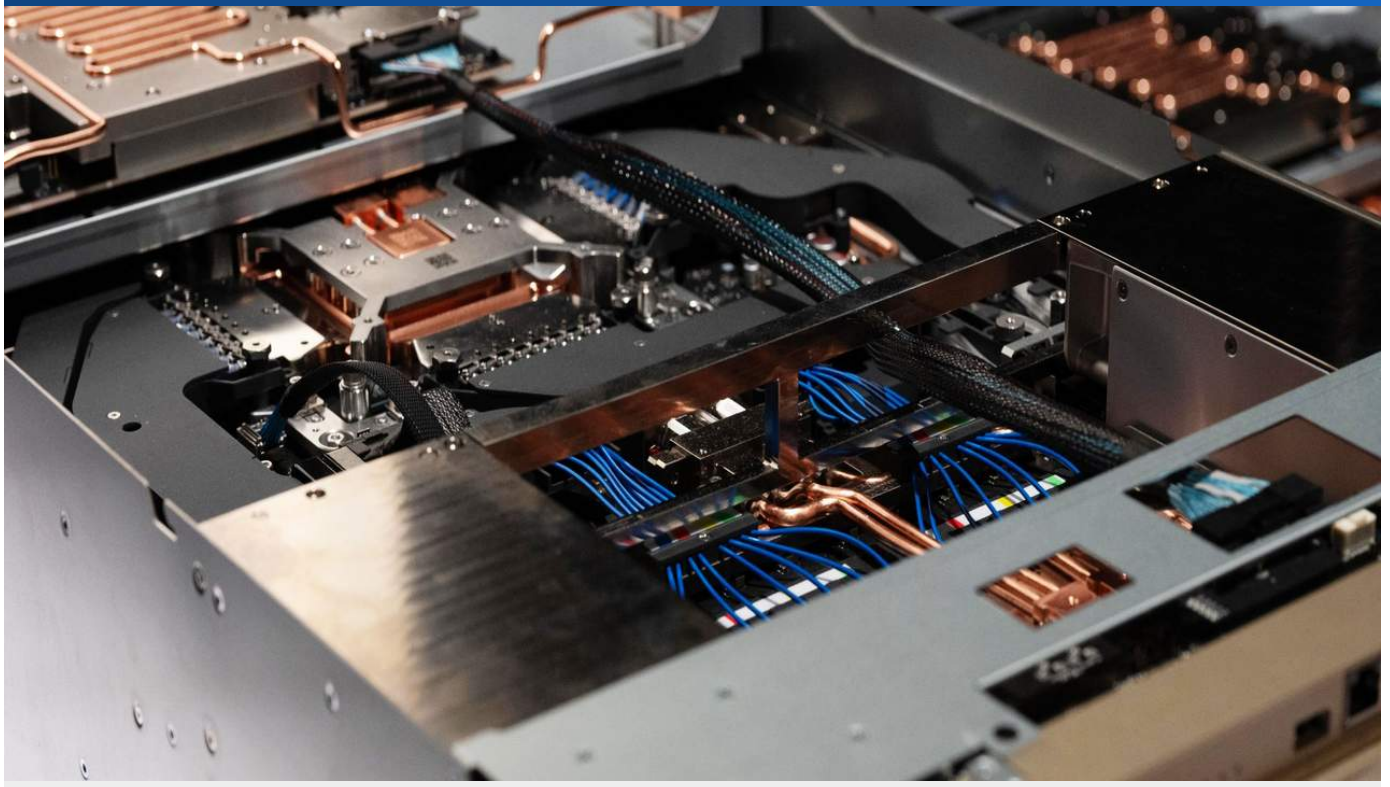
Zhongji Innolight's IPO not only underscores the growth of the optical communications industry driven by AI data center demand but also brings to light inherent vulnerabilities within the supply chain. Stabilizing the supply of InP substrates is an urgent challenge for Zhongji Innolight and the broader industry. Future efforts will likely focus on enhanced collaboration with material manufacturers and foundries, exploration of alternative materials, and expansion of production capacities. The company's trajectory in developing and commercializing its next-generation modules will significantly influence the evolution of AI infrastructure globally, especially in balancing cutting-edge performance with supply chain resilience.

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Source: <https://www.trendforce.com/news/2026/08/03/zj-innolight-debuts-on-hkex-in-record-ipo-as-inp-substrate-bottleneck-intensifies/>

# #06 Major Foundries Advance CPO Roadmaps as NVIDIA Spectrum-X and Broadcom Taurus BCM83640 Enter Mass Production and 400G/Lane DSP Era

Published August 03, 2026 Tom's Hardware USA



## OVERVIEW

Leading foundries (TSMC, Intel, Samsung, GlobalFoundries) are aggressively pursuing Co-Packaged Optics (CPO) roadmaps to address scale-up connectivity bottlenecks in AI clusters. NVIDIA has initiated mass production of CPO for its Spectrum-X Ethernet Photonics switch, while Broadcom unveiled the industry's first 400G/lane optical DSP, "Taurus BCM83640," optimized for 1.6T transceivers. CPO, by integrating optical engines closer to processors or switch ASICs, promises significant reductions in power consumption, increased bandwidth density, and predictable scalability for next-gen AI infrastructure.

### Key Findings

As AI cluster requirements escalate exponentially, major foundries including TSMC, Intel, Samsung, and GlobalFoundries are vigorously advancing their Co-Packaged Optics (CPO) technology roadmaps. CPO represents a transformative approach, dramatically shortening electrical signal paths by placing optical engines in close proximity to processors or switch ASICs, leading to substantial reductions in power consumption, enhanced bandwidth density, and predictable scalability. Concurrently, NVIDIA announced the commencement of mass production for CPO within its Spectrum-X Ethernet Photonics switches, and Broadcom introduced the industry's first 400G/lane optical DSP, the "Taurus BCM83640," at OFC 2026, specifically optimized for 1.6T transceiver applications.

### Technical & Business Details

- **TSMC's COUPE Platform:** TSMC is driving CPO through its "COUPE" platform, an extension of its CoWoS and SoIC ecosystems into optics. This leverages advanced packaging techniques to optimize electrical and optical integration. NVIDIA has collaborated with TSMC to develop the COUPE silicon photonics packaging platform, integrating CPO into its Spectrum-X products.
- **Intel's Optical I/O Chiplets:** Intel focuses on optical computing interconnect chiplets, aiming for direct integration between processors and optical engines. This strategy capitalizes on Intel's extensive semiconductor manufacturing capabilities and silicon photonics expertise.
- **Samsung's Silicon Photonics:** Samsung is delivering CPO solutions by integrating silicon photonics into its semiconductor manufacturing processes. This approach enables high-density, power-efficient optical interconnects while leveraging existing fabrication infrastructure.
- **GlobalFoundries' SCALE Platform:** GlobalFoundries implements its CPO strategy through the "SCALE" (Silicon Photonics with Add-on Low-Cost Edge-Coupling) platform. This platform emphasizes cost-effectiveness and flexibility, making CPO technology accessible to a broader customer base.

- **NVIDIA and Broadcom Productization:** NVIDIA's Spectrum-X Ethernet Photonics switches, by adopting CPO, significantly shorten electrical pathways compared to traditional transceiver-based switches. This improves signal integrity and reduces latency, drastically enhancing efficiency for AI models operating in larger clusters. Broadcom's Taurus BCM83640 is a groundbreaking DSP foundational to next-generation 3.2T optical transceiver modules, positioning CPO as the "North Star" for energy-efficient, high-bandwidth scaling.

## Background & Context

The burgeoning demands of AI workloads have led to an explosive increase in data movement between GPUs, pushing traditional electrical interconnects to their limits in terms of power consumption and latency. CPO is widely regarded as one of the most promising technologies to overcome this "electrical bottleneck." Foundries are accelerating CPO investments, recognizing that chip-level optical integration is indispensable for the evolution of AI infrastructure. The CPO market is projected to exceed \$39 billion by 2030, intensifying competition among technology leaders.

## Strategic Significance & Outlook

The widespread deployment of CPO technology has the potential to revolutionize AI data center design and operation. Improvements in power efficiency, increased bandwidth density, and assured scalability are pivotal for building sustainable AI infrastructure. The diverse CPO approaches from various foundries and key component suppliers will foster a rich ecosystem of solutions, further accelerating technological innovation. Specifically, the productization efforts by industry giants like NVIDIA and Broadcom unequivocally signal CPO's transition from an experimental concept to a mainstream technology, shaping the future of high-performance computing and AI.

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Source: <https://www.tomshardware.com/tech-industry/artificial-intelligence/co-packaged-optics-cpo-foundry-roadmaps-breaking-down-tsmc-intel-samsung-and-globalfoundries-approach-to-next-generation-scale-up-connectivity>



# #07 NTT Achieves Record Q1 2026 Revenue, Accelerates IOWN Global Expansion with APN in Chile, PEC-2 Switches in India, and GPU over APN Testbed in Japan

Published August 06, 2026 Investing.com Japan



## OVERVIEW

NTT reported record revenues in Q1 2026, propelling accelerated global deployment of its IOWN technology, particularly the All-Photonics Network (APN) in Chile for remote mining operations and Photonic-Electronic Converged (PEC-2) device-equipped switches for data center energy efficiency in India. Concurrently, NTT is advancing its AIOOWN vision in Japan with a "GPU over APN Testbed" across eight locations, enabling distributed GPU resource utilization via APN. These initiatives demonstrate IOWN's critical role in enhancing power efficiency and processing capabilities for next-generation digital infrastructure.

### Key Findings

Nippon Telegraph and Telephone Corporation (NTT) achieved record revenues in the first quarter of fiscal year 2026, leveraging this momentum to significantly accelerate the global deployment of its Innovative Optical and Wireless Network (IOWN) technology. Noteworthy advancements include the integration of the All-Photonics Network (APN) into remote operations within Chile's copper mining industry, the commencement of a proof-of-concept experiment for Photonic-Electronic Converged (PEC-2) device-equipped switches to enhance data center energy efficiency in India, and the establishment of a "GPU over APN Testbed" at eight locations across Japan. These initiatives mark crucial milestones toward realizing IOWN's ALOWN vision, which aims for dramatic improvements in power efficiency and processing power.

### Technical & Business Details

- **APN Deployment in Chile:** In Chile's copper mining sector, IOWN's APN has been deployed for remote control systems to boost safety and productivity in harsh environments. APN processes signals entirely with light from end-to-end, delivering ultra-low latency and high-capacity communication, which enables precise remote machine operation. This is expected to significantly improve worker safety and operational efficiency.
- **PEC-2 Switch PoC in India:** In India, a proof-of-concept experiment is underway for switches equipped with NTT's PEC-2 devices to address the escalating power consumption in data centers. PEC-2 maximizes the conversion efficiency between electrical and optical signals, dramatically improving data center energy efficiency, reducing operational costs, and lowering environmental impact. This technology is key to building sustainable IT infrastructure, especially as AI workloads increase data center power demands.
- **GPU over APN Testbed in Japan:** The "GPU over APN Testbed", implemented across eight locations in Japan, seamlessly connects distributed GPU resources via APN, enhancing AI computation flexibility and efficiency. This testbed allows geographically dispersed GPUs to function as a single high-performance supercomputer, enabling faster and more cost-effective training and inference for large-scale AI models. This provides a groundbreaking environment for AI developers and research institutions.



## Background & Context

NTT's IOWN concept aims for a dramatic evolution of information and communication infrastructure by realizing networks, computing, and devices entirely based on light. With the explosive proliferation of AI and IoT, data processing volumes and network traffic are surging, and existing electrical signal-based technologies are beginning to show their limits. IOWN is expected to transform social infrastructure, industries, and individual lifestyles by simultaneously achieving ultra-high-speed, low-latency communication and significant power consumption reduction. The recent specific deployments and trials in various regions demonstrate the steady implementation of this ambitious vision into real-world applications.

## Strategic Significance & Outlook

The global expansion of NTT's IOWN technology will have a profound impact across diverse sectors, including telecommunications, AI, cloud computing, and industrial automation. Particularly, IOWN's ability to improve power efficiency contributes to reducing the environmental footprint of data centers worldwide, marking a crucial step towards a sustainable digital society. As more countries and regions adopt these solutions, IOWN could potentially emerge as a new global standard for digital infrastructure. The advancement of the AIOWN vision clearly demonstrates NTT's commitment to solving societal challenges through technological innovation.

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Source: <https://www.investing.com/news/company-news/ntt-q1-2026-slides-record-revenues-iown-expansion-accelerate-93CH-4840287>

# #08 All-Photonics Networks Poised to Redefine AI Data Center Locations, Boosting Efficiency and Sustainability

Published August 06, 2026   Photonics Spectra   USA



## OVERVIEW

All-Photonics Networks (APN) are set to fundamentally redefine AI data center location strategies, reducing reliance on traditional concentrated hubs. This technology enables more flexible site selection based on energy supply and regional demand, significantly enhancing AI efficiency and sustainability amidst growing power and space constraints. Fiber is now being positioned as the "fourth pillar" of AI, underscoring the critical importance of optical interconnects for next-generation AI infrastructure.

### Key Findings

All-Photonics Networks (APN) are poised to initiate a paradigm shift in AI data center siting, potentially reducing the industry's dependence on traditional, concentrated urban data center hubs with their inherent power and space limitations. This technological advancement will enable more distributed and flexible data center deployments, allowing for locations optimized by energy supply availability and specific regional demands. The anticipated outcome is a dramatic improvement in AI computational efficiency coupled with enhanced environmental sustainability for its operations. The Fiber Broadband Association has positioned fiber as the "fourth pillar" of AI, citing current AI chip architectures approaching 30 Tbps/chip and exceeding electrical interconnect capabilities.

### Technical & Business Details

- **Driving a Distributed Data Center Model:** APN transmits data entirely as optical signals, minimizing signal degradation and enabling long-distance, ultra-low-latency communication. This effectively neutralizes the challenge of physical distances between data centers, facilitating distributed deployments in regions with abundant power, high cooling efficiency, or proximity to specific data generation sources—locations previously considered impractical.
- **Enhancing Energy Efficiency and Sustainability:** AI data centers consume vast amounts of electricity, and their cooling represents a significant challenge. Optical communication technologies like APN reduce the number of electrical-to-optical conversions, minimizing power loss and improving overall energy efficiency. This is expected to lower operational costs and reduce carbon footprints, contributing to the development of sustainable AI infrastructure.
- **Fundamental Improvement in AI Efficiency:** In large-scale "AI factories," high-speed, efficient data movement between chips, servers, and data centers often bottlenecks AI processing performance. Photonics is key to resolving this bottleneck, enabling dramatic increases in data transfer speeds while maintaining power efficiency. This accelerates the training and inference of AI models, facilitating the realization of more complex AI applications.

## Background & Context

The evolution of AI demands unprecedented computational and data processing capabilities, pushing existing data center infrastructures to their limits. Specifically, the "siloe" nature of data centers often leads to inefficient resource utilization and increased power consumption. Optical communication technology is recognized as a promising solution to these challenges, serving to strengthen the "brain" and "nervous system" of AI infrastructure. This has fostered a consensus within the industry that to improve AI efficiency, data center connectivity methods must be fundamentally transformed.

## Strategic Significance & Outlook

Further advancements in APN and optical communication technologies will accelerate the shift of AI data centers from high-cost, power-constrained urban areas to more optimized, distributed locations. This could also stimulate regional economic development and foster the creation of new industrial clusters. By positioning fiber as an indispensable element of AI, investment in optical infrastructure will intensify, fortifying the foundation to unleash the full potential of AI technology. Future AI will operate on distributed, highly efficient infrastructures powered by advanced optical connectivity.

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Source: [https://www.photonics.com/Articles/To\\_Improve\\_the\\_Efficiency\\_of\\_AI\\_Lets\\_Improve/p5/a72338](https://www.photonics.com/Articles/To_Improve_the_Efficiency_of_AI_Lets_Improve/p5/a72338)

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #09 NVIDIA Commits Over \$15 Billion in Strategic Investments to Lumentum, Marvell, Coherent, and Corning to Secure and Expand Photonics Supply Chain for AI Infrastructure

Published August 05, 2026   HRM Outlook   USA



NVIDIA investing over \$15 billion in Lumentum, Marvell, Coherent & Secure & expand its photonics supplier AI infrastructure

## OVERVIEW

In 2026, NVIDIA strategically invested over \$15 billion across seven companies, including Lumentum, Marvell Technology, Coherent, and Corning, to secure and expand the critical photonics and optical interconnect supply chain for AI infrastructure. A \$2 billion investment in Lumentum will establish new US manufacturing facilities to meet soaring AI data center demand, while up to \$3.2 billion into Corning will boost optical fiber production by over 50% and tenfold US manufacturing capacity. These investments address the shifting AI bottleneck from raw compute to connectivity, ensuring essential optical interconnects and power management for next-generation AI data centers.

### Key Findings

NVIDIA has made strategic investments exceeding \$15 billion across seven key companies in 2026, solidifying its dominant position in the AI infrastructure ecosystem. These substantial investments are specifically targeted at securing the supply chain and expanding manufacturing capabilities for photonics and optical interconnect technologies, which form the critical "nervous system" connecting AI's "brain." As part of this strategy, NVIDIA announced a multi-year partnership with Lumentum Holdings Inc., investing \$2 billion to construct new manufacturing facilities in the United States, thereby addressing the surging demand from AI-driven data centers. Furthermore, up to \$3.2 billion has been allocated to Corning Inc., with plans to increase optical fiber production capacity by over 50% and expand US manufacturing capabilities tenfold, ensuring the optical connectivity essential for next-generation AI data centers.

### Technical & Business Details

- **Lumentum Investment and US Manufacturing Expansion:** The \$2 billion investment in Lumentum aims to accelerate innovation in advanced optical and laser technologies to support the rapid growth of AI infrastructure. Lumentum is a crucial supplier for NVIDIA's optical interconnect needs, and the expansion of its US manufacturing footprint will enhance supply chain stability and regional supply capabilities, securing a consistent flow of high-quality, high-capacity optical components vital for AI systems.
- **Strengthened Collaboration with Marvell Technology:** NVIDIA has also invested approximately \$2 billion in Marvell Technology, bolstering Marvell's focus on the hyperscale market with custom silicon, optical interconnects, and networking semiconductors. Marvell collaborates with NVIDIA on the NVLink Fusion ecosystem and silicon photonics development, providing solutions that improve chip-to-chip, rack-to-rack, and data center-to-data center connectivity within AI infrastructure.



- **Investments in Coherent and Corning:** Coherent is considered an integral part of NVIDIA's AI infrastructure strategy to secure photonics supply. The investment of up to \$3.2 billion in Corning secures the supply of optical fiber and connectivity solutions, strengthening the physical foundation necessary to meet increasing AI infrastructure demands. These investments collectively fortify NVIDIA's supply chain and future growth across all layers of AI infrastructure, including optical interconnects, CPO switching chips, high-speed connectivity, and power management.
- **Market Outlook:** Goldman Sachs projects the AI optical networking market to reach \$154 billion by 2028, positioning NVIDIA's extensive investments as a strategic move to capitalize on this massive market opportunity.

## Background & Context

As AI advances, the bottleneck has shifted from raw computational power to data movement and connectivity. Training and inference of large-scale AI models demand ultra-high-speed, low-latency data transfer between GPUs, pushing traditional electrical signaling to their limits. Photonics technology has emerged as the key to solving this challenge, becoming an indispensable element for enhancing power efficiency and performance in AI data centers. NVIDIA's investments signify a strong commitment to strengthening the entire optical communication technology supply chain to maximize the performance of its AI platforms.

## Strategic Significance & Outlook

NVIDIA's broad investment in the photonics sector will play a pivotal role in shaping the future of AI infrastructure. A more resilient supply chain and the standardization and proliferation of advanced optical interconnect technologies will further boost AI computing performance, enabling the creation of new applications and services. These developments are expected to generate significant growth opportunities across the entire photonics industry, accelerating a new investment cycle in the AI era. The expansion of US manufacturing capacity also holds critical importance in addressing geopolitical risks and diversifying supply chains.



Collected: August 08, 2026 | Automated Research System (Gemini API)

# #10 AI Photonic Interconnect Startup Lumilens Raises Over \$700 Million in Series C to Accelerate Chip-to-Chip Data Transfer for AI

Published August 07, 2026   Wowtale   USA



## OVERVIEW

Lumilens, an AI photonic interconnect startup, successfully closed a Series C funding round with over \$700 million, accelerating its development of advanced optical connectivity solutions for faster and more efficient chip-to-chip data transfer in AI. This substantial capital infusion highlights strong investor interest in the competitive chip-to-chip optical interconnect market, where companies like Ayar Labs (TeraPHY), Lightmatter (Passage), and Celestial AI (Photonic Fabric) are also active. Lumilens aims to resolve the data movement bottleneck in AI workloads using photonics technology.

