

Forward Looking Statements



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Aeluma vision:

Build the world's highest performance semiconductor chips with scalable and cost-effective manufacturing.

At a Glance

Aeluma™

Aeluma develops high-performance semiconductors that scale for multiple large and growing markets.

Meadquarters: Goleta/Santa Barbara, California

Team: ~15



\$4.9B SAM in 2030 SAM growing from **\$1B** in 2026

Broad Applicability Traction and market potential in: Defense & Aerospace, Mobile and Consumer

Electronics, Al Infrastructure, Automotive, AR/VR, Industrial and Robotics, Quantum Computing

\$4.7M FY2025 revenue

30 Issued and pending patents

ISO 9001:2015 Quality Management System certification

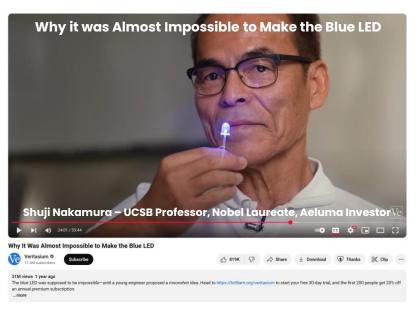
Background Story: Gallium Nitride (GaN) and the Blue LED



An example materials breakthrough that enabled an industry and more

"These won't ever replace the kitchen light."

"The research is a waste of money."



https://www.youtube.com/watch?v=AF8d72mA41M&t=1399s

The blue LED revolutionized lighting and displays, and gallium nitride broadly impacted many photonics and electronics industries.

LEDs use **75% less energy** and last **25 times longer Energy savings** by 2035 of **569 TWh** (92 1,000 MW power plants)



Aeluma's Indium Gallium Arsenide (InGaAs) Breakthrough



Best-in-class materials with scalable manufacturing

"InGaAs on silicon won't work, people have tried."
"You can't grow quantum dots by MOCVD."









InGaAs is the best material for shortwave infrared (SWIR) applications, impacting defense & aerospace, mobile and consumer electronics, Al infrastructure, and autonomous systems.

Eye safe, operation in direct sunlight, night vision, higher sensitivity, higher speed, lower power consumption, and lower cost

















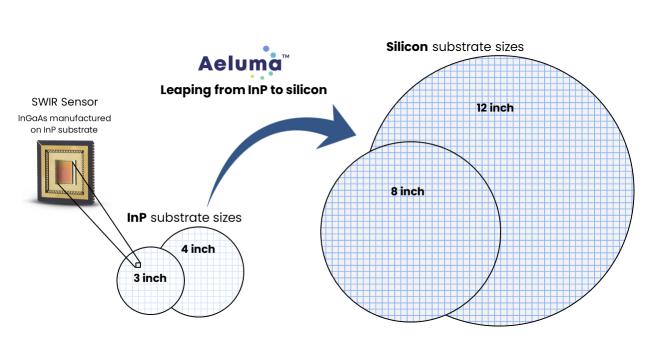


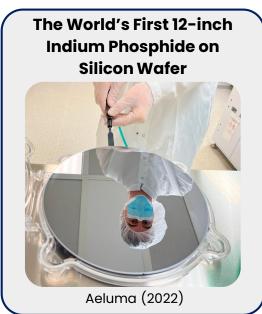


Aeluma's Breakthrough in Semiconductor Manufacturing



Best-in-class materials on large-diameter substrates





Aeluma's Technology Breakthrough



Scalable, cost-effective manufacturing enabled by cutting-edge intellectual property

Conventional manufacturing of InGaAs semiconductor devices

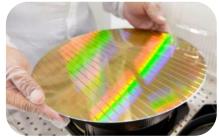


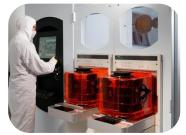


Moving from 3-inch to 12-inch wafers

Not scalable, manual, and low throughput

Aeluma high-performance InGaAs with silicon manufacturing







- ✓ Highly automated and ability to produce many chips per wafer
- ✓ Monolithic CMOS process integration
- ✓ Wafer-scale integration and packaging
- √ 10X lower manufacturing cost for mass market applications

Aiming to Service a Broad Market

High-performance semiconductors that scale



Mobile, Tablet, PC, and AR/VR

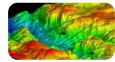




- Mobile phone
- Tablet
- Facial ID and scanner
- Proximity sensors
- AR/VR

Defense and Aerospace





- 3D Imaging and LiDAR
- Security
- Autonomous systems
- · Atmospheric sensing
- Topography

AI, Data Center Interconnects, and Quantum





- Al
- Data centers and HPC
- Telecommunications
- Quantum computing
- 5G/6G wireless

Automotive





- Consumer vehicles
- Robotaxis
- Trucking
- Advanced driver assistance systems

Industrial and Robotics





- Robotics
- Delivery robots
- Factory automation
- Logistics
- Security

Aeluma is positioned as a semiconductor technology provider to service a broad range of market verticals.