### Key Findings

Lumilens, a startup specializing in AI photonic interconnects, has secured over \$700 million in a Series C funding round. This significant capital injection will enable the company to accelerate the development of its groundbreaking optical connectivity technologies designed to speed up data movement and enhance power efficiency between AI processors and accelerators. This substantial funding clearly indicates robust investor confidence in optical technologies capable of resolving the electrical bottleneck in chip-to-chip data transfer for AI, a sector also seeing active advancements from competitors such as Ayar Labs (TeraPHY platform), Lightmatter (Passage platform), and Celestial AI (Photonic Fabric).

### Technical & Business Details

- Lumilens' technology focuses on one of the most challenging problems in AI systems: moving vast amounts of data rapidly and efficiently between chips. While current AI chips have seen exponential increases in computational power, the speed and power efficiency of data transfer via traditional electrical traces between chips have become a bottleneck, limiting overall system performance.
- The company's photonic interconnect solutions leverage optical fiber and silicon photonics technologies to achieve data transmission speeds that are significantly faster and consume less power compared to electrical signals. This capability is crucial for reducing latency and increasing throughput during AI workload execution.
- In the competitive landscape, Ayar Labs' TeraPHY platform is known as a production-ready optical I/O engine connecting via UCle (Universal Chiplet Interconnect Express). Lightmatter's Passage platform has achieved 1.6 Tbps/fiber unidirectional throughput with its CPO chiplets, and Celestial AI's Photonic Fabric is recognized for its unique optical computing approach. Lumilens' funding success underscores how these companies with advanced technologies are attracting substantial investments to establish competitive advantages in the AI era.

## Background & Context

The increasing sophistication of AI applications has driven the performance enhancement of dedicated hardware like GPUs and AI accelerators, but the interconnects between these chips are now creating "memory wall" or "data movement wall" problems that bottleneck overall system performance. Traditional electrical connections face physical limits in data transfer rates and increasing power consumption. Consequently, there's a growing recognition that optical technology is essential for next-generation AI infrastructure. Against this backdrop, investment in startups developing optical interconnect technologies has become vibrant, with Lumilens' success serving as a prime example.

## Strategic Significance & Outlook

Lumilens' large funding round suggests that AI photonic interconnect technology is entering a mature phase, with accelerated development towards commercialization. If successful, the company's technology could revolutionize AI data center design, contributing to significant improvements in power efficiency and dramatic increases in computational capacity. While competition in this sector is expected to intensify, it is anticipated that these innovations will ultimately maximize the efficiency of AI workloads and enable the construction of more powerful and sustainable AI systems for the future.

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Source: <https://en.wowtale.net/2026/08/08/234651/>

# #11 Lightmatter and Qualcomm Collaborate to Develop 1.6 Tbps/Fiber CPO Chiplet, Resolving AI Training's Electrical Bottleneck

Published July 31, 2026   alchedek   USA



## OVERVIEW

Lightmatter, in strategic collaboration with Qualcomm Technologies, has achieved 1.6 Tbps/fiber unidirectional throughput with its Passage L-Series Co-Packaged Optics (CPO) chiplet. This breakthrough chiplet leverages a 16-wavelength DWDM architecture, delivering approximately 8 times the bandwidth of existing Near-Packaged Optics (NPO) and CPO solutions. This marks a critical advancement in Lightmatter's mission to address the electrical bottleneck in AI training through innovative optical interconnects.

### Key Findings

Lightmatter, through its strategic collaboration with Qualcomm Technologies, has announced a breakthrough achievement aimed at resolving the electrical bottleneck in AI training. The company has demonstrated an impressive 1.6 Terabits per second (Tbps) per fiber unidirectional throughput with its Passage L-Series Co-Packaged Optics (CPO) chiplet. This innovative chiplet incorporates a 16-wavelength DWDM (Dense Wavelength Division Multiplexing) architecture, delivering approximately 8 times the bandwidth compared to existing Near-Packaged Optics (NPO) and CPO solutions. This achievement represents a significant step towards realizing high-speed and power-efficient optical interconnect technology essential for accommodating the exponential growth in AI workloads.

### Technical & Business Details

- **Performance of Passage L-Series CPO Chiplet:** Lightmatter's Passage L-Series CPO chiplet minimizes the electrical signal path by integrating the optical engine in very close proximity to the processor or switch ASIC. This integration significantly improves signal integrity and drastically reduces power consumption. The 1.6 Tbps/fiber unidirectional throughput is critical performance for eliminating data movement bottlenecks between chips and boards, particularly in AI model training and inference.
- **16-Wavelength DWDM Architecture:** The 16-wavelength DWDM architecture employed in this chiplet allows for the simultaneous transmission of multiple optical signals at different wavelengths over a single optical fiber. This dramatically increases the effective data transmission capacity, enabling ultra-high-bandwidth connectivity while limiting the increase in physical fiber count. This contributes to optimizing space and cost within data centers and AI factories.
- **Collaboration with Qualcomm Technologies:** The strategic cooperation with Qualcomm Technologies facilitates the integration of Qualcomm's deep expertise in mobile and computing with Lightmatter's optical computing and photonics technology. This partnership is a crucial step towards embedding optical technology into next-generation AI chipsets and networking solutions, potentially accelerating broader market adoption.



## Background & Context

The increasing complexity of AI models and the explosion of data volumes are exposing the limitations of current electrical interconnect technologies. Specifically, data movement between GPUs and AI accelerators leads to poor power efficiency and increased latency, which are major bottlenecks restricting the overall performance of AI systems. To address this challenge, CPO technology, which integrates optical engines into chip packages, has gained significant attention, with leading semiconductor companies and startups engaged in intense development competition. Lightmatter's achievement underscores the superiority of optical technology in high-performance computing for the AI era.

## Strategic Significance & Outlook

The success of Lightmatter's Passage L-Series CPO chiplet, in collaboration with Qualcomm Technologies, holds the potential to significantly transform the future of optical interconnects in AI infrastructure. An eightfold increase in bandwidth compared to existing solutions will dramatically accelerate AI training speeds, enabling the development and deployment of larger and more complex AI models. This technology is expected to have a major impact on data center design, power management, and operational costs, and further commercialization and adoption are anticipated as a key technological innovation for realizing a sustainable and high-performance AI ecosystem.

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Source: <https://www.alchedek.com/news/articleView.html?idxno=751>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #12 CoreWeave to Construct Three AI Data Centers in Indonesia by 2028, Expanding into APAC Market and Driving AI Storage Demand

Published August 05, 2026   Converge Digest   USA



## OVERVIEW

CoreWeave announced plans to build three AI data center facilities in Indonesia by 2028, marking its first expansion into the Asia-Pacific region. This initiative will add a total of 360MW of IT load capacity, addressing regional demand for AI cloud services and providing low-latency, data-local AI infrastructure. Concurrently, a \$335 million contract with CoreWeave led to a surge in Backblaze's stock, illustrating the widespread impact of the AI infrastructure cycle on data storage and optical networking sectors.

### Key Findings

CoreWeave, a prominent AI cloud service provider, has unveiled ambitious plans to construct three state-of-the-art AI data center facilities in Indonesia by 2028, signaling its strategic entry into the Asia-Pacific market. This substantial expansion will introduce an aggregate of 360 megawatts (MW) of IT load capacity, directly addressing the escalating demand for AI workloads across the APAC region. This move is poised to bolster regional economies by delivering low-latency, data-local AI infrastructure, while also demonstrating the profound impact of the AI infrastructure cycle on the broader data storage market. Indeed, a significant \$335 million contract with CoreWeave propelled the stock value of data storage company Backblaze to new highs.

### Technical & Business Details

- **Data Center Construction in Indonesia:** CoreWeave is partnering with Singapore-based consultancy Yondr Group to develop data centers across three locations in Indonesia, including Jakarta and the Riau Islands. These facilities will be engineered with cutting-edge AI accelerators, high-speed interconnects, and efficient cooling systems to support massive AI training and inference workloads. This regional expansion strategically anticipates the accelerating adoption of AI and the growth of the digital economy, particularly in Southeast Asia.
- **Total Capacity of 360MW IT Load:** The addition of 360MW capacity is exceptionally large for AI data centers, cementing CoreWeave's position as one of the world's leading AI infrastructure providers. This capacity is capable of hosting tens of thousands of high-performance GPUs, providing the computational resources necessary for complex AI model training and real-time AI application execution.

- **AI Infrastructure Cycle Impacts Storage Market:** The volume of data generated and processed by AI models is growing exponentially, driving heightened demand for high-performance storage solutions. The substantial contract between a cloud storage provider like Backblaze and CoreWeave clearly illustrates that AI infrastructure demand extends beyond mere computational power, creating widespread economic effects across foundational sectors such as storage and networking, including optical interconnects. Optical networking stocks have also seen significant appreciation, further validating the sustained high demand for optical interconnects in AI data centers.

## Background & Context

The rapid advancement of generative AI has created unprecedented demand for data center resources globally. Particularly in the Asia-Pacific region, accelerated digital transformation and increased investment in AI technologies have heightened the need for high-performance computing infrastructure. Specialized AI cloud providers like CoreWeave offer optimized access to GPU resources and services tailored specifically for AI workloads, establishing a competitive advantage over traditional general-purpose cloud providers. This expansion into Indonesia carries strategic implications for geographically distributing AI workloads and addressing data sovereignty requirements.

## Strategic Significance & Outlook

CoreWeave's deployment of AI data centers in Indonesia will further accelerate the growth of the AI ecosystem in the APAC region. The provision of low-latency AI infrastructure will create opportunities for local startups and enterprises to develop and deploy more advanced AI applications. Moreover, the economic ripple effects of AI infrastructure on related industries such as data storage and optical networking are expected to continue, stimulating further investment and technological innovation in these areas. CoreWeave's success symbolizes the importance of specialized cloud services in the AI era and the dynamic changes occurring within the global data center market.

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #13 Arista Networks Achieves First Quarterly Revenue Over \$3 Billion, Forecasts \$12.6 Billion for 2026 with 40% Growth, and Advances Open CPO Strategy

Published August 04, 2026   Seeking Alpha   USA



## OVERVIEW

Arista Networks reported its first-ever quarterly revenue exceeding \$3 billion, projecting \$12.6 billion for 2026 with 40% growth, driven by sustained AI networking demand and improving supply chains. The company issued its third upward guidance revision for the year, anticipating broad demand across all product sectors, including backend AI fabrics and core data center frontends. Arista is also deepening its focus on open Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) models, with 1.6T trials expected in H2 2026 and full production in 2027.



### Key Findings

Arista Networks has achieved a historic milestone, reporting its first-ever quarterly revenue exceeding \$3 billion, fueled by robust AI networking demand and significant improvements in its supply chain. The company projects full-year 2026 revenue of \$12.6 billion, representing a 40% year-over-year growth, marking its third upward guidance revision for the year. This impressive performance is attributed to widespread demand across all product sectors, including backend AI fabrics, core data center frontends, campus networks, and routing solutions. Furthermore, Arista is strategically intensifying its focus on open Co-Packaged Optics (CPO) and Near-Packaged Optics (NPO) models to support next-generation AI infrastructure, with plans to commence 1.6 Terabit (T) CPO product trials in the second half of 2026 and full production in 2027.

### Technical & Business Details

- **Record Revenue Growth:** Arista Networks is solidifying its market leadership amid a surge in AI workloads that is accelerating investments in high-speed, high-performance network infrastructure for enterprise and cloud data centers. Quarterly revenues exceeding \$3 billion and a 40% annual growth forecast demonstrate widespread adoption of its products as effective solutions for AI-era networking challenges. Meta Platforms such as Meta Platforms, a major cloud provider, deploying Arista's latest Ethernet-based AI clusters, further underscores its technological superiority.
- **Open CPO/NPO Strategy:** While industry-wide component constraints are expected to persist until 2028, Arista is focusing on open CPO/NPO models, which promise improved power efficiency and bandwidth density. This approach integrates optical engines directly into the switch ASIC package, significantly reducing power consumption and latency compared to traditional pluggable optical modules. Arista's commitment to an open model aims to ensure supply chain flexibility and provide diverse options to its customers.

- **AI Fabric Capabilities:** Arista highlights essential AI fabric capabilities such as Smart System Upgrade (SSU) and Multi-Chassis Resiliency (MRC). SSU enables network upgrades without interrupting availability, while MRC provides redundancy across multiple chassis, ensuring high reliability and continuous operation for AI clusters. These features are critical for achieving the extremely high performance and resilience required by generative AI workloads.

## Background & Context

The proliferation of AI, particularly generative AI, is placing unprecedented demands on bandwidth and processing capabilities within data centers and enterprise networks. Traditional network architectures are struggling to keep pace with this surging demand, necessitating more efficient and scalable solutions. Arista Networks plays a pivotal role in this AI-driven networking market by providing high-performance, Ethernet-based switching solutions. Improving the supply chain is crucial for ensuring production capacity to meet demand, further boosting the company's performance.

## Strategic Significance & Outlook

Arista Networks' sustained growth and strategic pivot toward CPO/NPO will serve as critical indicators shaping the future of data center networking in the AI era. The introduction of 1.6T products and the promotion of an open ecosystem could influence industry standards, prompting similar technological innovations from other vendors. The adoption of CPO technology, which balances power efficiency and performance, will contribute to reducing data center operational costs and environmental impact, thereby accelerating the construction of sustainable AI infrastructure. Arista's trajectory remains a key point of interest for investors, engineers, and enterprises seeking to deploy AI at scale.

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Source: [https://seekingalpha.com/news/4625520-arista-projects-12\\_6b-2026-revenue-on-40-percent-growth-as-supply-chain-improves](https://seekingalpha.com/news/4625520-arista-projects-12_6b-2026-revenue-on-40-percent-growth-as-supply-chain-improves)

# #14 Marvell Technology Enters S&P 500, Stock Triples in 2026 as Data Center Business Drives 76% of Revenue, Led by AI Optical Modules and 51.2T Ethernet Switches

Published August 06, 2026 Investing.com AU Australia



## OVERVIEW

Marvell Technology has been added to the S&P 500 index, with its stock nearly tripling in 2026, demonstrating rapid growth fueled by AI infrastructure investments. The company reported that 76% of its Q1 FY27 revenue came from its data center business, driven by strong bookings for AI-related products including 800G and 1.6T optical modules, 51.2T Ethernet switches, and custom XPU silicon. A strategic investment from NVIDIA and collaboration on the NVLink Fusion ecosystem and silicon photonics have further solidified Marvell's trusted position in AI connectivity infrastructure.

### Key Findings

Marvell Technology has achieved a significant milestone by being included in the S&P 500 index, experiencing remarkable growth with its stock nearly tripling in 2026, clearly riding the wave of AI infrastructure investments. This growth is largely driven by its data center business, which accounted for 76% of Q1 FY27 revenue, with exceptionally strong bookings reported for AI-related products. These include 800G and 1.6T optical modules, 51.2T Ethernet switches, and custom XPU silicon. This performance underscores the market's re-evaluation of Marvell from a networking and storage vendor to a pivotal AI ASIC partner.

### Technical & Business Details

- **Explosive Demand for AI-Related Products:** Marvell's surging data center business directly reflects the explosive demand for high-speed, power-efficient interconnect and processing solutions driven by increasing AI workloads. Its 800G and 1.6T optical modules enable ultra-fast data transfer between GPU clusters and servers within AI data centers, resolving computational efficiency bottlenecks. The 51.2T Ethernet switches dramatically boost overall data center network bandwidth, serving as a foundational element for large-scale AI deployments.
- **Strategic Alliance with NVIDIA:** Marvell collaborates closely with NVIDIA on the NVLink Fusion ecosystem and silicon photonics development. A strategic investment from NVIDIA played a crucial role in establishing Marvell's trusted position as a supplier in AI connectivity infrastructure, silicon photonics, and optical interconnect solutions. This partnership validates the industry's recognition that the AI bottleneck is shifting from raw compute capabilities to connectivity.
- **Significance of S&P 500 Inclusion:** Inclusion in the S&P 500 index signifies a company's market importance, liquidity, and scale, confirming Marvell's establishment as a major player in the semiconductor industry and AI ecosystem. This move is expected to attract broader institutional investor interest and potentially drive further stock appreciation.

## Background & Context

The AI revolution presents unprecedented growth opportunities for the semiconductor industry but simultaneously demands fundamental transformations in data center infrastructure. Beyond improvements in GPU performance, networking and interconnect technologies that efficiently link these components have become critical determinants of AI system performance. Marvell has successfully capitalized on this market demand by leveraging its long-standing expertise in storage and networking to deliver timely, AI-optimized, high-performance solutions. Collaborations with industry leaders like NVIDIA further enhance its competitive edge.

## Strategic Significance & Outlook

Marvell Technology's S&P 500 inclusion and robust AI-driven growth underscore the paramount importance of optical communication and high-performance networking solutions in AI infrastructure. As AI models continue to scale in size and complexity, demand for products like Marvell's 800G/1.6T optical modules and 51.2T Ethernet switches will undoubtedly intensify. The deepening collaboration with NVIDIA will contribute to Marvell's technological innovation and market share expansion, proving crucial for the company to maintain its position as a top-tier semiconductor firm in the AI era. Investors will continue to monitor its AI-related bookings and technological advancements closely.

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Source: <https://au.investing.com/analysis/marvell-joins-the-sp-500-as-ai-premium-faces-its-first-test-200614440>

# #15 Ayar Labs' UCle-Compatible 'TeraPHY' Optical I/O Engine Extends AI Scale-Up Beyond the Rack, Strengthening Ecosystem Partnerships

Published August 04, 2026   TechArena Forum   USA

The image shows a perspective view of a server rack with many blue-colored components. The TechArena logo is overlaid in the center, with the 'A' featuring a teal-colored triangle.

# TechArena®

## OVERVIEW

Ayar Labs announced its "TeraPHY" optical I/O engine, built on silicon photonics and standard CMOS, connects via a UCle-based electrical interface to enable AI scale-up beyond single-rack constraints. The company is forging partnerships with foundries, advanced packaging providers, OSATs, ASIC design services, and ODMs to develop comprehensive reference designs and manufacturing flows at the package, board, and rack levels. Ayar Labs is also actively recruiting talent to join its team transforming AI infrastructure with optical I/O technology, accelerating its growth strategy.



### Key Findings

Ayar Labs has developed its innovative "TeraPHY" optical I/O engine to address data movement bottlenecks in AI infrastructure. This engine, built upon silicon photonics and standard CMOS manufacturing processes, connects via a UCle (Universal Chiplet Interconnect Express)-based electrical interface, enabling AI scale-up to extend beyond the physical constraints of a single rack. To facilitate broad deployment of this technology, the company is establishing strategic partnerships with foundries, advanced packaging providers, OSATs (Outsourced Semiconductor Assembly and Test), ASIC design services, and ODMs (Original Design Manufacturers), advancing the development of reference designs and manufacturing flows at the package, board, and rack levels.

### Technical & Business Details

- **Innovation of TeraPHY Optical I/O Engine:** TeraPHY achieves significantly higher bandwidth density and power efficiency compared to traditional electrical signal transmission by utilizing optical signals within or between adjacent chip packages. Compatibility with the UCle standard ensures interoperability between chiplets from different vendors, greatly enhancing flexibility in AI system design. This dramatically boosts data transfer speeds between AI accelerators, maximizing the computational power required for training and inference of large-scale AI models.
- **Building an Extensive Ecosystem:** Ayar Labs is not merely focused on developing individual technologies; it is dedicated to building an ecosystem that promotes industry-wide adoption. Collaboration with foundries optimizes TeraPHY's manufacturing process to fit standard semiconductor production lines, ensuring mass manufacturability. Partnerships with packaging providers address chiplet integration and packaging challenges, while OSAT and ODM collaborations enable rapid integration into final products and faster time-to-market.
- **SuperNova Light Source:** Ayar Labs is also developing the "SuperNova" light source, which works in conjunction with the TeraPHY chiplet. SuperNova provides highly efficient and stable optical output, serving as the foundation for transmitting data as optical signals through TeraPHY. This integrated approach offers an end-to-end optical interconnect solution, further optimizing AI workload performance.

## Background & Context

AI workloads are pushing the bandwidth, power, and distance limits of traditional electrical connections for data movement between GPUs and AI accelerators. This "data movement bottleneck" is a primary factor hindering the performance scale-up of AI systems. Silicon photonics technology, which combines the advantages of optical communication (high speed, low loss, high bandwidth) with semiconductor manufacturing techniques, is considered the most promising approach to resolve this challenge. Companies like Ayar Labs are at the forefront of this field, aiming for a fundamental transformation of AI infrastructure.