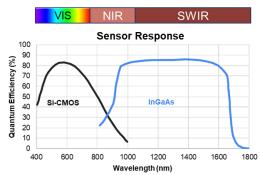
Why Aeluma and Why Now?

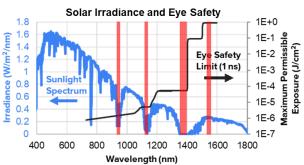
Aeluma™

Better performance preferred for mass markets

Market Vertical Example: Shortwave Infrared (SWIR) Sensors for Mobile and Consumer

What is SWIR?





SWIR sensors needed for eye safety and other benefits



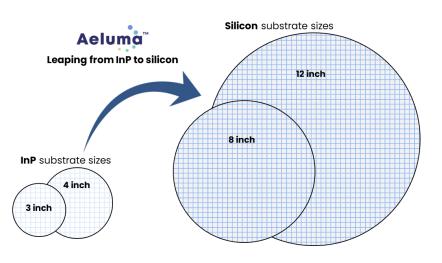
Radical approach required to scale and reduce cost

Manufacturing for a Mass Market



Aeluma's large-diameter manufacturing economies of scale

Aeluma's Large-Diameter Wafer Platform



Manufacturing Capacity Bottleneck: Producing 20 million sensor chips for consumer market

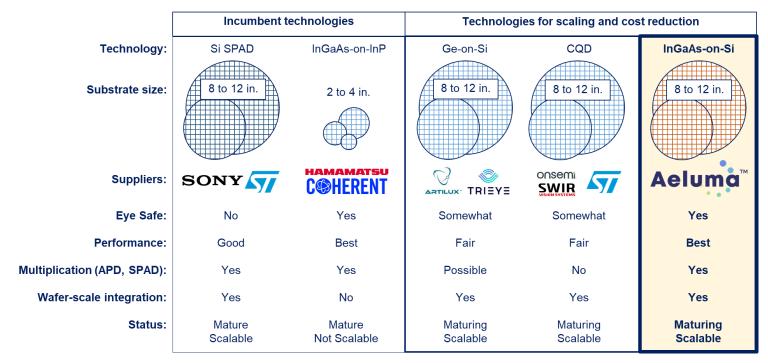
	Substrate size	Wafers required for 20m sensor chips	Typical fab capacity
Incumbent Technology	3-inch	425k wafers	1k-10k wafers per month
	4-inch	213k wafers	1k-10k wafers per month
Aeluma™	8-inch	43k wafers	10k-100k per month
Large-diameter platform	12-inch	18k wafers	10k-100k per month

Incumbent technologies cannot meet volume requirements for consumer markets Aeluma's manufacturing enables scaling and cost reduction required for current mass market applications

Aeluma Outperforms the Competition



Technology Comparison

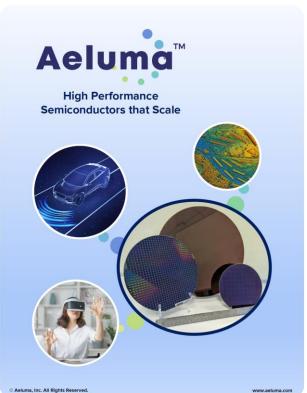


Aeluma's is the only known technology that combines proven, high-performance InGaAs with scalable, cost-effective silicon manufacturing, thereby overcoming the cost-performance tradeoff.

Technology Portfolio

Aeluma™

- Detector Arrays
- Large-area Detectors
- Quantum Dot Lasers
- Quantum Photonics
- Nano-scale Semiconductors







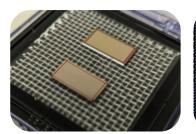
Custom Detector Arrays

SWIR Detector Arrays for Active and Passive Imaging

Product Offering Features

- Low dark current photodetector arrays manufactured with large-diameter substrate platform
- Pixel and array size customizable
- Typical array sizes: 128X32, 256X128, 640X512
- Delivered as PDA chips or with ROICs
- FPA assembly available
- Small test arrays (ex. 8 X 8) available for evaluation/qualification

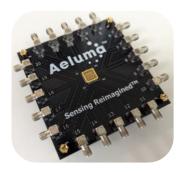
Photodetector Array Chips



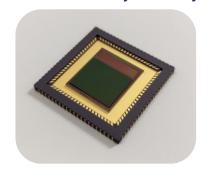


Examples shown are 256X128 format

Evaluation Board



Focal Plane Array Assembly



Applicable markets include:

- Automotive
- Mobile
- AR/VR
- Defense & Aerospace
- Industrial and Logistics
- Robotics
- Security

Large-Area Detectors

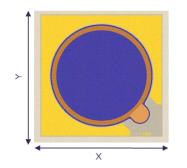


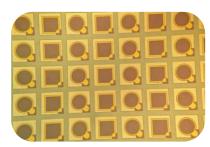
High sensitivity, low dark current and high speed detectors for SWIR and XSWIR

Product Offering Features

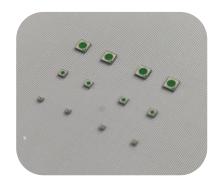
- Typical Photosensitive Diameter (D): 0.25 to 5.0mm
- Typical Operating Wavelength (λ): 0.95 to 1.55μm
- Device: PIN, APD or SPAD
- Format:
 Bare die or mounted in TO package