## Strategic Significance & Outlook

The widespread adoption of Ayar Labs' TeraPHY optical I/O engine has the potential to revolutionize AI data center design and performance. The ability to scale AI beyond rack physical constraints will enable larger, more distributed AI systems, significantly reducing power consumption while maximizing computational power. The company's ecosystem collaboration strategy will accelerate the standardization and proliferation of its technology, playing a crucial role in establishing the foundation for future AI computing. Ayar Labs remains a company to watch as a pioneer solving one of the most challenging computing problems in the AI era.

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Source: <https://techarena.ai/forum>

# #16 Thin-Film Lithium Niobate Modulators Emerge as Core Technology for Next-Gen Photonic Systems, Delivering Ultra-High Bandwidth and Low Power Consumption

Published August 01, 2026   Liobate   International



## OVERVIEW

Thin-film Lithium Niobate (TFLN) modulators are establishing themselves as a critical component for next-generation high-speed and high-efficiency photonic systems, addressing the escalating demand for faster data transfer. These modulators offer superior characteristics including ultra-high bandwidth, low drive voltage, and minimal insertion loss, pivotal for advanced optical communication and sensing platforms. Their ability to enable precise optical signal control with significantly reduced energy consumption is key to supporting the explosive growth of data processing driven by AI and machine learning, overcoming the limitations of conventional silicon photonics.

### Key Findings

Thin-Film Lithium Niobate (TFLN) modulators have cemented their position as a pivotal component for next-generation high-speed and high-efficiency photonic systems. These modulators offer an unprecedented combination of ultra-high bandwidth, low drive voltage, and low insertion loss, dramatically enhancing performance across optical communication, sensing platforms, and other advanced photonic applications.

### Technical Details

At the heart of TFLN modulators is the ability to integrate lithium niobate ( $\text{LiNbO}_3$ ), a material known for its high electro-optic coefficient and excellent optical properties, onto a thin-film platform. This innovation allows for a significant reduction in device size compared to conventional bulk lithium niobate devices, while simultaneously lowering drive voltages to millivolt levels and increasing modulation speeds to hundreds of gigahertz (GHz). Specifically, they are capable of handling data rates exceeding several hundred Gbps, enabling precise on/off switching and phase control of optical signals. This thin-film approach facilitates low-loss light confinement within waveguides, contributing to reduced power consumption and maintained signal integrity.

### Background & Context

The rapid advancement of AI, machine learning, and the widespread adoption of cloud computing have led to an exponential increase in data transfer volumes and processing speeds within and between data centers. Traditional electronic communication systems face inherent limitations in bandwidth and escalating power consumption, propelling a growing reliance on optical communication technologies. TFLN modulators are particularly crucial in the evolution of Co-Packaged Optics (CPO) and photonic integrated circuits, where they deliver superior performance that is challenging for silicon photonics to match. Their adoption is accelerating across diverse sectors, including data center interconnects, long-haul optical networks, and even quantum computing.

## Strategic Significance & Outlook

The advancements in TFLN technology are poised to revolutionize optical communication infrastructure. Future developments, including further integration and optimized manufacturing processes, are expected to improve the cost-efficiency of TFLN modulators, fostering broader market adoption. They are indispensable for realizing next-generation ultra-high-speed optical transceivers, such as 1.6T and 3.2T, which will significantly enhance data center power efficiency and contribute to sustainable information societies. Beyond communication, TFLN technology holds promise for optical computing and novel sensing applications, positioning it as a core driver of innovation across the broader photonics landscape.

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Source: <https://en.liobate.com/Blog/the-growing-importance-of-thin-film-lithium-niobate-modulators-in-high-speed-photonics>

Collected: August 08, 2026 | Automated Research System (Gemini API)



# #17 Sumitomo Electric Raises Full-Year Profit Forecast on Surging AI Data Center Optics Demand, Q1 Operating Profit Jumps 61%

Published July 31, 2026   Bloomberg   Japan



## OVERVIEW

Sumitomo Electric Industries has revised its full-year sales and profit targets upwards, driven by a significant increase in demand for optical wiring equipment and devices for data centers, fueled by the rapidly expanding generative AI market. The company reported a robust 61% year-on-year increase in operating profit for its first fiscal quarter, substantially exceeding market expectations. This strong performance underscores the global rise in demand for high-speed, large-capacity optical communication infrastructure critical for AI processing, solidifying Sumitomo Electric's technological advantage and market leadership in the optical communication sector.



### Key Findings

Sumitomo Electric Industries has revised its full-year operating profit targets upwards, propelled by a surge in demand for optical wiring equipment and optical devices catering to data centers, a direct consequence of the rapidly expanding generative AI market. The company announced a remarkable 61% year-on-year increase in operating profit for its first fiscal quarter, significantly outperforming market expectations.

### Business Details

This robust performance is primarily attributed to strong demand across its product portfolio, including optical fiber cables, optical connectors, and optical modules for the data center market. The construction of AI clusters necessitates low-loss, high-density optical wiring capable of terabit-scale high-speed data transmission. Sumitomo Electric leverages its extensive expertise in optical communication technology to meet these critical market needs. Components for cutting-edge optical transceivers and interconnect solutions within data centers have been particularly strong contributors to both revenue and profit. The company continues to invest heavily in R&D to address next-generation optical communication technologies, such as 800G and 1.6T, further strengthening its competitive edge.

### Background & Context

The global generative AI boom is creating immense business opportunities, not only for the semiconductor industry but also for the foundational data center infrastructure that supports it, particularly in optical communications. As AI training and inference scales, data transfer volumes between servers, racks, and data centers are exploding, pushing conventional copper cabling to its limits in terms of power consumption and bandwidth. This trend is accelerating the shift towards optical fibers and devices, benefiting key suppliers like Sumitomo Electric Industries. The company's revised outlook exemplifies how AI is driving substantial physical infrastructure investment, beyond just computational power.

## Strategic Significance & Outlook

Sumitomo Electric's strong financial performance and positive outlook signal a sustained period of robust growth for the optical communication market. As AI continues to advance, the demand for high-speed, high-capacity optical communication is expected to persist. The company plans to fully capitalize on this market environment, further solidifying its position as a leading company in optical communication technology. This involves accelerating new technology development, strengthening global production capabilities, and actively expanding into new AI-related markets to ensure continuous growth. For investors and researchers, this serves as an important indicator that the AI boom's benefits are extending beyond semiconductor manufacturers to companies providing the underlying foundational technologies.

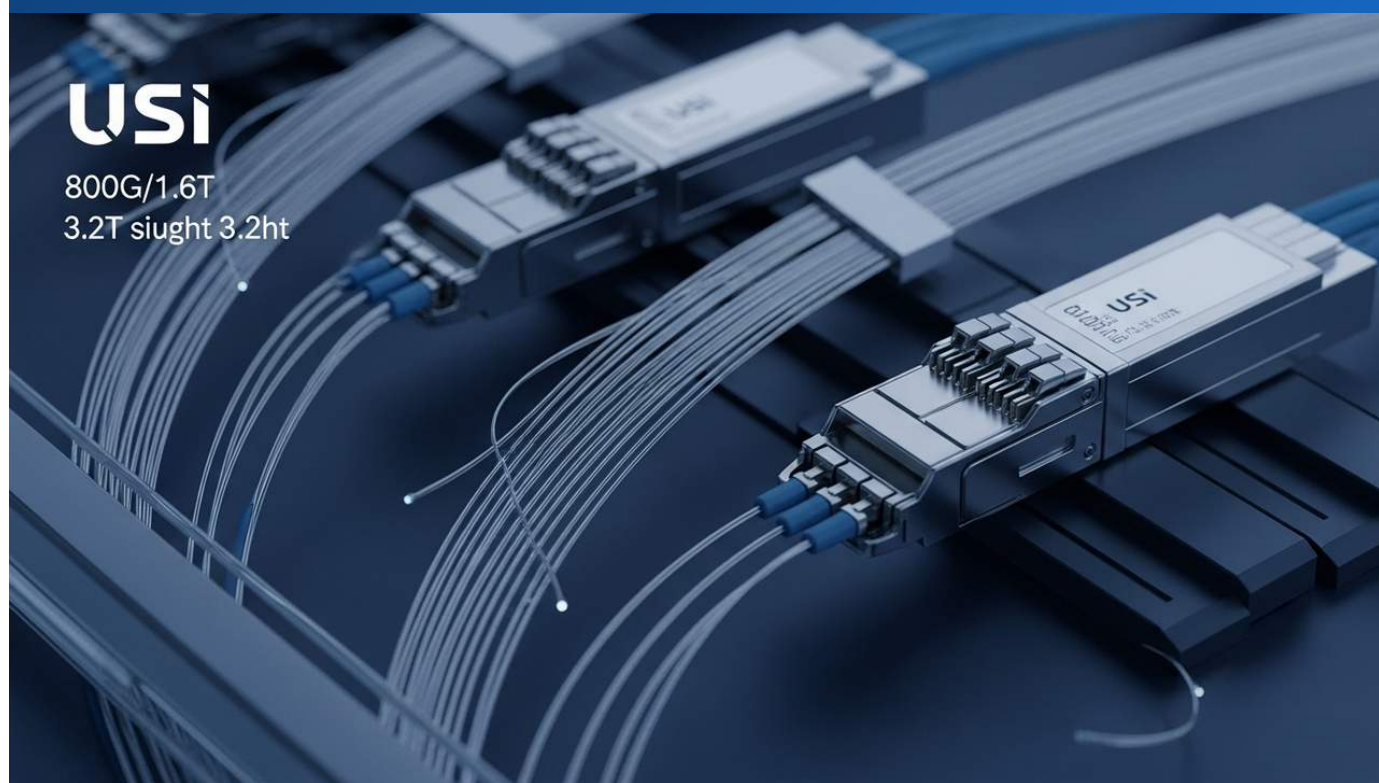
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Source: <https://tokyobrief.com/articles/sumitomo-electric-raises-profit-guidance-ai-optics-demand>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #18 USI Reports Optical Transceivers Evolving to 800G/1.6T and Eyeing 3.2T to Alleviate AI Cluster Data Bottlenecks

Published August 03, 2026   USI   Taiwan



**USI**

800G/1.6T  
3.2T sight 3.2ht

## OVERVIEW

USI reports rapid advancement in optical transceiver technology, moving from 100G and 400G to readily available 800G and 1.6T solutions, with 3.2T speeds on the horizon, to address data transfer bottlenecks in AI clusters. Fueled by the explosive growth in AI compute, optical communications has shifted from a telecom-centric role to the primary driver of datacom growth, leading the largest expansion cycle in decades. This technological evolution is crucial for enhancing AI application performance and widespread adoption, significantly improving data center power efficiency and scalability.

### Key Findings

Optical transceiver technology is undergoing rapid evolution to address critical data transfer bottlenecks within AI clusters, with current solutions at 100G and 400G quickly advancing to 800G and 1.6T. Universal Scientific Industrial (USI) highlights that this accelerated progress is directly driven by AI demand, with an eye towards achieving ultra-high-speed 3.2T optical transceivers in the near future.

### Technical Details

This remarkable progress is underpinned by the maturation of silicon photonics technology and the adoption of advanced integration techniques like Co-Packaged Optics (CPO). Optical transceivers convert electrical signals into optical signals for data transmission over fiber optic cables. In AI clusters, where thousands to tens of thousands of GPUs must be interconnected to exchange vast amounts of data in real-time, high-speed, low-latency, and low-power optical interconnects are indispensable. 800G and 1.6T transceivers achieve high bandwidth by utilizing multiple optical lanes (channels), offering performance that far exceeds the limitations of traditional copper cables, particularly for short-reach data center interconnections.

### Background & Context

The evolution of AI is profoundly reshaping data center architectures. While traditional data centers primarily supported internet services and enterprise applications, AI workloads demand much higher computational density and commensurate data movement capabilities. Consequently, optical communication has expanded its role from being the backbone of traditional telecom networks to becoming the primary connectivity technology within data centers (datacom). The current AI boom is a significant growth driver for the optical communications industry, fueling its largest expansion cycle in decades by providing the essential infrastructure for AI's performance enhancement and widespread deployment.

## Strategic Significance & Outlook

The acceleration of optical transceiver speeds is set to continue, with the transition to 3.2T promising to further scale AI clusters and boost their performance. This technological advancement will significantly improve data center power efficiency and contribute to reducing operational costs. Moreover, ultra-high-speed, high-capacity optical interconnects will enable the development of new AI applications and facilitate the training of even more complex AI models. Companies like USI are playing a pivotal role in supporting digital transformation in the AI era by providing these high-performance optical devices, thus becoming integral to the development of next-generation computing infrastructure. For investors, this trend highlights significant business opportunities in the optical component market, extending beyond just semiconductor manufacturers within the broader AI ecosystem.

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Source: <https://www.usiglobal.com/en/blog/the-rise-of-silicon-photonics-optical-transceiver>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #19 Lumentum CEO Flags Indium Phosphide Wafer Shortage; US Regulators Consider Banning Chinese Optical Transceivers, Potentially Benefiting Coherent and Other US Firms

Published August 07, 2026 Morningstar USA



## OVERVIEW

Lumentum Holdings' CEO has warned that indium phosphide wafers, crucial for silicon photonics, could face a more severe supply crunch than memory semiconductors. Proactively, Lumentum has deposited \$87 million with AXT to secure a six-year supply of these wafers. Concurrently, reports indicate the U.S. Federal Communications Commission (FCC) is considering a ban on Chinese-made optical transceivers, a move that could provide a competitive advantage to American optical communication companies like Coherent and Lumentum. This development signals an expansion of the U.S.-China tech rivalry into the critical optical communications sector.



### Key Findings

The CEO of Lumentum Holdings has issued a stark warning: indium phosphide (InP) wafers, critical for silicon photonics, could face a more acute supply shortage than even memory semiconductors. In response, Lumentum has taken the extraordinary step of depositing \$87 million with AXT to secure a six-year supply of InP wafers. Furthermore, reports suggest the U.S. Federal Communications Commission (FCC) is considering a ban on Chinese-made optical transceivers, a regulatory move that could significantly benefit U.S. companies such as Coherent and Lumentum.

### Market & Regulatory Details

InP wafers are essential for manufacturing lasers and modulators used in high-speed optical communications, particularly in 800G and 1.6T optical transceivers seeing burgeoning demand in AI data centers and 5G infrastructure. Their production involves specialized processes and requires considerable time to scale capacity. Lumentum's substantial deposit underscores the company's urgent concern for a stable supply of this strategic material. The FCC's deliberation over banning Chinese optical transceivers is driven by national security concerns and a desire to protect domestic industries. Such a ban would likely exclude Chinese products from U.S. data center and telecom network procurement, creating a significant market opportunity for U.S.-based suppliers like Coherent and Lumentum to expand their market share.

### Background & Context

The technological friction between the U.S. and China is extending beyond semiconductors into optical communication infrastructure. Optical communication forms the bedrock of next-generation digital technologies like AI, cloud computing, and 5G/6G, making the security and reliability of its supply chain strategically vital for all nations. Historically, Chinese companies have gained significant market share in optical transceivers due to their cost competitiveness and rapid technology adoption. However, increased U.S. regulatory scrutiny could fragment global supply chains and profoundly alter market dynamics. Investors are closely monitoring how these geopolitical risks impact corporate revenues and competitive landscapes.

## Strategic Significance & Outlook

While the InP wafer shortage may temporarily affect optical component manufacturers, measures like Lumentum's long-term agreement will help stabilize the supply chain. Should the U.S. implement regulations on Chinese optical transceivers, American companies could gain a competitive advantage in the domestic market, potentially accelerating their R&D investments and production capacity expansions. This heralds an era where geopolitical factors exert significant influence not only on technological competition but also on market share reallocation within the global optical communication industry. Other regions, including Europe and Asia, may follow suit in strengthening their own supply chains and asserting technological independence.

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Source: <https://www.morningstar.com/news/marketwatch/20260807105/optical-stocks-have-a-china-problem-that-most-investors-are-missing>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #20 Broadcom Unveils Industry's First 400G/Lane Optical DSP 'Taurus' at OFC 2026, Paving Way for 200T AI Era with Cost-Effective 1.6T Transceivers

Published August 03, 2026    Broadcom Inc.    USA



## OVERVIEW

Broadcom introduced the industry's first 400G/lane optical DSP, 'Taurus,' at OFC 2026, showcasing cutting-edge solutions for scaling AI infrastructure. This groundbreaking DSP, when combined with Broadcom's high-performance 400G EMLs and photodiodes, enables cost-effective and low-power 1.6T optical transceivers. Critically, this technology lays the foundation for future 3.2T optical transceivers, offering a key solution to the bandwidth and power efficiency challenges faced by data centers in the AI era.

### Key Findings

Broadcom unveiled its groundbreaking solutions at OFC 2026, designed to enable exponential scaling of AI infrastructure. Central to this offering is 'Taurus,' the industry's first 400G/lane optical Digital Signal Processor (DSP). When integrated with Broadcom's high-performance 400G Electro-absorption Modulated Lasers (EMLs) and photodiodes, this innovative DSP facilitates cost-effective, low-power 1.6T optical transceivers, establishing a crucial foundation for future 3.2T optical transceivers.

### Technical Details

The 'Taurus' DSP achieves an astonishing 400G/lane data transmission rate, significantly surpassing the performance of previous optical interconnects. By integrating this DSP with Broadcom's proprietary 400G EMLs and corresponding photodiodes, a single optical transceiver module can deliver a total bandwidth of 1.6 Terabits per second (T). This advancement enables data centers and AI clusters to efficiently handle immense data traffic with fewer transceivers. The low-power design is particularly critical for curbing the escalating energy consumption of data centers driven by AI workloads, contributing to reduced operational costs and enhanced sustainability.

### Background & Context

The increasing complexity and scale of generative AI models impose unprecedented demands on data center computing power and network bandwidth. In AI clusters, tens of thousands of GPUs must collaborate closely, exchanging petabytes of data within milliseconds, often making optical interconnect performance a bottleneck for the entire system. Broadcom's 'Taurus' DSP and 1.6T transceivers offer a direct solution to this challenge, ensuring the scalability of AI workloads. The fusion of Broadcom's comprehensive optical component portfolio with its advanced DSP technology solidifies its market leadership and accelerates the evolution of data center infrastructure in the AI era.

## Strategic Significance & Outlook

Broadcom's 400G/lane technology is expected to pave the way for AI systems exceeding 200T (200 Terabits per second) in total bandwidth. The widespread adoption of 1.6T transceivers, followed by the evolution to 3.2T, will fundamentally transform the design and operation of AI data centers. This represents a significant step towards realizing Co-Packaged Optics (CPO) and on-chip optical communication, where ASICs or GPUs are physically integrated with optical transceivers to achieve even greater power efficiency and reduced latency. Such advancements will accelerate the training and deployment of larger, more powerful AI models, bringing innovation to all sectors where AI is leveraged, including autonomous driving, medical diagnostics, and scientific research.

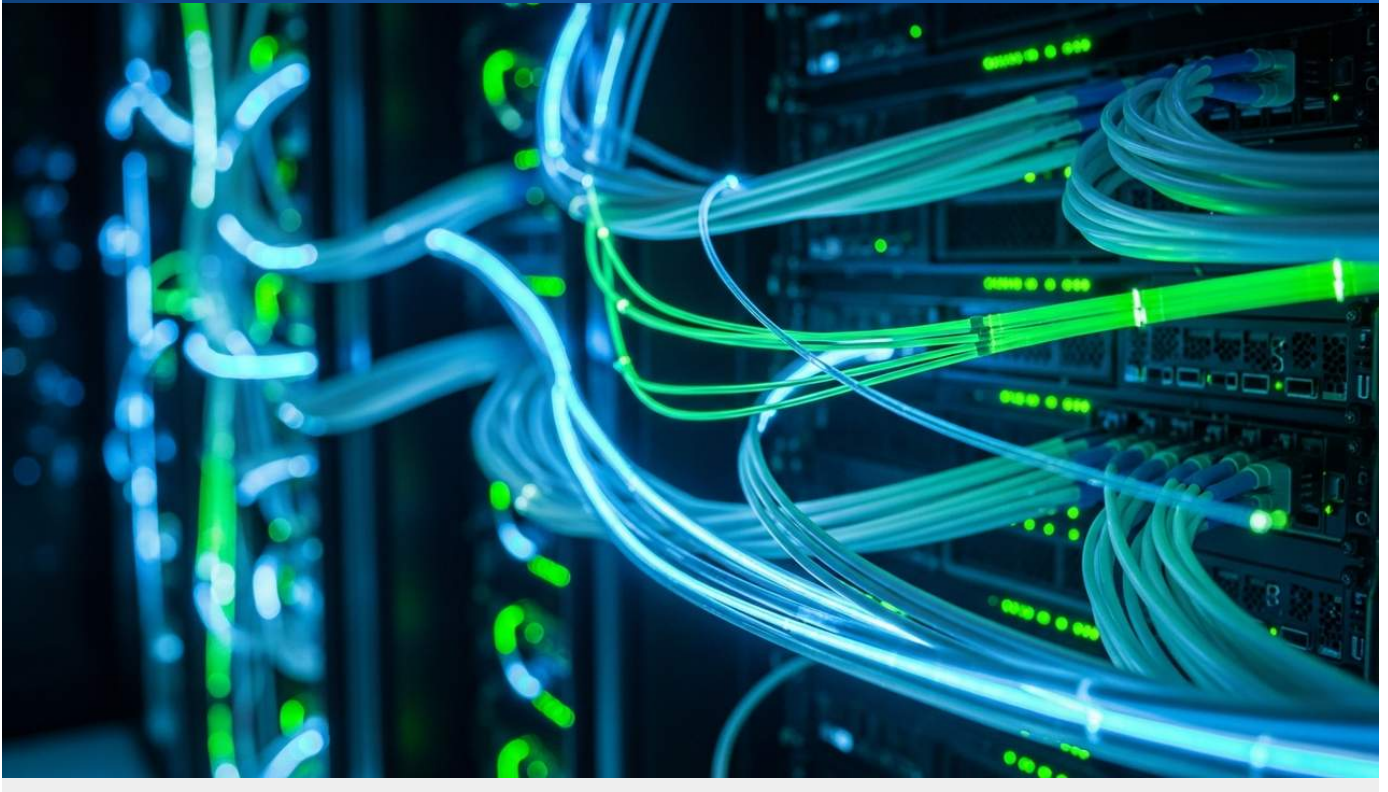
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Source: [https://www.broadcom.com/company/news/articles?topic\[\]=Optical%20interconnects](https://www.broadcom.com/company/news/articles?topic[]=Optical%20interconnects)

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #21 Facebook Declares Photonic Interconnects Critical for Next-Gen AI and Data Centers

Published August 03, 2026   Facebook   USA



## OVERVIEW

Facebook has highlighted that photonic interconnects are becoming indispensable for next-generation AI and data centers, as traditional electrical links reach their limits under escalating AI and HPC workloads. This technology promises significantly higher bandwidth, lower latency, and improved energy efficiency. Despite manufacturing and integration challenges, its complementary role alongside photonic accelerators is seen as crucial for future AI infrastructure.



### Key Findings

Facebook has declared that silicon photonics-based optical interconnects are essential for next-generation data centers and computing platforms, driven by the exponential growth of AI workloads and high-performance computing (HPC). This technology is poised to address the fundamental limitations of traditional electrical interconnects, which are struggling to meet the demands for increased bandwidth, reduced latency, and improved energy efficiency.

### Technical / Clinical Details

Silicon photonics interconnects utilize light for data transfer between processors and within systems, offering significantly higher speeds and lower losses compared to electrical signals. Specifically, this technology enables terabit-per-second bandwidths and nanosecond-level latencies that are unachievable with current electrical wiring. Furthermore, the reduced heat generation associated with optical transmission dramatically lowers data center cooling requirements, enhancing overall energy efficiency. This breakthrough is critical for overcoming data bottlenecks in AI model training and inference, thereby facilitating the construction of larger and more complex AI systems.

### Background & Context

The evolution of AI has not only boosted the computational power of GPUs and other processing units but also drastically increased the volume and speed of data movement within data centers. Conventional copper cables and electrical traces are increasingly unable to cope with this demand, leading to severe issues like signal degradation, high power consumption, and thermal challenges. Silicon photonics, being compatible with standard semiconductor manufacturing processes, offers a pathway for relatively straightforward integration into existing infrastructure and possesses significant potential for mass production. The endorsement and push by hyperscale data center operators like Facebook are powerful catalysts for accelerating industry-wide standardization and adoption.

## Strategic Significance & Outlook

While challenges such as improving manufacturing yields and reducing integration costs persist, the relentless advancement of AI technology ensures a continuous surge in demand for faster and more efficient data transfer solutions. Facebook's announcement underscores that silicon photonics is no longer merely a research concept but a foundational technology for AI infrastructure within the next few years. This will likely spur increased investment and technological partnerships across data center design, AI hardware development, and the semiconductor manufacturing sectors, further solidifying the critical role of optical technology in the AI era.

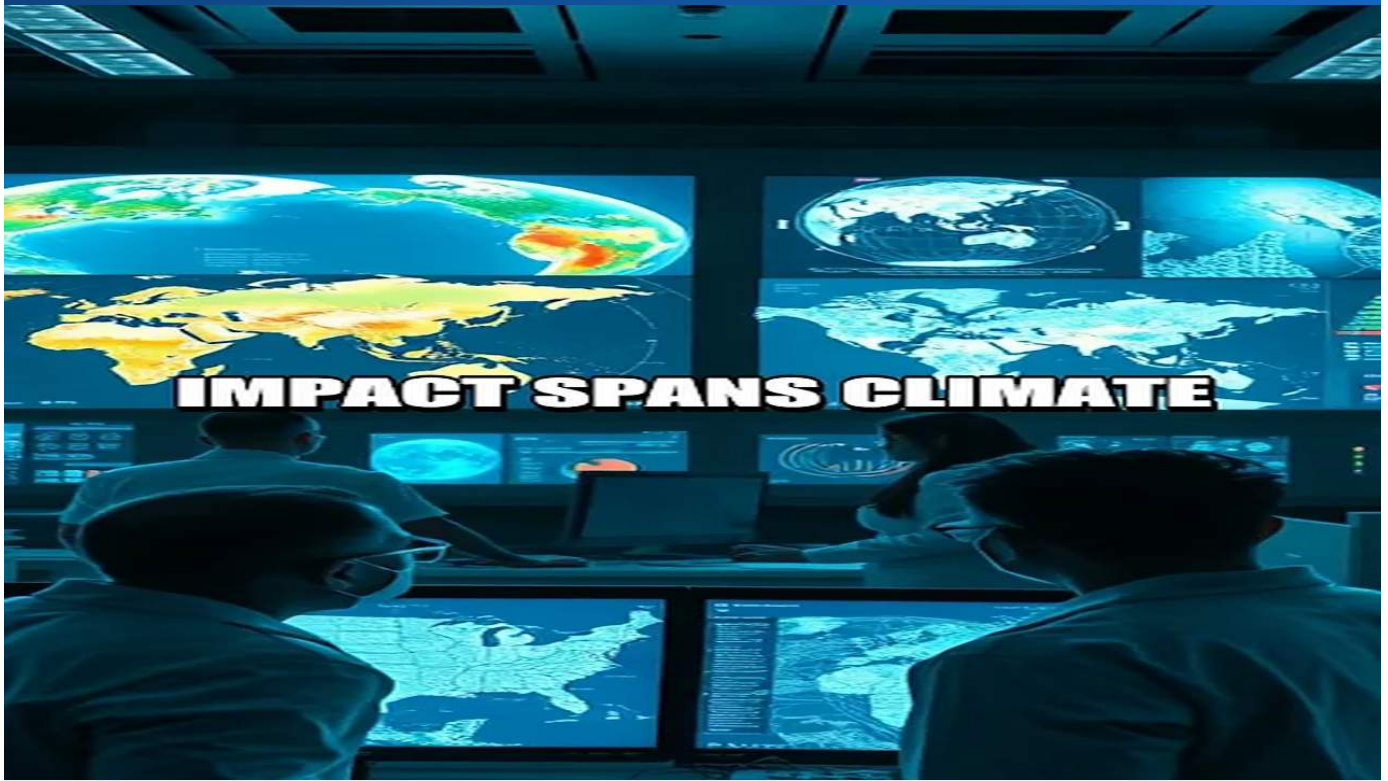
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Source: <https://www.facebook.com/findlight.net/posts/as-ai-workloads-and-high-performance-computing-continue-to-grow-traditional-elec/1359487943065536/>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #22 Novel Photonic AI Accelerator Achieves 70% Power Reduction Over GPUs for Edge AI Breakthrough

Published August 01, 2026   YouTube   Global



## OVERVIEW

A new photonic AI accelerator has achieved a significant breakthrough, enabling complex simulations on edge devices while reducing power consumption by approximately 70% compared to GPUs. This technology fuses light and logic using a combination of CMOS and nanophotonic circuits to accelerate data tasks. Experts anticipate diverse applications in climate modeling, drug discovery, and real-time urban planning, though manufacturing scale and thermal management remain challenges.

### Key Findings

A novel photonic AI accelerator has been developed, delivering a groundbreaking improvement in AI computing performance on edge devices while achieving an approximate 70% reduction in power consumption compared to existing GPUs. This breakthrough enables complex simulations to be executed efficiently at the device level by fusing light and logic on a single chip.

### Technical / Clinical Details

This innovative accelerator integrates traditional CMOS semiconductor technology with advanced nanophotonic circuits. Photons, traveling faster than electrons and generating minimal heat, dramatically accelerate data task processing while significantly improving energy efficiency. For edge AI applications, where power constraints are strict and real-time processing is critical, this 70% power reduction is profoundly impactful. Potential applications include autonomous vehicles, IoT devices, and wearables, all requiring high-performance AI processing under low-power conditions.

### Background & Context

As AI adoption grows, the demand for AI processing on edge devices, not just in data centers, is surging. However, edge devices typically have limited power budgets, making efficient AI processing challenging with conventional high-performance electronic chips. This photonic AI accelerator is a promising solution to the long-standing 'power wall' and 'thermal wall' challenges in the semiconductor industry. Experts anticipate this technology will have substantial societal impacts, enabling more precise climate models, rapid discovery of new drugs, and real-time smart city management. Concurrently, scaling the precise manufacturing of nanophotonic circuits and efficient thermal management in confined spaces are identified as key challenges for future commercialization.

## Strategic Significance & Outlook

The advent of this photonic AI accelerator has the potential to fundamentally transform edge AI capabilities and open up new application domains. Its low power consumption will be a significant advantage, particularly for battery-powered devices and AI processing in remote environments. Future research and development will likely focus on optimizing manufacturing processes, ensuring scalability, and enhancing compatibility with a broader range of AI frameworks. Widespread adoption of this technology could enable more devices to perform advanced AI processing in real-time, bringing immeasurable benefits to daily life and industrial activities.

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Source: <https://www.youtube.com/shorts/ttXv2tleTk0>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #23 Photonic Computing Poised to Outperform Silicon, Dramatically Boosting AI Performance and Energy Efficiency

Published August 04, 2026   Dr Akhilesh Kumar   Global



## OVERVIEW

Photonic computing offers a potential paradigm shift by using light instead of electrons for information processing, thereby overcoming the physical and energy limitations of conventional electronic processors. This technology dramatically improves computing speed, bandwidth, and energy efficiency due to light's speed and minimal heat generation. It holds particular promise for AI inference, deep learning, and high-performance computing, significantly contributing to AI model optimization.



### Key Findings

Photonic computing presents a groundbreaking opportunity to fundamentally overcome the physical and energetic limitations faced by traditional electronic processors, by utilizing light instead of electrons to process information. This innovative approach promises dramatic improvements in computing speed, data bandwidth, and energy efficiency.

### Technical / Clinical Details

Photons, being chargeless and able to travel at the speed of light without significant interference, enable photonic processors to handle data far more rapidly than existing electronic counterparts. Furthermore, the minimal heat generated during optical transmission substantially reduces cooling system requirements, thereby lowering data center operational costs and environmental impact. This technology particularly excels in AI inference, deep learning, and high-performance computing (HPC) applications. Optical-based operations can execute large-scale parallel processing efficiently, shortening the training time for complex AI models and enabling faster decision-making. For instance, while current GPU-based systems face non-linear power consumption increases with larger AI models, photonic computing avoids this through linear optical operations, maintaining power efficiency.

### Background & Context

Modern computing faces the twin challenges of slowing Moore's Law and the 'power wall' driven by explosive data growth. In the AI sector specifically, while demand for higher-performance processors intensifies, the associated massive energy consumption poses a sustainability challenge. Photonic computing is attracting significant attention from both academia and industry as a promising solution to these issues. Major technology companies like Google and IBM are accelerating investments in light-based computing technologies, with advancements in silicon photonics leading the charge in this field.

## Strategic Significance & Outlook

Photonic computing has the potential to propel AI development to its next phase. Beyond optimizing AI models, it could also lead to entirely new computing paradigms through integration with quantum computing and seamless integration with optical networks. Currently, key challenges include improving the precision and integration density of optical circuits and ensuring compatibility with existing electronic systems. However, continuous R&D and investment are expected to bring practical solutions that outperform electronic processors in specific AI workloads within a few years. This will significantly contribute to solving complex societal problems in areas such as autonomous driving, drug discovery, and climate change modeling.

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Source: [https://drakhileshkumar.com/blog\\_details.php?slug=photonic-computing-the-technology-that-could-outperform-silicon](https://drakhileshkumar.com/blog_details.php?slug=photonic-computing-the-technology-that-could-outperform-silicon)

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #24 Optical Computing Redefines AI's Physical Limits; China Accelerates Industrialization with Key Innovations

Published August 03, 2026 LINIOBATE | Power Next Gen Photon China



## OVERVIEW

Optical computing is rapidly advancing to redefine the physical limits of AI computing by overcoming the 'power wall' and 'memory wall' of electronic chips. Lightmatter's photonic AI accelerator achieves 1/9 the energy consumption of electronic devices, while Neurophos has shrunk modulators by 10,000x using metamaterials. China is rapidly industrializing the sector, evidenced by the launch of the Wuxi photonic chip pilot line, NanZhi Optoelectronics' "OptoChat AI" (China's first photonic LLM), and Tsinghua University's "Taiji-II" achieving large-scale neural network in-situ training on optical chips. This positions China to gain a strategic advantage in next-generation AI development.

### Key Findings

Optical computing is emerging as a revolutionary technology poised to redefine the physical limits of AI computing by fundamentally breaking through the 'power wall' and 'memory wall' faced by conventional electronic chips. This sector is witnessing significant technological breakthroughs from leading companies and rapid industrialization in China, with the potential to profoundly alter the landscape of next-generation AI development.

### Technical / Clinical Details

Specifically, Lightmatter's photonic AI accelerator has achieved an exceptionally low energy consumption, registering only 1/9th the power of equivalent electronic devices. This efficiency stems from using light for information transmission, which drastically reduces resistance and heat generation compared to electron movement. Concurrently, Neurophos has successfully miniaturized optical modulators by a factor of 10,000 using advanced metamaterial technology. This drastic reduction in size is crucial for exponentially increasing the integration density of optical circuits, enabling the production of higher-performance and more compact optical chips.

### Background & Context

China has demonstrated remarkable progress in the industrialization of optical computing technology. In Wuxi, a state-of-the-art photonic chip pilot line has commenced operations, accelerating the transition from research to mass production. Furthermore, NanZhi Optoelectronics announced "OptoChat AI," China's first photonic large language model (LLM), signaling the potential for widespread application of optical computing in generative AI. Researchers at Tsinghua University have also achieved in-situ training of large-scale neural networks on an optical chip, dubbed "Taiji-II," demonstrating the versatility and practical utility of optical processors. These initiatives are considered part of a robust national strategy by China to establish global leadership in AI and next-generation computing.

## Strategic Significance & Outlook

The advancements in optical computing are set to significantly contribute to resolving data center energy consumption issues, enhancing edge AI performance, and fostering the creation of new AI applications. China's state-led industrialization push is accelerating technological development and intensifying the global competitive landscape. The combination of technological innovation from companies like Lightmatter and Neurophos with China's potent industrial policies is expected to solidify optical computing's position as a core AI technology within the next few years. This will lead to even higher AI performance and the realization of more sustainable computing infrastructure.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQGkMkWhWwg41OHkbzCGiUswXGKY8B-mM7sswnbF0ySzbsAR45\\_\\_ISKIJGUmvEP6C5PBMtFf7JQR\\_mMgoQvt1F7Vxzv-O15FDLivobNEUJc8ieDgbwJXmy4hQti5uet18kCLTVAXANMi6DZA==](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQGkMkWhWwg41OHkbzCGiUswXGKY8B-mM7sswnbF0ySzbsAR45__ISKIJGUmvEP6C5PBMtFf7JQR_mMgoQvt1F7Vxzv-O15FDLivobNEUJc8ieDgbwJXmy4hQti5uet18kCLTVAXANMi6DZA==)

Collected: August 08, 2026 | Automated Research System (Gemini API)



# #25 Marvell Unveils Photonic Fabric Products Post-Celestial AI Acquisition, Fortifying AI Memory Infrastructure

Published August 05, 2026   Technologies.org   USA



## OVERVIEW

Following its acquisition of Celestial AI in February 2026, Marvell has launched new AI memory infrastructure products, including Photonic Fabric memory modules, NICs, and chiplets. These offerings aim to bolster Marvell's position in the AI infrastructure market. The products promise shared memory across racks up to 50 meters and claim 2-3x higher token throughput within existing footprints and power envelopes, underscoring the critical role of optical interconnects for demanding AI workloads.



### Key Findings

Marvell has announced a suite of AI memory infrastructure products, including Photonic Fabric memory modules, Photonic Fabric Network Interface Cards (NICs), and Photonic Fabric chiplets, built upon the technology of Celestial AI, whose acquisition was finalized in February 2026. This strategic move is set to significantly strengthen Marvell's position in the rapidly expanding AI infrastructure market.

### Technical / Clinical Details

Celestial AI's Photonic Fabric technology utilizes optical communication to create ultra-high-speed connections between processors, memory, and accelerators. The newly announced product line implements this technology as concrete hardware solutions. Particularly noteworthy is the ability to provide shared memory across racks, extending up to 50 meters. This achieves low-latency, high-bandwidth data transfer over distances previously challenging for electrical interconnects, resolving performance bottlenecks in large-scale AI clusters. Marvell asserts that these products will boost AI model token throughput by 2-3 times within existing footprints and power envelopes. The Photonic Fabric NICs enable high-speed data transfer over networks, while the chiplets pave the way for next-generation Co-Packaged Optics (CPO) solutions.

### Background & Context

AI workloads, especially the training and inference of large language models (LLMs), demand immense data movement and extremely high bandwidth. Traditional electrical interconnects face physical limitations such as signal degradation, increased power consumption, and heat generation, which have become significant barriers to improving AI system performance. Optical interconnects are gaining widespread attention across the industry as a promising solution to overcome these challenges. Marvell's swift announcement of concrete products just months after acquiring Celestial AI demonstrates a strong commitment to market introduction and signals intensifying competition in the AI infrastructure sector.

## Strategic Significance & Outlook

The introduction of Marvell's Photonic Fabric product line is expected to profoundly influence the design and operation of AI data centers. Shared memory over long distances and higher token throughput will facilitate the construction of more efficient and scalable AI clusters, accelerating the next phase of AI development. Moving forward, Marvell is anticipated to expedite the market rollout of these products and deepen collaborations with key AI hardware vendors and cloud providers. This technological innovation is set to push the boundaries of AI performance while also contributing to improved power efficiency in data centers, fostering the development of a sustainable AI ecosystem.