Photodetector Schematic





Bare Die



TO Package



Applicable markets include:

- Automotive
- Mobile
- AR/VR
- Defense & Aerospace
- Industrial and Logistics
- Gas sensing and Energy
- Instrumentation
- Security

Quantum Dot Lasers for Silicon Photonics

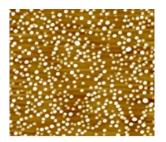
Aelum

Optical Interconnects for AI, DCI and HPC

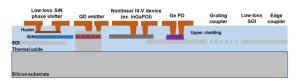
Al Market: **\$826B** in 2030¹

Silicon photonics market: **\$8B** in 2030²

Quantum Dot Lasers



Lasers for Silicon Photonics



Integration of quantum dot lasers and other group III-V active devices in silicon photonics

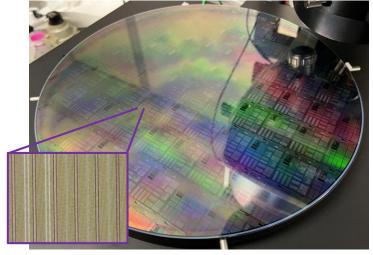
12-inch Wafer in Growth Chamber



12-inch Wafer Under Test



12-inch Silicon Photonics Wafer with Aeluma Materials







Aeluma, Inc. Enters into Agreement with RFSUNY to Support AIM Photonics

Quantum Computing with Photonics

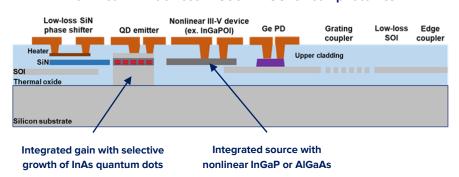
Nonlinear Optical Materials with Heterogeneous Integration Quantum computing market: **\$20B** in 2030¹



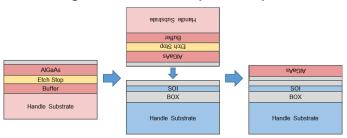
Quantum Photonic Circuits



Nonlinear III-V devices in 300mm SOI silicon photonics



Adding III-Vs to SOI silicon photonics platform



AlGaAs-on-Insulator following hybrid wafer bonding and substrate removal



Future Advanced-Node Semiconductors

Aeluma™

Heterogeneous Integration of III-V Materials on Silicon CMOS Semiconductor market: **\$1T** in 2030¹

Aeluma Wins \$11.717 Million DARPA Contract for Nano-Scale Semiconductors

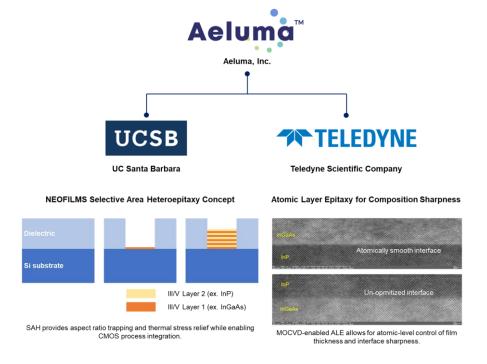
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Award to Develop Heterogeneous Integration Technology Compatible with Leading Edge and Future Advanced-Node Semiconductors

Technology Applications Include AI, Mobile Devices and 5G/6G

Aeluma Partnering with Teledyne Scientific Company and University of California Santa Barbara

GOLETA, CA / ACCESSWIRE / September 18, 2024 / Aeluma, Inc. (OTCQB:ALMU), a semiconductor company specializing in high performance, scalable technologies for mobile, automotive, AI, defense & aerospace, communication and quantum computing, announced today that it has been awarded funding from the Defense Advanced Research Projects Agency (DARPA) to develop heterogeneous integration technology compatible with leading edge and future advanced-node semiconductors with potential applications in AI, mobile devices and 5G/6G wireless communication.



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¹www.digitimes.com 18

Aeluma's Cost-Effective and Scalable Manufacturing Aeluma

Transitioning to Commercialization

12-inch wafer capability







Rapid prototyping and smallvolume manufacturing





Partners for medium- and largevolume manufacturing







Combining rapid prototyping capabilities and volume manufacturing partners, Aeluma is positioned to effectively transition from R&D to commercialization with a capital-light approach.

Leadership Team

Vision, Entrepreneurship, and Expertise

Senior Management



Jonathan Klamkin, PhD

Founder, CEO & Director





BIN PTICS



Christopher Stewart CFO



ENTROPIC. Tinte



Matthew Dummer, PhD Director of Technology



Investors/Advisors



Shuji Nakamura, PhD Seed Investor



SLDLASERSORAA



Richard Ogawa, JD Seed Investor & Advisor



Aelun

Board Members



Steven DenBaars, PhD Seed Investor & Director





John Paglia, PhD Director







St Simulations Plus KENETIN



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Mike Byron Director



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