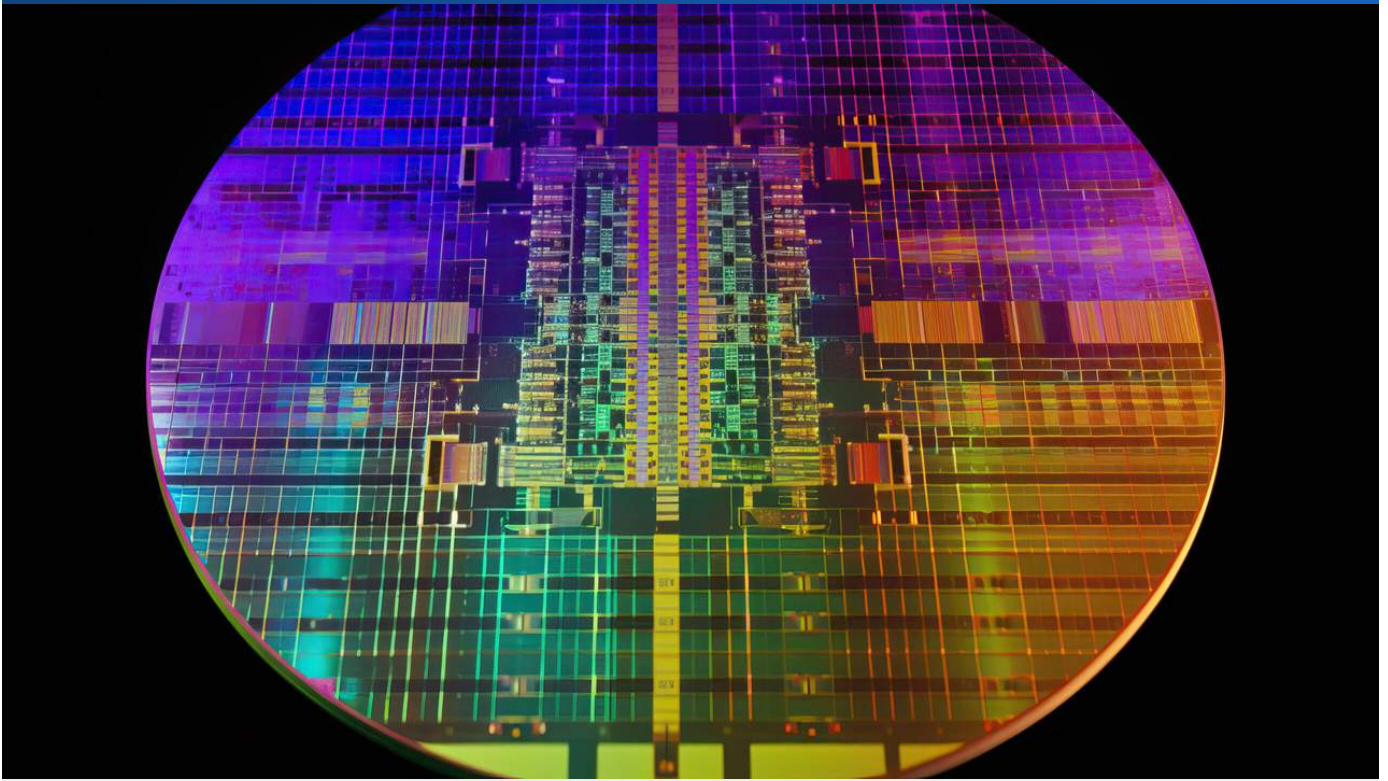
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Source: <https://technologies.org/marvell-mrvl-turns-celestial-ai-into-product-and-the-5-5-billion-earnout-clock-is-now-running/>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #26 UC Berkeley Develops Ultra-Low-Loss, Low-Power Silicon Photonics MEMS Optical Switch with Zero-Change Foundry Process

Published August 05, 2026   Semiconductor Engineering   USA



## OVERVIEW

Researchers at UC Berkeley have published a technical paper on a broadband silicon photonics MEMS optical switch utilizing a 'zero-change foundry-compatible process' and 'BEOL post-processing.' This switch achieves an extinction ratio over 30dB and insertion loss below 1.5dB, with static power consumption of approximately 20nW at maximum actuation voltage. This breakthrough significantly contributes to highly efficient optical network construction in data centers and AI/ML clusters, enhancing the balance between power consumption and performance. Its compatibility with existing semiconductor manufacturing processes reduces barriers to practical implementation.

### Key Findings

A research team at UC Berkeley has successfully developed a broadband silicon photonics MEMS (Micro-Electro-Mechanical Systems) optical switch using a groundbreaking 'zero-change foundry-compatible process' and 'BEOL (Back-End-of-Line) post-processing.' They have published a detailed technical paper on this achievement. This novel switch simultaneously achieves a high extinction ratio of over 30dB and an extremely low insertion loss of less than 1.5dB, while exhibiting remarkably low static power consumption of approximately 20nW at maximum actuation voltage, demonstrating exceptional energy efficiency.

### Technical / Clinical Details

This MEMS optical switch integrates silicon photonics technology with micromechanics to electrically control the routing of optical signals. Its primary distinguishing feature is the adoption of a 'zero-change' approach, which requires minimal modifications to existing semiconductor foundry processes. This enables efficient production while minimizing the need for extensive additional investment in manufacturing facilities. An extinction ratio exceeding 30dB ensures extremely low light leakage during switch ON/OFF states, enhancing signal purity and reliability. Concurrently, an insertion loss below 1.5dB signifies minimal attenuation of optical signals, maintaining signal quality even over long distances or in multi-stage connections. The ultra-low static power consumption of 20nW is particularly beneficial for reducing heat generation and power costs in data centers and edge devices, thereby improving overall system energy efficiency.

## Background & Context

AI/ML (Machine Learning) clusters and high-performance data centers demand ultra-fast and efficient transmission of massive data volumes between chips and across racks. Traditional electrical switches have faced challenges related to bandwidth limitations, high power consumption, and heat generation. Optical switches are leading candidates to solve these issues, but manufacturing cost and integration density have been hurdles. UC Berkeley's research represents a significant step towards practical implementation and widespread adoption of optical switches by enhancing foundry compatibility. Public-private partnerships like AIM Photonics are also driving the industrialization of photonics technology, and this switch holds potential as a foundational component for optical networks in future AI infrastructure.

## Strategic Significance & Outlook

This ultra-low-loss, low-power silicon photonics MEMS optical switch has the potential to accelerate the proliferation of optical interconnects in next-generation data centers and AI/ML clusters. Its ability to leverage existing semiconductor manufacturing infrastructure is expected to shorten the path to commercialization. Future efforts will likely focus on further increasing integration density, optimizing dynamic power consumption, and verifying robustness in large-scale network environments. If commercialized, this technology is expected to dramatically enhance AI computing performance and sustainability, enabling more efficient data processing and bringing innovation across a wide range of industries.

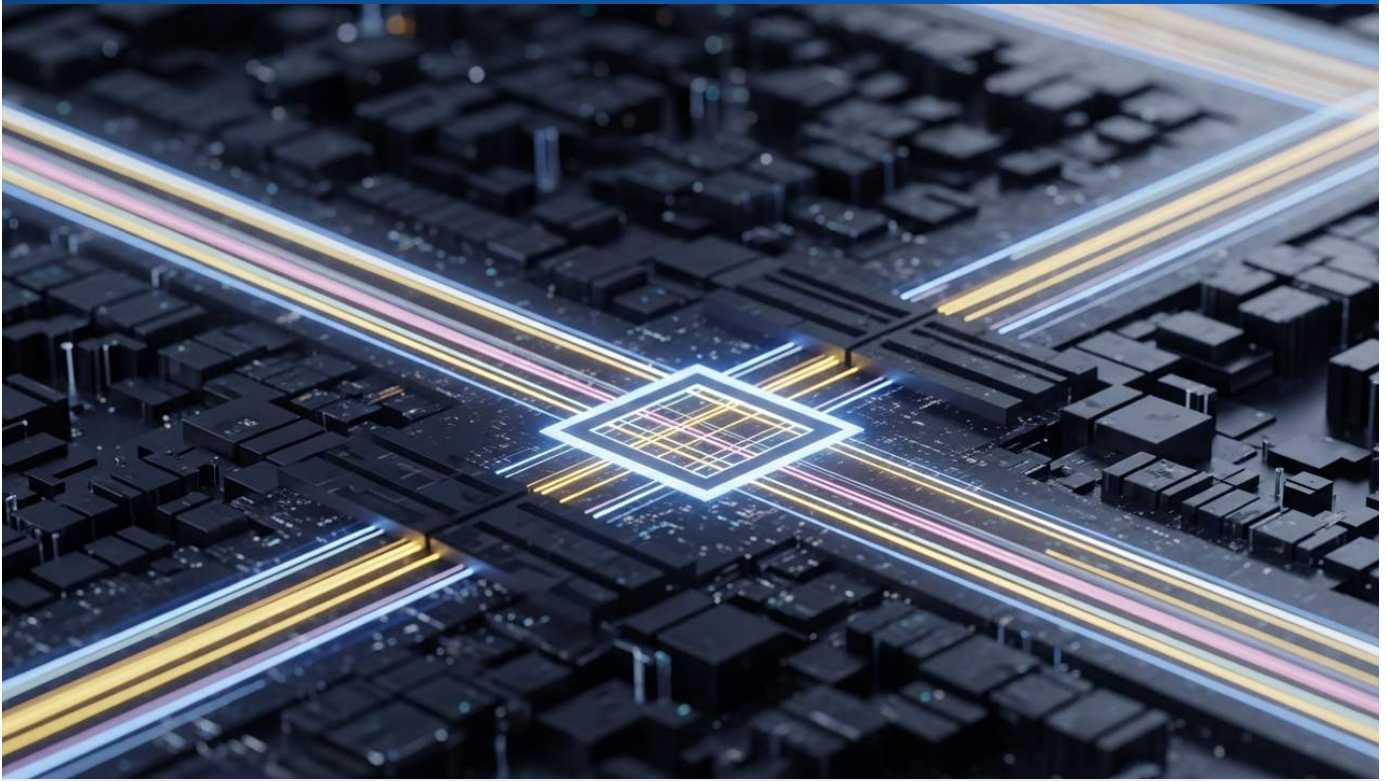
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Source: <https://semiengineering.com/silicon-photonics-mems-based-optical-switch-using-a-zero-change-foundry-compatible-process-uc-berkeley/>



# #27 Scientists Develop Photonic Chip with Quad-Lane Optical Highway, Dramatically Boosting Data Transfer Capacity

Published August 03, 2026   Facebook   Global



## OVERVIEW

Scientists have developed a photonic chip featuring a 'quad-lane optical highway,' capable of transmitting four independent optical signals via parallel waveguides on a single chip. This breakthrough dramatically increases data capacity while simultaneously reducing energy consumption and signal interference. The technology holds potential for enabling faster and more efficient data centers, AI computing, high-speed internet, and next-generation communication networks, representing a significant advance in optical communication technology.



### Key Findings

A team of scientists has developed an innovative photonic chip equipped with a 'quad-lane optical highway,' capable of simultaneously transmitting four independent optical signals through parallel waveguides on a single chip. This new technology successfully achieves a dramatic increase in data capacity while significantly reducing both energy consumption and signal interference during information transmission.

### Technical / Clinical Details

The core of this photonic chip lies in its design of multiple parallel waveguides. While traditional optical communication often relies on single optical paths or uses Wavelength Division Multiplexing (WDM) to multiplex multiple signals at different wavelengths, this 'quad-lane optical highway' physically arranges four independent optical waveguides in parallel. By transmitting different optical signals through each lane, it effectively quadruples data processing capability. Optical signals inherently offer higher speeds, lower heat generation, and less susceptibility to electromagnetic interference compared to electrical signals. This parallel processing approach increases the amount of information transferable per unit time while minimizing crosstalk between signals. Furthermore, chip-level integration contributes to a smaller overall system footprint and reductions in manufacturing costs and power consumption.

### Background & Context

Modern information society faces an explosive increase in data volume, demanding ever-greater capacity and speed from data centers, AI computing, and high-speed internet communication infrastructures. Conventional electronic circuits have been challenged by physical limitations and increasing power consumption. Optical communication technologies, particularly silicon photonics, are actively researched and developed as key solutions to these challenges. This 'quad-lane optical highway' represents a groundbreaking advancement in directly increasing data capacity, expected to alleviate interconnect bottlenecks in AI workloads and strengthen the foundation for next-generation communication networks like 5G/6G.

## Strategic Significance & Outlook

This novel photonic chip has the potential to bring revolutionary speed and efficiency to internal data center communications, interconnects between AI processors, and endpoint devices in optical fiber networks. Key challenges moving forward will include further increasing integration density, establishing mass production processes, and ensuring compatibility with existing network infrastructure. If commercialized, this technology is expected to accelerate the realization of various applications such as improved cloud computing performance, enhanced real-time processing capabilities for autonomous driving, and high-speed delivery of virtual reality/augmented reality (VR/AR) content, thereby enriching our digital lives.

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Source: <https://www.facebook.com/groups/1095219274973573/posts/1804824587346368/>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #28 GlobalFoundries Accelerates Next-Gen Silicon Photonics, Taiwan Foundries Establish Competitive Edge

Published August 03, 2026 Facebook (Daily Gazette投稿) Global



## OVERVIEW

GlobalFoundries is rapidly advancing next-generation silicon photonics, with industry leaders like NVIDIA leveraging its 300mm platform. Concurrently, TSMC is integrating silicon photonics and HBM via 3D packaging on its COUPE platform, solidifying Taiwan's strategic advantage through its robust semiconductor ecosystem. This collective push underscores the critical role of optical technology in overcoming data transfer bottlenecks in the AI era.

### Background

The explosive growth of AI workloads has pushed traditional electrical interconnects to their limits, exacerbating critical issues such as power consumption, heat generation, and bandwidth bottlenecks. In response, silicon photonics has emerged as the most promising technology to overcome these challenges, attracting significant attention across the semiconductor industry. Taiwan, notably, boasts a robust semiconductor supply chain, anchored by world-leading foundries like TSMC and UMC, and supported by research institutions such as ITRI (Industrial Technology Research Institute). This comprehensive ecosystem grants Taiwan a strategic advantage in silicon photonics manufacturing and technological innovation, providing end-to-end support from advanced optical chip design to high-volume production.

### Key Findings

GlobalFoundries is actively accelerating the development of next-generation silicon photonics technology, with leading industry players like NVIDIA, Broadcom, and Marvell leveraging its 300mm silicon photonics platform for their designs. Simultaneously, major Taiwanese foundries are establishing strategic advantages in this field, intensifying global competition and driving innovation across the optical communication and photonics industries.

GlobalFoundries' 300mm silicon photonics platform is crucial for delivering high-bandwidth, low-power, and low-latency optical interconnect solutions. Its design directly addresses the escalating demand for high-speed data transfer in data centers, AI/ML accelerators, and communication networks, leveraging its high compatibility with existing semiconductor manufacturing processes. Parallel to this, TSMC is pursuing a sophisticated strategy via its COUPE (Chip-on-Wafer-on-Substrate with Unconventional Photonic Engine) platform. This involves integrating advanced logic chips and High-Bandwidth Memory (HBM) using 3D packaging in conjunction with silicon photonic solutions, all aimed at maximizing power efficiency and data throughput in cutting-edge AI chip designs.

These advancements, spearheaded by GlobalFoundries and Taiwanese foundries, are poised to revolutionize AI-era computing infrastructure. The widespread adoption of higher-performance and more energy-efficient optical interconnect solutions will facilitate the development of more complex and larger-scale AI models, substantially improving data center operational efficiency. Looking ahead, as both GlobalFoundries and Taiwanese players leverage their respective strengths to accelerate the development and standardization of advanced packaging technologies like Co-Packaged Optics (CPO) and In-Package Optics (IPO), competition in the AI infrastructure market is projected to intensify. This trajectory will solidify optical technology's position as an indispensable component underpinning the foundation of our information society.

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Source: <https://www.facebook.com/DailyGazette/posts/globalfoundries-will-accelerate-and-develop-the-next-generation-of-silicon-photo/1753755746185257/>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #29 Photonics & Optics Stocks Surge Amidst AI Data Center Boom; Concerns Rise Over Overseas Competition

Published August 07, 2026 Facebook (Investopedia投稿) USA



## OVERVIEW

The exponential growth of AI data centers is pushing copper interconnects to their limits, creating critical power, thermal, and bandwidth challenges. Photonics technology is emerging as the pivotal solution, driving a significant surge in optics and photonics stocks, with major players like TSMC, Broadcom, and GlobalFoundries integrating advanced optical solutions into their AI roadmaps. While this shift fuels massive investment in optical high-speed data transfer and connectivity, it also raises concerns about escalating international competition, particularly from China.



### **Background: The Interconnect Wall in AI Data Centers**

The relentless advancement of Artificial Intelligence (AI) demands not only significant improvements in computational power but also radical innovations in data transfer capabilities. As AI data centers expand rapidly, traditional copper interconnects are being pushed to their physical limits, exacerbating critical issues such as high power consumption, excessive heat generation, and severe bandwidth bottlenecks. Without overcoming this 'interconnect wall,' the further evolution of AI infrastructure and capabilities is fundamentally constrained.

### **Technological Drivers: Photonics as the Essential Solution**

AI workloads generate massive amounts of data, requiring ultra-high-speed and energy-efficient transfer between processors. Electrical signals inherently struggle to meet this demand, leading to significant signal attenuation over distance, increased power consumption, and complex cooling problems. Photonics technology, in contrast, offers fundamental advantages: data transmission at the speed of light, drastically lower loss, and minimal heat generation, positioning it as a key solution to these challenges.

Industry leaders are rapidly integrating optical technologies into their AI roadmaps. TSMC, for instance, is maximizing AI chip performance by integrating advanced 3D packaging and silicon photonics through its innovative COUPE (Chip-on-Wafer-on-Substrate with Unconventional Photonic Engine) platform. Broadcom is advancing Co-Packaged Optics (CPO) solutions, which involve integrating lasers and chips directly to shorten data transmission distances and significantly improve power efficiency. GlobalFoundries also provides a robust 300mm silicon photonics platform, already being utilized by major companies like NVIDIA and Marvell for their cutting-edge designs. Silicon photonics, CPO, and optical I/O are thus becoming indispensable elements in the future architectural plans of leading chip developers such as NVIDIA and Broadcom.

## Market Impact and Investment Landscape

The market has strongly recognized the essential role of optical technology in AI infrastructure. This acknowledgment led to a significant surge in stocks of optics and photonics-related companies, indicating robust investor confidence and a strong pricing-in of this technological shift. Consequently, investments are rapidly increasing across the sector, targeting companies that provide high-speed data transfer solutions, advanced optical chips, laser systems, and comprehensive AI connectivity solutions, fueled by the accelerating demand for AI infrastructure.

## Strategic Outlook and Competitive Landscape

The progress in photonics technology is poised to fundamentally transform the design philosophy of AI data centers, enabling the realization of higher-performance, more scalable, and significantly more energy-efficient AI systems. While the rise in related stocks reflects strong market expectations for this profound technological shift, it also coincides with underlying concerns about intensifying overseas competition. China, in particular, is actively fostering its domestic photonics industry through substantial government-led initiatives. This proactive stance could create new and significant competitive pressures for Western companies, prompting the market to evaluate both the technological superiority of domestic players and their long-term ability to compete effectively on a global stage.

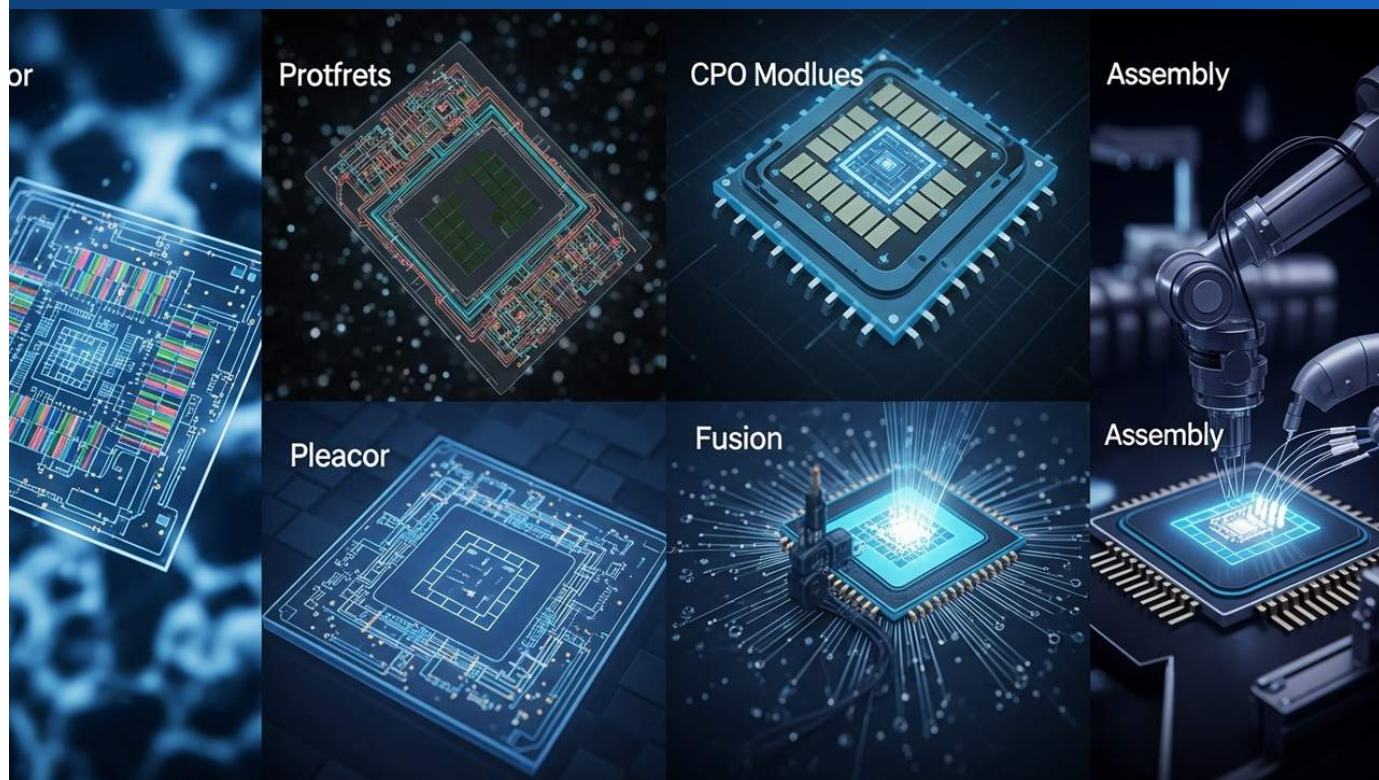
Moving forward, key factors determining the long-term growth and success of this industry will include technology standardization, strengthening of global supply chains, and carefully balancing international cooperation with strategic competition. The optics and photonics sector is widely predicted to remain one of the most significant and attractive investment opportunities in the unfolding AI era.

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Source: <https://www.facebook.com/Investopedia/posts/photonics-and-optics-stocks-got-a-big-boost-friday-in-the-wake-of-strong-earning/1488456466639490/>

# #30 CPO Shipments Intensify as Four Foundries Pursue Diverse Paths in Next-Gen Optical Integration

Published August 05, 2026 MLQ News Global



## OVERVIEW

As Co-Packaged Optics (CPO) shipments scale up, four major semiconductor foundries—TSMC, Intel, Samsung Foundry, and GlobalFoundries—are pursuing distinct strategies for next-generation optical integration. TSMC extends its CoWoS and SoIC ecosystems with its COUPE architecture, stacking electrical and photonic dies. Intel has demonstrated integrated optical computing interconnect chiplets, while Samsung Foundry is transitioning its 300mm silicon photonics platform to optical engines and turnkey CPO. These varied approaches highlight the industry's multifaceted quest for high-performance and power-efficient AI data centers.

### Key Findings

With the market shipment of Co-Packaged Optics (CPO) gaining momentum, leading global semiconductor foundries are adopting unique strategic approaches to the development and deployment of next-generation optical integration technologies. The divergent paths of TSMC, Intel, Samsung Foundry, and GlobalFoundries highlight the industry's diverse pursuit of high-performance and power-efficient solutions for AI data centers.

### Technical / Clinical Details

Each foundry's approach is detailed as follows:

- **TSMC**: The company is expanding its existing advanced packaging technologies, CoWoS (Chip-on-Wafer-on-Substrate) and SoIC (System-on-Integrated-Chips) ecosystems, into the optical domain. Specifically, TSMC is developing the COUPE (Chip-on-Wafer-on-Substrate with Unconventional Photonic Engine) architecture, which involves 3D stacking of electrical and photonic dies, aiming for intimate integration of logic and optics.
- **Intel**: Leveraging its technological leadership, Intel has demonstrated integrated optical computing interconnect chiplets. This approach embeds optical devices directly into processors, enabling extremely high bandwidth and low latency.
- **Samsung Foundry**: Samsung is building on its 300mm silicon photonics platform, driving its transition towards optical engines and turnkey CPO solutions. Its strategy is to maximize the utilization of existing semiconductor manufacturing capabilities to accelerate optical integration.
- **GlobalFoundries**: As a specialized silicon photonics foundry, GlobalFoundries offers standard Process Design Kits (PDKs) and Multi-Project Wafer (MPW) services, providing broad customer access to optical integration technology. Its platform focuses on high-efficiency interconnects specifically for data center and AI applications.

## Background & Context

The explosive growth of AI workloads has intensified interconnect bottlenecks in data centers, leading to increased power consumption and heat generation. CPO is an innovative technology designed to break this 'interconnect wall' by integrating laser sources and electronic chips within a single package, thereby significantly improving performance and efficiency. The focus of each foundry on CPO, along with their distinct technological approaches, underscores the immense market potential and the intensity of the technical competition to find optimal solutions.

## Strategic Significance & Outlook

The diverse development and accelerating shipments of CPO technology by major foundries are critically important for shaping the future of AI data centers. This dynamic of competition and collaboration will foster the establishment of technical standards and accelerate the proliferation of cost-effective, high-performance optical interconnect solutions. Ultimately, these technological advancements are expected to contribute to the realization of larger, more efficient, and sustainable AI infrastructures, enabling further evolution of AI technology.

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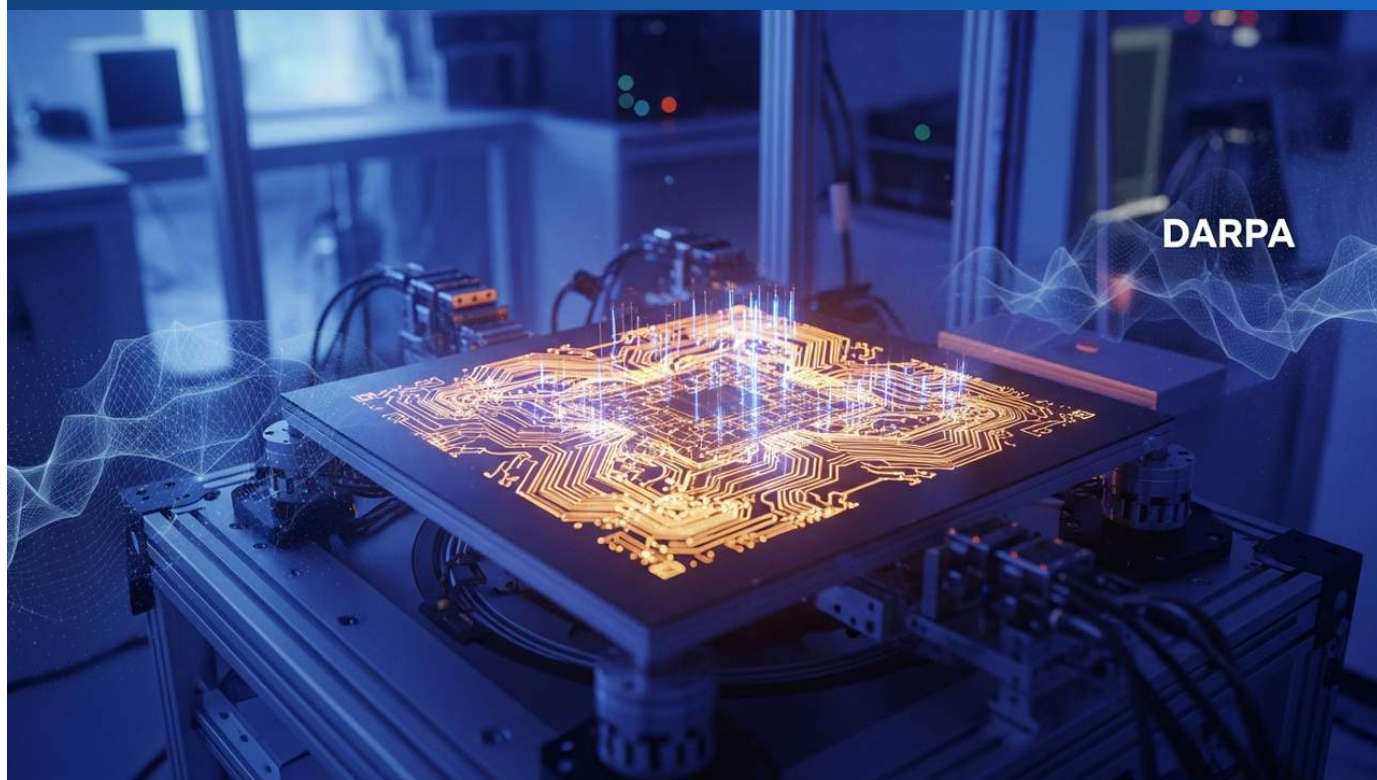
Source: <https://mlq.ai/news/cpo-is-shipping-but-foundries-are-taking-four-different-routes/>

Collected: August 08, 2026 | Automated Research System (Gemini API)



# #31 PsiQuantum Secures \$125M DARPA Quantum Computing Contract to Validate Silicon Photonics Design

Published August 03, 2026   PostQuantum.com   USA



## OVERVIEW

PsiQuantum has been awarded a substantial \$125 million expanded tasking agreement under DARPA's Quantum Benchmarking Initiative (QBI) Stage C. This contract aims to validate the efficacy of the company's fault-tolerant quantum computer design, which is based on silicon photonics and fusion-based computation. CHIPS incentives are earmarked for developing barium titanate optical switches, high-temperature single-photon detectors, and advanced photonic packaging. This signifies PsiQuantum's technological leadership and strong U.S. government backing towards achieving practical quantum computing.



### Key Findings

PsiQuantum has secured a significant expanded tasking agreement totaling \$125 million under Stage C of the Quantum Benchmarking Initiative (QBI), led by the Defense Advanced Research Projects Agency (DARPA). This crucial contract primarily aims to validate the technical effectiveness of the company's fault-tolerant quantum computer design, which leverages silicon photonics and fusion-based computation.

### Technical / Clinical Details

PsiQuantum's quantum computing architecture is built upon silicon photonics, using photons as information carriers to construct qubits. This approach offers advantages over other quantum computing modalities, such as superconducting qubits or ion traps, including potential room-temperature operation and high compatibility with existing semiconductor manufacturing infrastructure. Under the DARPA contract, the company is particularly focused on achieving fault-tolerant quantum computation, a crucial element for realizing large-scale, practical quantum computers. Furthermore, CHIPS incentives (a U.S. semiconductor industry support program) are designated for the development of key quantum hardware components, including barium titanate optical switches, single-photon detectors operating at elevated temperatures, and advanced photonic packaging technologies. These technologies are fundamental to further enhancing the performance and reliability of PsiQuantum's quantum computers.

### Background & Context

Quantum computing holds the potential to dramatically accelerate solutions for problems intractable for conventional supercomputers, spanning drug discovery, materials science, financial modeling, and cryptography. However, realizing practical 'utility-scale' quantum computers still faces numerous technical challenges, such as qubit stability, error correction, and scalability. The U.S. government, particularly DARPA, recognizes the strategic importance of quantum technology and is accelerating R&D in this field through significant investments in private companies like PsiQuantum. This \$125 million contract indicates that PsiQuantum's technology is deemed critically important for U.S. national security and economic interests.

## Strategic Significance & Outlook

The substantial funding from DARPA will provide a powerful impetus for PsiQuantum to further develop its silicon photonics-based quantum computing technology and achieve significant milestones towards commercialization. The development of components like barium titanate switches and high-temperature single-photon detectors holds the potential to dramatically improve quantum hardware performance. Moving forward, PsiQuantum is expected to steadily execute its roadmap, in collaboration with DARPA, towards refining quantum error correction techniques, designing scalable optical circuits, and constructing utility-scale quantum computers. This will significantly accelerate the impact of quantum computing on society.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQG1LCzF3dw09SjThxUc\\_Wj8Es6LaVN9WhK-5FOKyyvwrwnh4yvWBJR5vHEAHba8wgcDh27VsnCk\\_X3DKOip1AkKqYvhXO3DoWf8ab4tmSKZKdhoWx0OFE0HI9f](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQG1LCzF3dw09SjThxUc_Wj8Es6LaVN9WhK-5FOKyyvwrwnh4yvWBJR5vHEAHba8wgcDh27VsnCk_X3DKOip1AkKqYvhXO3DoWf8ab4tmSKZKdhoWx0OFE0HI9f)

Collected: August 08, 2026 | Automated Research System (Gemini API)

## #32 Former Intel CEO Patrick Gelsinger Lauds PsiQuantum's \$125M DARPA Contract as 'Transformative'

Published August 04, 2026   Wccftch   USA



### OVERVIEW

Former Intel CEO Patrick Gelsinger praised PsiQuantum's \$125 million contract with DARPA as 'transformative.' PsiQuantum is developing a silicon photonics platform aiming for 'utility-scale quantum computing' to solve major problems through large-scale quantum computation. This contract evaluates methods for transitioning quantum computing technology to practical scale, with industry endorsement highlighting strong confidence in PsiQuantum's technology and strategy.

### Key Findings

Former Intel CEO Patrick Gelsinger has highly praised the substantial \$125 million contract between PsiQuantum and the Defense Advanced Research Projects Agency (DARPA) as 'transformative.' This endorsement underscores the potential for PsiQuantum's silicon photonics-based quantum computing to play a critically important role in the transition to practical quantum systems.

### Technical / Clinical Details

PsiQuantum's core technology is founded on a silicon photonics platform, an approach that leverages existing semiconductor manufacturing processes to construct photon-based qubits. Silicon photonics offers advantages such as high compatibility with conventional electronic circuits, light-speed information transmission, low heat generation, and immunity to electromagnetic interference. The company aims to overcome challenges in qubit scalability and coherence (the ability to maintain quantum states) to build large-scale quantum computing systems. The DARPA contract, lauded by Gelsinger, is designed to evaluate PsiQuantum's methodology and progress towards achieving 'utility-scale quantum computing'—practical quantum computers capable of solving complex industrial and societal problems. Specifically, it involves validating quantum error correction and fault-tolerant design.

### Background & Context

Quantum computing holds the potential to bring revolutionary breakthroughs across various fields, including drug discovery, materials science, finance, and logistics, but its realization faces immense technical and engineering challenges. In particular, building practical-scale quantum computers and effectively controlling errors remains a common challenge for the entire industry. Patrick Gelsinger, as a former Intel CEO, has been at the forefront of the semiconductor industry, gaining deep insights into the future of technology; his commendation of PsiQuantum signifies that the company's technology and strategy are highly regarded within the industry. The U.S. government, especially defense-related agencies, invests heavily in quantum computing with the strategic intent of securing national security advantages and maintaining leadership in next-generation technology competition.

## Strategic Significance & Outlook

Support from an industry luminary like Patrick Gelsinger and a substantial contract with DARPA will significantly benefit PsiQuantum in solidifying its position as a leader in the silicon photonics quantum computing sector. Backed by this funding and trust, PsiQuantum is expected to accelerate technological development, increase qubit counts, reduce error rates, and strengthen efforts towards overall system integration and commercialization. This will bring the realization of utility-scale quantum computing closer, promising significant societal transformations. It will also create substantial business opportunities for related supply chain and software development companies.

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Source: <https://wccfttech.com/former-intel-ceo-patrick-gelsinger-lavishes-praise-on-quantum-computing-companys-agreement-with-secretive-government-agency/>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #33 Multifunctional FMCW LiDAR Revolutionizes NEV Autonomous Driving with Simultaneous 3D Imaging and Multi-Parameter Sensing

Published August 05, 2026    Light: Advanced Manufacturing    Global



## OVERVIEW

A multifunctional FMCW LiDAR system has been proposed for New Energy Vehicles (NEVs), enabling simultaneous 3D imaging and sensing of multiple parameters like ambient temperature, gas concentration, and liquid density within a single system. This technology significantly enhances the perception capabilities of Autonomous Driving Systems (ADS) and Advanced Driver-Assistance Systems (ADAS), bolstering safety and functionality. This advancement, overcoming existing LiDAR limitations, represents a crucial step towards increasing autonomous driving reliability and accelerating NEV adoption.



### Key Findings

An innovative multifunctional Frequency-Modulated Continuous-Wave (FMCW) LiDAR system has been proposed for New Energy Vehicles (NEVs). This system boasts the capability to perform high-definition 3D imaging and simultaneously sense multiple physical parameters, such as ambient temperature, gas concentration, and liquid density, all within a single hardware unit. This significantly elevates the perception capabilities of Autonomous Driving Systems (ADS) and Advanced Driver-Assistance Systems (ADAS).

### Technical / Clinical Details

While conventional LiDAR systems primarily focus on distance and velocity measurements, this new FMCW LiDAR integrates additional sensing modules with the core FMCW technology, which uses light interference to acquire highly accurate distance, velocity, and angular information of objects. This enables not only high-resolution 3D reconstruction of objects in free space but also real-time measurement of physical and chemical parameters like concentration, temperature, and liquid density. This is achieved by analyzing the absorption spectra of specific molecules (e.g., methane gas, CO<sub>2</sub>, water vapor) in the environment as the LiDAR beam passes through. For example, it can accurately detect changes in ambient temperature, harmful gases, or the state of water and ice on the road surface, providing crucial feedback to the driving system. This multifunctionality enriches the information sources for sensor fusion, leading to more robust environmental perception.

### Background & Context

The advancement of autonomous driving technology critically depends on the development of sensor systems that can accurately and comprehensively perceive the surrounding environment. While existing LiDAR excels at 3D mapping, it has limitations in directly measuring environmental parameters. Other sensors like cameras and radar play complementary roles, but each has its weaknesses. The proposed multifunctional FMCW LiDAR system aims to reduce the complexity of the sensor system while enhancing autonomous driving safety and reliability by acquiring richer information from a single sensor. NEVs, in particular, are gaining attention for their environmental benefits, and this multifunctional LiDAR is expected to play a vital role in delivering smarter and safer mobility solutions.

## Strategic Significance & Outlook

The development of this multifunctional FMCW LiDAR system represents a significant step forward for autonomous vehicle perception technology. Future challenges will include miniaturization, cost reduction, and improving robustness under adverse weather conditions. Research into how autonomous driving AI can efficiently integrate and utilize the multiple parameters collected for decision-making will also be crucial. If commercialized, this technology will enable autonomous vehicles to make safer and more intelligent decisions, accelerating their widespread adoption. Furthermore, applications in industrial robotics, smart city infrastructure, and other fields requiring 3D sensing and environmental monitoring are also anticipated.

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Source: <https://www.light-am.com/article/doi/10.37188/lam.2026.102>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #34 Hamamatsu Photonics Europe Enhances Advanced Imaging Solutions with Fairchild Sensor Technologies

Published July 31, 2026   Novus Light Today   Japan



## OVERVIEW

Hamamatsu Photonics Europe is strengthening its advanced imaging solutions by actively promoting Fairchild Imaging's high-performance CMOS image sensor technology to European customers, acquired in 2024. This integration enables the provision of CMOS image sensors with low-noise performance, high resolution, and diverse pixel sizes for demanding imaging environments, including X-ray, medical, scientific, and space-certified applications. This strategy significantly boosts the company's competitiveness in the global image sensor market.

### Key Findings

Hamamatsu Photonics Europe is significantly bolstering its advanced imaging solutions portfolio by actively offering Fairchild Imaging's innovative CMOS image sensor technology, acquired in 2024, to customers in the European market. This strategic move has enabled the company to establish a robust capability for delivering high-quality sensor products, particularly in demanding and specialized imaging application sectors.

### Technical / Clinical Details

Fairchild Imaging's CMOS image sensors are characterized by their superior low-noise performance, high resolution, and flexibility to accommodate diverse pixel sizes. These sensors are engineered for use in challenging environments requiring stringent specifications, such as X-ray detection, advanced medical diagnostic equipment, high-precision scientific research instruments, and space-certified applications. For instance, low-noise characteristics are indispensable for scientific applications detecting faint light signals and for improving image quality in X-ray diagnostics. High resolution offers an advantage in medical imaging capturing minute structures and scientific experiments requiring detailed observation. A wide range of pixel sizes allows for optimized solutions tailored to various optical systems and detection requirements, ensuring flexible response to customer needs. Through this technological integration, Hamamatsu Photonics can now fuse Fairchild Imaging's expertise in high-speed, high-sensitivity CMOS image sensors with its own extensive photonics technologies, enabling a more comprehensive solution offering.

## Background & Context

The image sensor market constantly demands higher performance across industrial applications, medical fields, scientific research, and space exploration. Specifically, characteristics such as high sensitivity, low noise, and fast readout are crucial for developing new diagnostic and analytical methods, as well as enabling the exploration of uncharted territories in space. Hamamatsu Photonics is a global leader with a long-standing track record in areas such as photomultiplier tubes and photodiodes. The acquisition of Fairchild Imaging was a strategic move to strengthen its product lineup in the rapidly growing CMOS image sensor market and further enhance its market competitiveness. This integration combines the technological strengths of both companies, improving their capability to address more complex and specialized imaging challenges.

## Strategic Significance & Outlook

The active deployment of Fairchild Imaging's CMOS sensor technology will play a crucial role in enhancing Hamamatsu Photonics Europe's presence in the European market and strengthening its leadership in advanced imaging. Moving forward, the company is expected to further pursue synergies with its existing product lines and accelerate the development of custom solutions tailored to specific customer needs. Key areas of focus will likely include applications in smart imaging systems integrated with AI and machine learning, as well as R&D aimed at ensuring long-term reliability in extreme environments. This is expected to contribute to society across various fields, including improved accuracy in medical diagnostics, acceleration of scientific discoveries, and increased efficiency in industrial processes.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHUtU-A0WXfESrZLyuh2FRO1WrRTqwW\\_PYjjYVfqoppiw1hoRIBZ-Chq2q3k2Dus6kXoVmAOdnfcjD5oFrY6kiWHiwCSSEzGu9-PMz4fTlw-QQJBVQ8EQeu8Hez1IVNn71zKqVJMEgOANudt9-mEU02OL8Qag5zcYwmW\\_w3YDmSVEJiT5H54Ax0TSCtXUPf7xbDZUoGh90cMRP4eeuWBGT5PMKbXkRgWUvWrUYgiDnNWoyDcsruvhtRlrWWKkYIkU8XR3g](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHUtU-A0WXfESrZLyuh2FRO1WrRTqwW_PYjjYVfqoppiw1hoRIBZ-Chq2q3k2Dus6kXoVmAOdnfcjD5oFrY6kiWHiwCSSEzGu9-PMz4fTlw-QQJBVQ8EQeu8Hez1IVNn71zKqVJMEgOANudt9-mEU02OL8Qag5zcYwmW_w3YDmSVEJiT5H54Ax0TSCtXUPf7xbDZUoGh90cMRP4eeuWBGT5PMKbXkRgWUvWrUYgiDnNWoyDcsruvhtRlrWWKkYIkU8XR3g)

# #35 Hamamatsu Photonics Unveils New Industrial and Scientific Sensor Products, Including CMOS Line Image Sensors

Published August 06, 2026   Hamamatsu Photonics   Japan



## OVERVIEW

Hamamatsu Photonics has announced several new sensor products, including the CMOS line image sensor S15611W, high-speed Si PIN photodiodes S15152 and S17348 for YAG laser detection, surface-mount short-wavelength APD S17268 series, and Si photodiodes with filters for monochromatic light (310 nm). These offerings cater to a broad range of industrial and scientific applications, pushing the boundaries of existing optical sensor technology. This release highlights the company's commitment to delivering innovative photonics solutions that meet diverse market needs.



### Key Findings

Hamamatsu Photonics has launched several new high-performance optical sensors designed to meet diverse needs across industrial and scientific sectors. This release includes advanced CMOS line image sensors, high-speed silicon PIN photodiodes, and photodiodes optimized for specific wavelengths, reaffirming the company's leadership in optical technology.

### Technical / Clinical Details

The new products announced are as follows:

- **\*\*CMOS Line Image Sensor S15611W\*\***: A high-resolution, high-speed line scan CMOS sensor suitable for industrial inspection equipment and spectroscopic analysis instruments. It achieves high-precision data acquisition with excellent signal-to-noise ratio and wide dynamic range.
- **\*\*Surface-Mount High-Speed Si PIN Photodiode S15152\*\***: Characterized by its compact size and fast response, ideal for optical communication, ranging, and optical switching applications. Its surface-mount package enables reduced mounting area and high-density integration.
- **\*\*Si PIN Photodiode S17348 for YAG Laser Detection\*\***: Optimized for high sensitivity to the 1064nm YAG laser wavelength, contributing to improved detection accuracy in laser processing machines and laser ranging systems.
- **\*\*Surface-Mount Short-Wavelength APD S17268 Series\*\***: An avalanche photodiode (APD) exhibiting high sensitivity and gain in the short-wavelength region, suitable for medical diagnostic and analytical instruments requiring detection of faint light signals. Surface mounting facilitates miniaturization and system integration.
- **\*\*Si Photodiode with Filter for Monochromatic Light (310 nm)\*\***: Designed to efficiently detect only specific monochromatic light at 310nm, used for monitoring UV-C germicidal lamps, specific chemical analysis, and environmental monitoring. It eliminates interference from unwanted wavelengths, enabling high-precision measurements.

These products are the result of Hamamatsu Photonics' long-standing expertise in opto-semiconductor technology combined with cutting-edge market demands, designed to cover a wide range of wavelengths and applications.

## **Background & Context**

In fields such as industrial automation, medical diagnostics, scientific measurement, and optical communication, there is a constant demand for high-performance and reliable optical sensors. With the evolution of AI technology and the proliferation of IoT, the importance of data accuracy and speed acquired from sensors has further increased. Hamamatsu Photonics addresses these market trends by continuously introducing new products to meet diverse customer needs. This product announcement demonstrates the company's commitment to expanding the frontiers of optical sensor technology and supporting innovation across various industries.

## **Strategic Significance & Outlook**

The newly announced sensor products hold the potential to contribute to solving a wide range of societal challenges, including quality control in manufacturing, early diagnosis in medical fields, and improved accuracy in environmental monitoring. Particularly, the expansion of surface-mount products will contribute to device miniaturization and improved mass productivity, facilitating the integration of optical sensor technology into a broader range of systems. Hamamatsu Photonics is expected to support customer innovation and open new application areas for optical technology through these products. Moving forward, as these sensors are integrated into AI-driven systems and smart devices, the potential for creating new markets will also increase.

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Source: <https://www.hamamatsu.com/us/en.html>

# #36 IMEC and OAE Publishing Announce Breakthrough in Integrated Optical Routing for Optogenetic Probes

Published August 06, 2026 OAE Publishing ベルギー



## OVERVIEW

IMEC has announced a significant advancement in integrated optical routing for next-generation optogenetic probes. Their Neuropixels Opto probe features MZI-MMI arrays and dual-color emitters fabricated on 8-inch silicon nitride wafers, enabling scalable and independently addressable light delivery. This breakthrough promises higher density neural interfaces and cross-disciplinary applications, from neuroscience to quantum photonics.

### Background

Optogenetics is a revolutionary technique that uses light to control the activity of specific neurons, with the potential to transform our understanding of brain function and the development of treatments for neurological disorders. However, conventional optogenetic tools have faced challenges in light delivery precision and scalability. To individually manipulate a large number of neurons with high spatial and temporal resolution, technologies that can efficiently guide light to microscopic regions are essential. Integrated photonic waveguides are attracting attention as an ideal solution to this challenge, as they can route light with much higher integration density than optical fibers. IMEC's Neuropixels Opto probe represents state-of-the-art research in this field, offering new experimental tools to the neuroscience research community and expected to contribute to unraveling the brain's complex networks.

### Key Findings

Integrated photonic waveguide routing is emerging as a central technology in the design of next-generation optogenetic probes, enabling scalable and independently addressable light delivery. IMEC, a leading research institute in Belgium, is playing a pioneering role in this field, showcasing concrete implementations of this technology in its Neuropixels Opto probe.

## Technical Details

The Neuropixels Opto probe developed by IMEC is an advanced neural interface designed to enhance the precision and complexity of optogenetic experiments. This probe incorporates an innovative optical waveguide routing structure that combines arrays of Mach-Zehnder interferometers (MZI) and multimode interferometers (MMI). This allows light signals from multiple sources to be precisely guided to minute regions, enabling independent stimulation of individual neuron groups or circuits. Furthermore, the integration of dual-color emitters permits simultaneous or selective delivery of light at different wavelengths, supporting complex protocols for multi-color stimulation and inhibition in optogenetic experiments. In terms of manufacturing, silicon nitride (SiN) is adopted as the base material, and 8-inch (200mm) semiconductor foundry technology is utilized to achieve high integration density and manufacturing scale. This also relates to similar research in programmable integrated quantum photonics, highlighting the importance of precise control of microscopic optical circuits.

## Strategic Significance and Outlook

The evolution of integrated photonic waveguide routing technology has the potential to impact not only optogenetics but also a wide range of fields such as neural interfaces, biosensing, and even optical quantum computing. Moving forward, research institutions like IMEC will likely focus on improving the biocompatibility of probes, ensuring long-term stability, and further miniaturization and functional integration. If widely adopted, this technology could accelerate progress in brain science research and potentially pave the way for new light-based therapies for neurological diseases like Parkinson's and epilepsy. Furthermore, 8-inch foundry manufacturing capability is a crucial factor for future mass production and cost reduction, enabling access for more researchers and clinical applications.

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Source: <https://www.oaepublish.com/articles/ss.2026.68>

# #37 Lightmatter Challenges Performance-Cost Balance in Enterprise Optical Computing

Published July 31, 2026   NextSprints   USA



## Balance: Lightmatter's optical edge vs cost efficiency 💡

### OVERVIEW

Lightmatter faces the critical challenge of balancing cutting-edge performance with cost-effectiveness for its optical computing solutions in enterprise applications. Discussions center on metrics for evaluating its optical interconnect technology, photonic AI accelerator chips, and Envisi AI platform success. Key strategic issues include compatibility with AI frameworks, proprietary software development, and optimizing the balance between processing speed and power consumption. This highlights industry-wide challenges for the commercialization and large-scale deployment of optical computing technology.



### Key Findings

Lightmatter is tackling the significant industry-wide challenge of balancing the pursuit of high performance with cost-effectiveness in delivering cutting-edge optical computing solutions for enterprise applications. Achieving this balance is crucial for the widespread adoption of its technology in the market.

### Technical / Clinical Details

Lightmatter's solutions primarily consist of three key components:

- **Optical Interconnect Technology**: Utilizes light for data transfer within data centers and between chips, addressing the bandwidth limitations, latency issues, and power consumption problems of traditional electrical interconnects.
- **Photonic AI Accelerator Chips**: Performs AI workload computations using light, enabling significantly faster processing and lower power consumption compared to electronic chips like GPUs.
- **Envisi AI Platform**: A software platform that integrates the above hardware components to efficiently execute AI model training and inference.

To evaluate the success of these technologies, key metrics include objective numbers for processing speed and power consumption from benchmark tests, high compatibility with major AI frameworks (e.g., TensorFlow, PyTorch), and the ability to seamlessly integrate into existing enterprise IT infrastructure. Particularly important is how the company will harmonize its proprietary software development with the broader ecosystem.

## Background & Context

The evolution of AI technology demands increasingly larger datasets and more complex models, leading to exponentially growing requirements for computing resources. However, traditional electronic computing faces the limits of Moore's Law and the 'power wall,' making it challenging to achieve both high performance and cost efficiency. Optical computing is a promising candidate to overcome this challenge, but as a nascent technology, manufacturing costs, yields, and the complexity of integration with existing systems pose barriers to commercialization. Lightmatter is strategizing to industrialize this cutting-edge technology at the enterprise level, drawing significant industry attention.

## Strategic Significance & Outlook

For Lightmatter to succeed in the enterprise market, it must not only deliver high-performance and cost-effective solutions but also strengthen engagement with the developer community and expand its ecosystem. By enhancing compatibility with AI frameworks and efficiently advancing proprietary software development, customers can more easily harness the benefits of optical computing. Future focus will be on demonstrating product reliability and scalability, and accumulating successful case studies with early adopters. This will enable optical computing to become a mainstream AI infrastructure, accelerating enterprise digital transformation.

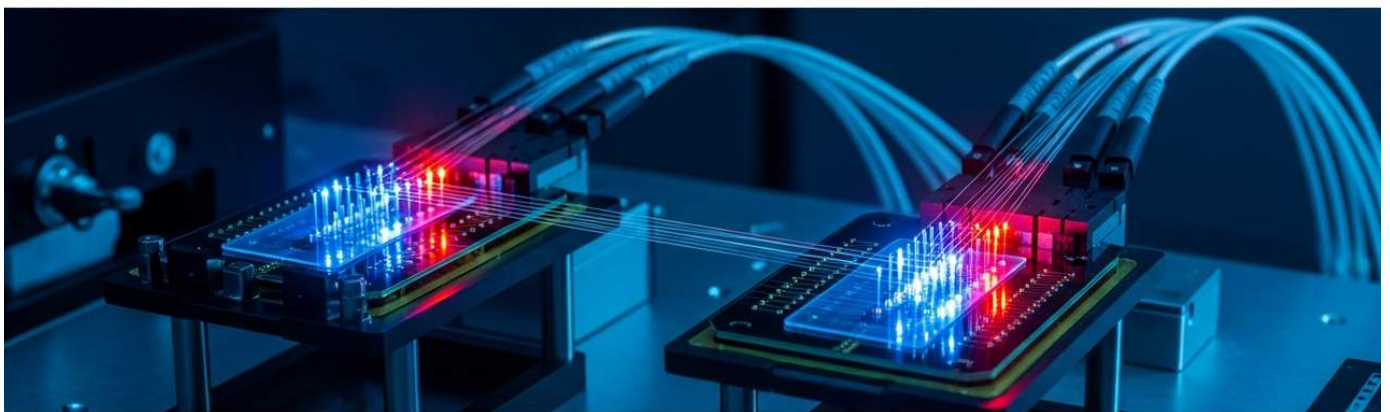
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Source: <https://nextsprints.com/how-balance-lightmatter-optical-computing-cost-performance>

Collected: August 08, 2026 | Automated Research System (Gemini API)

# #38 PsiQuantum Seeks Integrated Photonics Engineers for Silicon Photonics Quantum Computers, Emphasizing Fault Tolerance and Scalability

Published August 05, 2026   BeBee   USA



## OVERVIEW

PsiQuantum is recruiting integrated photonics engineers to build practical quantum computers based on silicon photonics. Its architecture is highly scalable and resistant to thermal and electromagnetic interference, integrating with existing cryogenic cooling and standard optical fiber infrastructure. Leveraging partners like GlobalFoundries, PsiQuantum benefits from advanced semiconductor manufacturing. This recruitment aims to strengthen characterization and validation of advanced photonic circuits, accelerating the realization of fault-tolerant, large-scale quantum computers.

### Key Findings

PsiQuantum has initiated recruitment for Integrated Photonics Engineers, signaling its commitment to realizing practical quantum computers based on silicon photonics technology. The company aims for fault-tolerant quantum computing, and its architecture leverages the unique properties of photons to achieve high scalability and compatibility with existing infrastructure.

### Technical / Clinical Details

PsiQuantum's quantum computer operates by manipulating qubits (photons) using photonic circuits integrated on silicon chips. This technology offers several key advantages:

- **\*\*Thermal Robustness\*\***: Photons generate minimal heat and are less susceptible to ambient temperature fluctuations, relaxing the strict cryogenic cooling requirements typical of electronic chips. However, some components like superconducting single-photon detectors still require cryogenic environments.
- **\*\*Electromagnetic Interference (EMI) Immunity\*\***: Optical signals are less affected by EMI, which effectively suppresses qubit decoherence (loss of quantum state) caused by external noise.
- **\*\*Integration with Existing Infrastructure\*\***: High compatibility with standard optical fiber infrastructure and advanced semiconductor manufacturing foundries like GlobalFoundries enables large-scale production and scaling.

The Integrated Photonics Engineer role focuses on supporting the characterization, validation, and design rule definition of advanced photonic circuits that underpin the quantum computing platform. Specifically, this involves developing and optimizing unique materials and process modules such as superconducting single-photon detectors, ultra-low-loss waveguides, optical scatter mitigation structures, and nonlinear epitaxial metal-oxide switches. This work aims to achieve mass production and improved reliability for commercially viable quantum computers.

## Background & Context

Quantum computing holds the potential to provide transformative solutions across many fields, including drug discovery, materials science, finance, and AI. However, its realization necessitates building fault-tolerant systems that can stably operate a large number of qubits and effectively correct errors. PsiQuantum asserts that silicon photonics is one of the most promising approaches to address this challenge and is advancing its industrialization through partnerships with major foundries like GlobalFoundries. This job opening is a clear indication that the company is moving to the next phase of technological development and is strengthening its engineering capabilities.

## Strategic Significance & Outlook

The hiring of Integrated Photonics Engineers marks a critical step for PsiQuantum in accelerating hardware development towards its goal of building practical quantum computers. Through advanced photonic circuit characterization and validation, improvements in qubit performance and overall system reliability will progress. This increases the likelihood that PsiQuantum's fault-tolerant quantum computer will eventually reach a level capable of supporting large-scale commercial applications. This move further elevates the prominence of silicon photonics in the quantum computing field and is likely to intensify technological competition.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQG61FPQhOgoQ0S-2jKCptEL8E94YUfHrqrt-oEefaXZWv\\_N4R0Z9N9XftoKZIROmulwCLr21xyYz9FPKhgm8zbmR28jiP2fXizUrne2TjFrk2Eco\\_H0yKtPQ1wOcEW7'9RmfWeC7AICsdDN3zk=](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQG61FPQhOgoQ0S-2jKCptEL8E94YUfHrqrt-oEefaXZWv_N4R0Z9N9XftoKZIROmulwCLr21xyYz9FPKhgm8zbmR28jiP2fXizUrne2TjFrk2Eco_H0yKtPQ1wOcEW7'9RmfWeC7AICsdDN3zk=)

# #39 A\*STAR Accelerates Advanced Optical Interconnect Development for Co-Packaged Optics (CPO) in Singapore

Published August 07, 2026   MyCareersFuture   Singapore



## OVERVIEW

A\*STAR Research Entities in Singapore are seeking a Senior Scientist to accelerate the development of package-level optical interconnects for advanced Co-Packaged Optics (CPO) platforms. This role involves designing and simulating optical interconnects using fan-out silicon interposers, polymer glass, or 3D stacking techniques, contributing to lens design, loss estimation, and wafer-scale integration for multi-chiplet systems. Deep knowledge of wafer-level processes, photonic packaging platforms (SiPh, InP, TFLN), and passive alignment techniques is required, indicating Singapore's potential as a key CPO R&D hub.



### Key Findings

A\*STAR Research Entities in Singapore are accelerating the development of package-level optical interconnects, which are essential for realizing advanced Co-Packaged Optics (CPO) platforms. As part of this strategic initiative, the institution has opened a recruitment drive for a Senior Scientist to lead research and development in this cutting-edge technology.

### Technical / Clinical Details

The Senior Scientist role encompasses a wide range of responsibilities, focusing on the design, simulation, and wafer-scale integration of optical interconnect technologies. Specifically, the following technical areas are included in the primary duties:

- **\*\*Optical Coupling Schemes and Lens Design\*\***: Developing efficient optical coupling schemes for various advanced packaging methods, such as fan-out silicon interposers, polymer glass, or 3D stacking techniques, and designing corresponding lenses. This aims to minimize optical signal loss between chips.
- **\*\*Accurate Estimation of Optical Losses\*\***: Performing precise estimations of insertion loss and coupling loss across the entire optical interconnect path to optimize performance.
- **\*\*Wafer-Scale Integration for Multi-Chiplet Systems\*\***: Contributing to the process development for achieving high-precision optical interconnects at the wafer level in CPO systems integrating multiple chiplets.
- **\*\*Simulation and Modeling\*\***: Conducting simulations of optical behavior, thermal characteristics, and mechanical stress to optimize designs and resolve issues.

This position requires deep knowledge of leading photonic packaging platforms, including Silicon Photonics (SiPh), Indium Phosphide (InP), and Thin-Film Lithium Niobate (TFLN), along with expertise in wafer-level process technologies and passive alignment techniques. This indicates A\*STAR's pursuit of comprehensive CPO solutions that integrate diverse materials and technologies.

## Background & Context

Driven by the increasing demand for AI and High-Performance Computing (HPC), the data transfer bandwidth between processors in data centers is growing exponentially, making it challenging for traditional electrical interconnects to meet these requirements. Co-Packaged Optics (CPO) is gaining attention as an innovative technology that integrates electronic chips and optical transceivers within the same package, significantly shortening data transfer distances and reducing power consumption and latency. Singapore, with its advanced semiconductor manufacturing and R&D capabilities, aims to play a crucial role in the development of next-generation technologies like CPO. This initiative by A\*STAR is seen as part of a national strategy to strengthen Singapore's position as a hub for photonics and packaging technology in the Asia-Pacific region.

## Strategic Significance & Outlook

This aggressive CPO development by A\*STAR Research Entities demonstrates Singapore's clear ambition to be at the forefront of global optical integration technology. The recruitment of Senior Scientists will accelerate the resolution of CPO technology bottlenecks (particularly high-efficiency optical coupling and wafer-scale mass production techniques), contributing to the realization of high-performance and energy-efficient optical interconnect solutions in AI data centers. In the future, these research outcomes are expected to disseminate not only within Singapore but also globally across the semiconductor and optical communication industries, fostering the standardization and widespread adoption of CPO technology.

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Source: <https://www.mycareersfuture.gov.sg/job/senior-scientist-i-co-packaged-optics-adv-pckg-ime-astar-research-entities-e597ea8a1fb7a2e6a82eab62ceaa5d5c>

# #40 3D Heterogeneous Integration Shapes AI Server & Data Center Future: Photonic Waveguides Address Power Crisis

Published July 31, 2026   YouTube   USA



## MICROELECTRONICS Technical Seminar

**MADHAVAN SWAMINATHAN**

PROFESSOR, PENN STATE UNIVERSITY



### OVERVIEW

This video discusses the future of 3D Heterogeneous Integration (3DHI) in AI server nodes and data centers. As AI data centers proliferate in 2026, creating a power consumption crisis, embedding photonic waveguides in glass substrates emerges as a critical opportunity to maximize interconnect bandwidth density and energy efficiency. Information on AIM Photonics and NY Creates' PIC and packaging capabilities is linked, underscoring optical technology's indispensable role in next-gen data center design.

### Key Findings

The future of AI server nodes and data centers is heavily reliant on 3D Heterogeneous Integration (3DHI). Particularly in 2026, with an impending power consumption crisis, the integration of photonic waveguides into glass substrates presents a groundbreaking opportunity to maximize interconnect bandwidth density and energy efficiency. This approach offers a fundamental solution to critical data transfer and processing challenges in the AI era.

### Technical / Clinical Details

3D Heterogeneous Integration is a technology that vertically stacks multiple chips with different functionalities (e.g., processors, memory, photonic circuits) and connects them with fine-pitch interconnects. This drastically shortens data transfer distances, leading to significant improvements in speed, latency, and power consumption compared to traditional 2D planar layouts. Specifically, the technology of forming photonic waveguides directly on glass substrates offers several advantages:

- **\*\*High Bandwidth Density\*\***: Glass substrates possess excellent optical properties, enabling the integration of high-density optical waveguides. This allows for parallel transfer of far more data than conventional electrical wiring, achieving terabit-per-second data throughputs.
- **\*\*Improved Energy Efficiency\*\***: Optical signals experience significantly lower transmission losses and minimal heat generation compared to electrical signals. This can drastically reduce overall data center cooling costs and substantially improve power efficiency.
- **\*\*Maintenance of Signal Integrity\*\***: Glass is a low dielectric loss material, suppressing electrical signal interference and attenuation, ensuring clearer and more stable signal transmission.

Organizations like AIM Photonics and NY Creates provide expertise in PIC (Photonic Integrated Circuit) design and packaging, supporting the practical implementation of such advanced integration technologies.

## Background & Context

The number of AI data centers is projected to surge in 2026, with the associated massive power consumption potentially leading to a global power crisis. AI workloads depend not only on computational power within a single chip but also heavily on the speed and efficiency of data movement between chips and across servers. Traditional electrical interconnects have reached their physical limits, becoming a significant bottleneck for AI performance. The combination of 3DHI and photonic waveguides is attracting considerable industry attention as a powerful solution to simultaneously break both the 'power wall' and the 'data movement wall.'

## Strategic Significance & Outlook

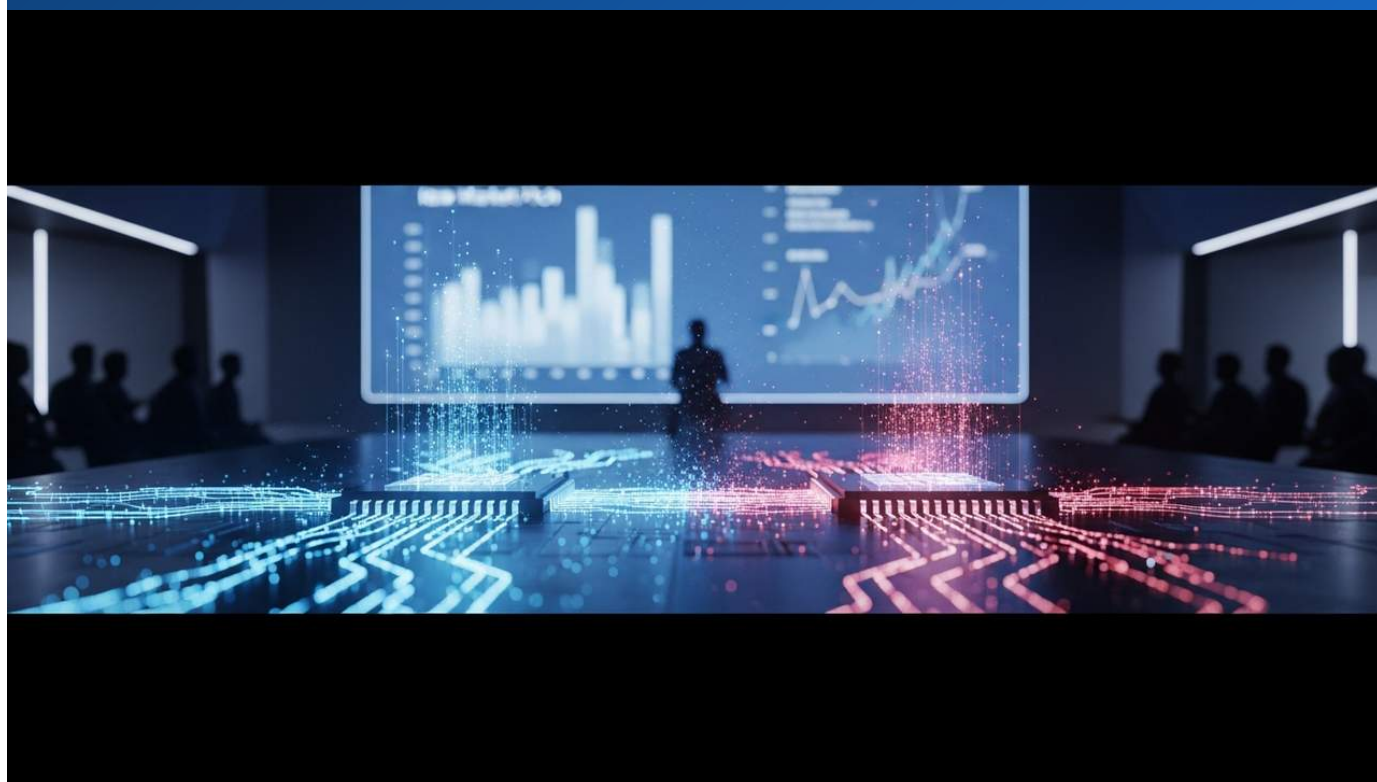
3D Heterogeneous Integration technology with photonic waveguides embedded in glass substrates will play a crucial role in forming the foundation of next-generation AI servers and data centers. Future efforts will focus on reducing manufacturing costs, establishing mass production processes, and further integrating this technology with the existing semiconductor ecosystem. Collaboration between public institutions like AIM Photonics and NY Creates and private companies will be key to accelerating the commercialization and widespread adoption of this technology. This is expected to drive further AI evolution and lead to the realization of more sustainable and high-performance computing infrastructures, potentially contributing significantly to solving complex societal problems in areas such as autonomous driving, drug discovery, and climate change modeling.

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Source: [https://www.youtube.com/watch?v=ixuyNPHOD\\_0](https://www.youtube.com/watch?v=ixuyNPHOD_0)

# #41 New Market Pitch Compares Chip-to-Chip Interconnect Startups, Analyzes Marvell's Celestial AI Acquisition Impact

Published July 31, 2026   New Market Pitch   USA



## OVERVIEW

New Market Pitch analyzed Marvell's acquisition of Celestial AI, suggesting new value creation opportunities for chip-to-chip interconnect startups. Celestial AI's Photonic Fabric technology was acquired by Marvell on February 2, 2026, for integration into its switches, custom chips, and optical interfaces. The article also compares other optical interconnect companies like Ayar Labs and Lightmatter, highlighting their technical approaches and commercialization progress. This signifies intensifying competition and industry consolidation in the optical interconnect market, driven by AI workloads.



### Key Findings

New Market Pitch has analyzed that Marvell's strategic acquisition of Celestial AI indicates new possibilities for value creation within large semiconductor platforms for startups developing chip-to-chip interconnect technologies. This acquisition underscores the critical importance of optical interconnect technology in AI infrastructure, where high bandwidth and low latency are paramount.

### Technical / Clinical Details

Celestial AI's Photonic Fabric technology is an innovative solution that uses optical communication to create high-speed connections between processors, memory, and accelerators. Following its acquisition by Marvell on February 2, 2026, this technology is set to be tightly integrated with Marvell's existing switch products, custom chips, and optical interfaces. This integration will enable Marvell to offer higher-performance and more energy-efficient interconnect solutions for AI data centers. The article also compares other leading optical interconnect startups, Ayar Labs and Lightmatter.

- **Ayar Labs**: A leader in optical I/O technology, with ongoing integration into Intel chips. It is characterized by high speed, low power consumption, and long-distance transmission.
- **Lightmatter**: Engages in both photonic computing and optical interconnects, offering integrated solutions that combine AI accelerators with their associated optical networks.

These companies each employ distinct technical approaches and commercialization strategies, all aimed at resolving data transfer bottlenecks in the AI era.

## Background & Context

The explosive growth of AI workloads has dramatically increased the volume of data movement between chips and across servers in data centers, exposing the limitations of traditional electrical interconnects. This has led to escalating power consumption, thermal issues, and bandwidth bottlenecks, posing significant barriers to improving AI system performance. Optical interconnects are attracting considerable attention across the semiconductor industry as the most promising technology to overcome these challenges. The trend of major semiconductor companies like Marvell acquiring optical technology startups like Celestial AI demonstrates the extremely high strategic value of optical technology in the AI infrastructure market, and further M&A and partnerships are anticipated in this sector.

## Strategic Significance & Outlook

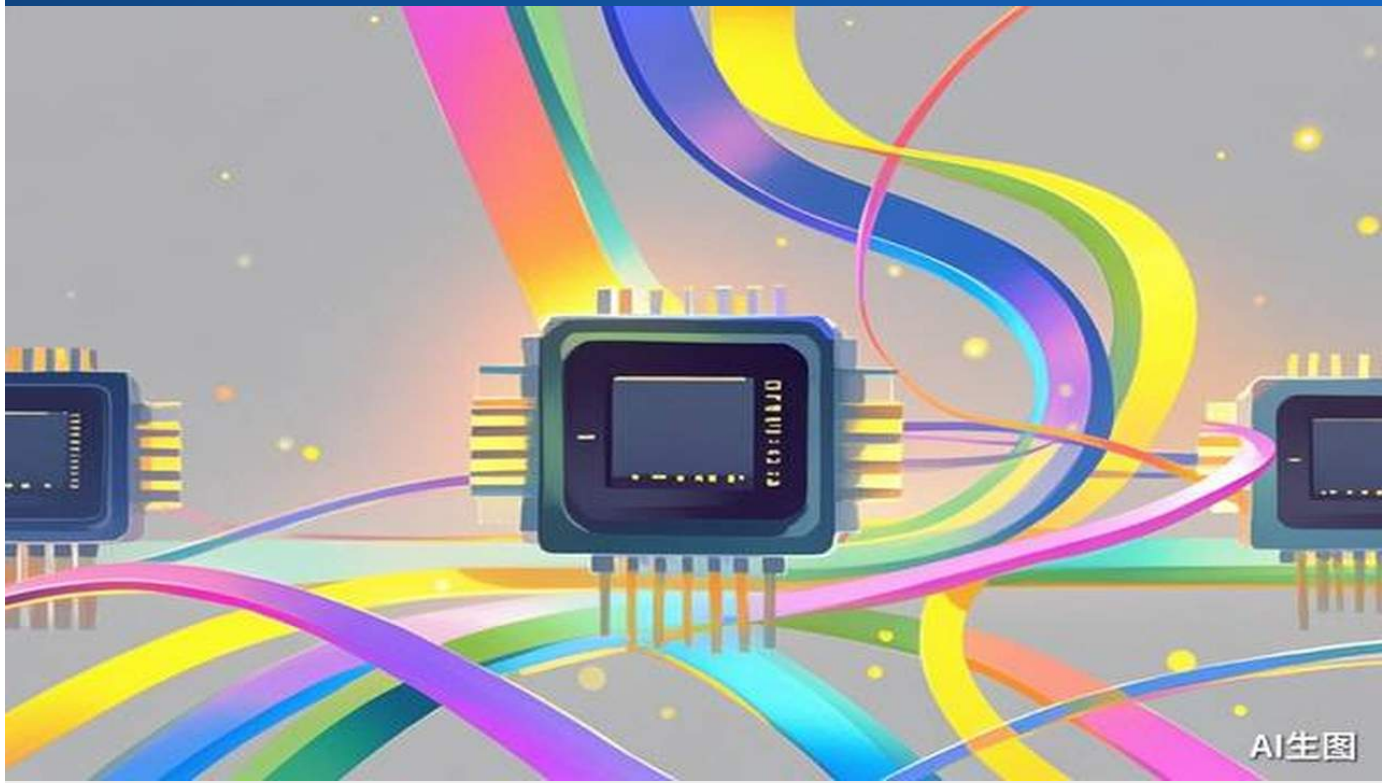
Marvell's acquisition of Celestial AI and the integration of its Photonic Fabric technology into Marvell's product portfolio will be a crucial step in accelerating the adoption of optical interconnects in the AI infrastructure market. As other players like Ayar Labs and Lightmatter also aim to capture market share by leveraging their respective strengths, technological competition is expected to intensify further. Ultimately, these technological innovations are expected to enable the construction of higher-performance and more energy-efficient AI data centers, contributing to the further evolution of AI and the expansion of its application domains. Industry-wide, efforts towards standardization and efficient integration of optical technology into existing semiconductor manufacturing processes will be key focus areas.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQF95tbDNSGEGS5Znwx\\_-p330VtGna8RalLqpudDXaVCbAoXqyXIQe3K2Xb6uZ0StQmVYkQHs309fjiYbwxDUZak8elPpj6\\_0wiGpZ8Y496FVnI](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQF95tbDNSGEGS5Znwx_-p330VtGna8RalLqpudDXaVCbAoXqyXIQe3K2Xb6uZ0StQmVYkQHs309fjiYbwxDUZak8elPpj6_0wiGpZ8Y496FVnI)

# #42 36kr Analyzes Optical Chip Industry Trends and Future: Highlighting Foundry Strategies and Taiwan's Advantage

Published August 06, 2026 36氪 China



## OVERVIEW

Chinese media outlet 36kr has published a comprehensive analysis of the evolving optical chip industry, identifying key material solutions like Silicon Photonics (SiPh), Indium Phosphide (InP), and Thin-Film Lithium Niobate (TFLN) advancing across diverse market segments. Major foundries, including GlobalFoundries, TSMC, and UMC, are instrumental in this growth, providing standardized SiPh Process Design Kits and mass production capabilities on mature 8- and 12-inch lines. With optical chips deemed indispensable for the AI era, this strategic foundry focus, particularly GlobalFoundries' emergence as the largest pure-play SiPh foundry, marks a significant shift towards a photonics-powered future.

### Background

The accelerating pace of technological advancements in AI, cloud computing, and 5G/6G is driving an unprecedented demand for data transfer speeds and bandwidth. Conventional electrical interconnects are rapidly approaching their physical limitations, manifesting in critical challenges such as escalating power consumption and heat dissipation. Optical chips, leveraging light-speed information transmission and inherently low-loss characteristics, are emerging as a pivotal solution to these impending bottlenecks. The strategic emphasis by leading foundries on Silicon Photonics (SiPh) technology standardization and high-volume manufacturing signals that optical chips are poised to become a significant new growth engine for the semiconductor industry. Specifically, GlobalFoundries' assertion of leadership as the world's largest pure-play SiPh foundry underscores a critical milestone in the industrialization of this transformative sector.

### Key Findings

The analysis by 36kr underscores a pivotal moment for the optical chip industry, characterized by the concurrent evolution of distinct material solutions and the foundational role of leading foundries.

#### **Diverse Material Solutions Drive Market Segmentation:**

The industry is advancing along several critical technological paths, each catering to specific application needs:

- **Silicon Photonics (SiPh):** Leveraging its high compatibility with established CMOS manufacturing, SiPh offers unparalleled mass production scalability and cost-efficiency. It is becoming indispensable for high-volume applications such as data center interconnects, AI accelerators, and various sensor technologies.

GlobalFoundries, bolstered by its 2025 acquisition of Advanced Micro Foundry (AMF), is cementing its position as the world's largest pure-play silicon photonics foundry, providing crucial standardized Process Design Kits (PDKs) and Multi-Project Wafer (MPW) services that significantly lower design barriers.

- **Indium Phosphide (InP):** This platform excels in monolithic integration of active optical components, including high-performance lasers and modulators. Its unique capabilities make InP essential for demanding, long-distance, high-speed, and particularly coherent optical communication systems.
- **Thin-Film Lithium Niobate (TFLN):** Distinguished by its superior high-speed modulation capabilities and remarkably low optical losses, TFLN is emerging as a highly promising candidate for next-generation ultra-high-speed optical transceivers and advanced optical switching devices.

### **Foundries as Catalysts for Industrialization:**

These advanced material technologies are rapidly maturing on industrial-scale 8-inch and 12-inch wafer production lines, ensuring robust supply capabilities for high-performance optical chips. Major foundries—GlobalFoundries, TSMC, UMC, and Tower Semiconductor—are proactively standardizing and accelerating the delivery of comprehensive SiPh ecosystems to their global clientele. This strategic focus on foundry services, including accessible PDKs and MPW options, is democratizing optical chip design and significantly shortening development cycles, fostering innovation across the sector.

### **Strategic Outlook and Future Challenges:**

The optical chip industry is poised for sustained, rapid expansion, with AI applications serving as a primary catalyst for the accelerated evolution and broader adoption of SiPh technology. Concurrently, InP and TFLN are projected to maintain their critical roles within their specialized market niches. Looking ahead, optimizing the seamless integration of these diverse material solutions and achieving robust hybrid integration with existing electronic chips represent significant technical hurdles. The keen interest from prominent Chinese media like 36kr underscores optical chips' status as a critical frontier in the global race for next-generation information technology. The interplay of technical competition and collaborative efforts on a global scale will undoubtedly define the trajectory of this transformative industry.

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Source: <https://eu.36kr.com/en/p/3927348484585859>



# #43 CSIS Report Highlights Critical Role of Regional Networks in 21st-Century Industrial Policy: Featuring AIM Photonics

Published August 03, 2026   CSIS   USA



## OVERVIEW

CSIS has released a report analyzing the critical role of regional networks in 21st-century industrial policy. It emphasizes AIM Photonics (American Institute for Manufacturing Integrated Photonics), part of the Manufacturing USA network, as a public-private partnership that effectively mitigates risks in scaling from research to full commercial manufacturing. This institute contributes to manufacturing scale-up assistance and fosters regional innovation ecosystems built around specific technologies, essential for strengthening the U.S. photonics industry's competitiveness.



### Key Findings

The Center for Strategic and International Studies (CSIS) has released an analytical report highlighting the critically important role of regional networks in 21st-century industrial policy. The report specifically commends AIM Photonics (American Institute for Manufacturing Integrated Photonics), a component of the Manufacturing USA network, for its effectiveness as a public-private partnership that significantly reduces the risks associated with transitioning from research stages to full-scale commercial manufacturing.

### Technical / Clinical Details

AIM Photonics was established to accelerate the industrialization of integrated photonics technology. Its activities are specialized in bridging the gap between fundamental research and product commercialization, specifically providing the following functions:

- **\*\*Provision of Pilot Production Facilities\*\***: Offers infrastructure for companies and research institutions to prototype and conduct small-scale production of new photonic devices in a cost-effective manner.
- **\*\*Technology Scale-up Support\*\***: Provides expertise and resources to transition technologies proven at the laboratory level into industrial-scale manufacturing processes, assisting with process optimization and yield improvement.
- **\*\*Promotion of Standardization\*\***: Fosters the establishment of industry standards in the design, manufacturing, and testing of integrated photonic products, improving efficiency and compatibility across the supply chain.
- **\*\*Workforce Development\*\***: Offers educational programs and training to cultivate the next generation of photonics engineers and scientists.

By building regional innovation ecosystems and promoting collaboration among industry, academia, and government centered on specific technological areas, AIM Photonics contributes to shortening time-to-market for new technologies and strengthening the competitiveness of the integrated photonics industry in the United States.

## Background & Context

In the contemporary global economy, nations are pursuing strategic industrial policies to enhance their industrial competitiveness. Particularly in high-tech sectors like semiconductors, AI, and biotechnology, it is crucial to advance processes from R&D to manufacturing quickly and efficiently. In the United States, the Manufacturing USA network serves as a vital framework for strengthening innovation and manufacturing capabilities in specific technological domains. AIM Photonics, as the flagship institute for photonics within this network, carries the national objective of reducing technological dependence on foreign sources and strengthening the domestic manufacturing base. Optical communication and photonics are foundational technologies for the future information society, underpinning AI data centers, high-speed communication, and quantum computing, making the security of their manufacturing capabilities a national security imperative.

## Strategic Significance & Outlook

The CSIS report clearly demonstrates that regional networks like AIM Photonics are indispensable tools in 21st-century industrial policy. This model is expected to expand into other strategic technological areas, becoming a critical factor in maintaining U.S. technological leadership. AIM Photonics is anticipated to continue accelerating the commercialization and widespread adoption of integrated photonics technology, contributing to the evolution of data centers and communication infrastructure. Furthermore, by deepening public-private partnerships, it will de-risk technological investments and promote long-term planning, ultimately contributing to U.S. economic growth and job creation. This initiative serves as a crucial guide for enhancing national innovation capabilities in an era of intensifying international technological competition.

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Source: <https://www.csis.org/analysis/role-regional-networks-twenty-first-century-industrial-policy>