

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report
(Date of earliest event reported): December 12, 2022

Aeluma, Inc.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation)

000-56218
(Commission File Number)

85-2807351
(IRS Employer
Identification No.)

27 Castilian Drive
Goleta, California
(Address of principal executive offices)

93117
(Zip Code)

805-351-2707
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act: none.

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 8.01 Other Events.

We are filing this report to disclose our new investor power point presentation. The presentation is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

Neither this report nor the exhibits attached hereto constitute an offer to sell, or the solicitation of an offer to buy our securities, nor shall there be any sale of our securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or jurisdiction.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Exhibit
99.1	Power Point Presentation
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

AELUMA, INC.

By: /s/ Jonathan Klamkin
Jonathan Klamkin

President, Chief Executive Officer and Director

Date: December 12, 2022



Sensing Reimagined™

Investor Presentation

December 12, 2022

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Forward Looking Statements



This presentation contains summary information about Aeluma, Inc. ("Aeluma") as of the date hereof. The information in this presentation is of general background and contains an overview and summary of certain data selected by the management of Aeluma. It does not purport to be complete.

This presentation is not a prospectus, disclosure document or offering document under the law of any jurisdiction. It is for informational purposes only. This presentation is not investment or financial product advice (nor tax, accounting or legal advice) and is not intended to be used for the basis of making an investment decision. A recipient must make their own independent investigations, consideration and evaluation of Aeluma and the offer and Aeluma recommends that investors should obtain their own professional advice before making any investment decisions in the company. This investor presentation shall also not constitute an offer to sell or the solicitation of an offer to buy any securities, nor shall there be any sale of securities in any states or jurisdictions in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. No registered offering of securities shall be made except by means of a prospectus meeting the requirements of section 10 of the Securities Act of 1933, as amended.

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Some of the statements appearing in this presentation are in the nature of forward looking statements. You should be aware that such statements are predictions based on assumptions, and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industry in which Aeluma operates as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets and other factors that are in some cases beyond Aeluma's control. As a result, any or all of the Aeluma's forward-looking statements in this presentation may turn out to be inaccurate and actual results may be materially different than those expressed in such forward-looking statements. Except as required by law, we are under no duty to update or revise any of the forward-looking statements, whether as a result of new information, future events or otherwise, after the date of this presentation. These forward-looking statements speak only as of the date of this presentation, and we assume no obligation to update or revise these forward-looking statements for any reason.

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At a Glance



Enabling the future of automation with high performance sensors

Overview

Aeluma is a leading-edge semiconductor company specializing in scalable, cost-effective sensor technologies for advanced LiDAR solutions.

Corporate Headquarters: Goleta, California (Infrared Capital of the World)

Founded: 2019

Employees: 11 (including five PhDs)

Highlights

Broad and defensible **intellectual property** portfolio

World-class technical **team**

Highly experienced **advisors** and seed investors including Nobel Laureate Shuji Nakamura

Went public through Form 10 Reverse Merger in June 2021 with \$8M oversubscribed raise – Listed on OTCQB (“ALMU”)

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Mission



Our vision is:
Ubiquitous Sensing
Homes, cars, phones, ... everywhere



And we achieve this with:
Scale, Cost, and Delivery



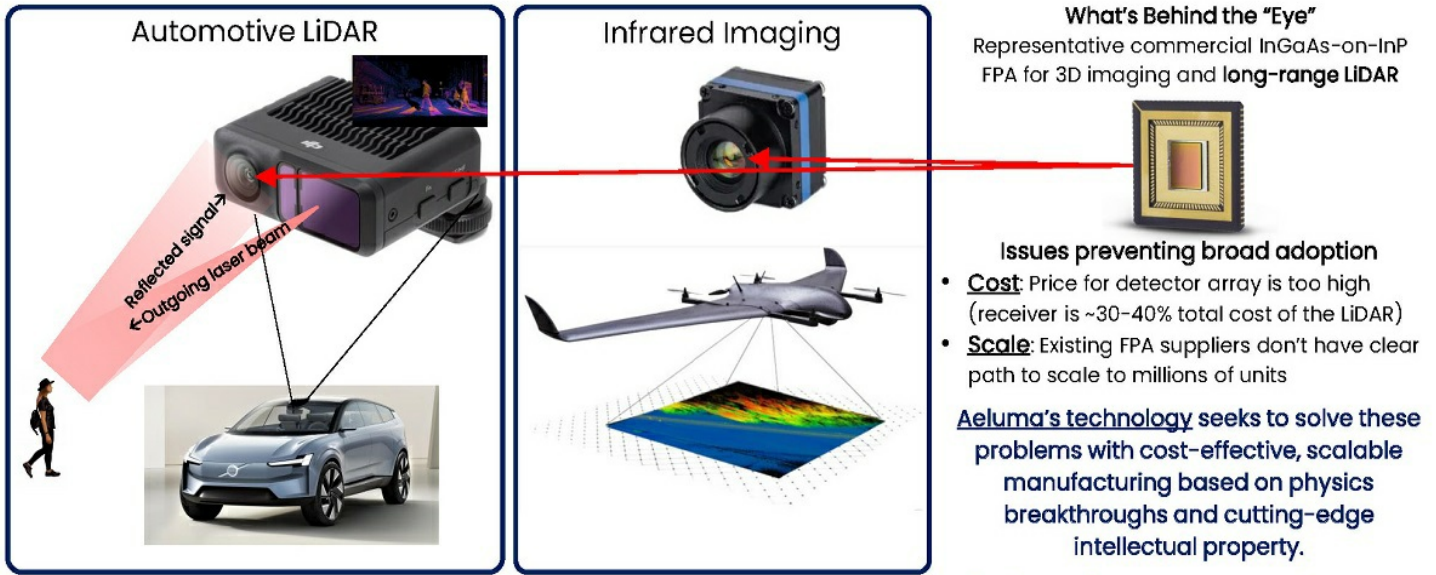
Source of mobile phone image: <https://www.sacyr.com/en/ldar-el-nuevo-ojo-laser-de-los-telefonos-moviles>

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Background on Automotive LiDAR



High-Performance Semiconductor Sensors for Autonomous Systems



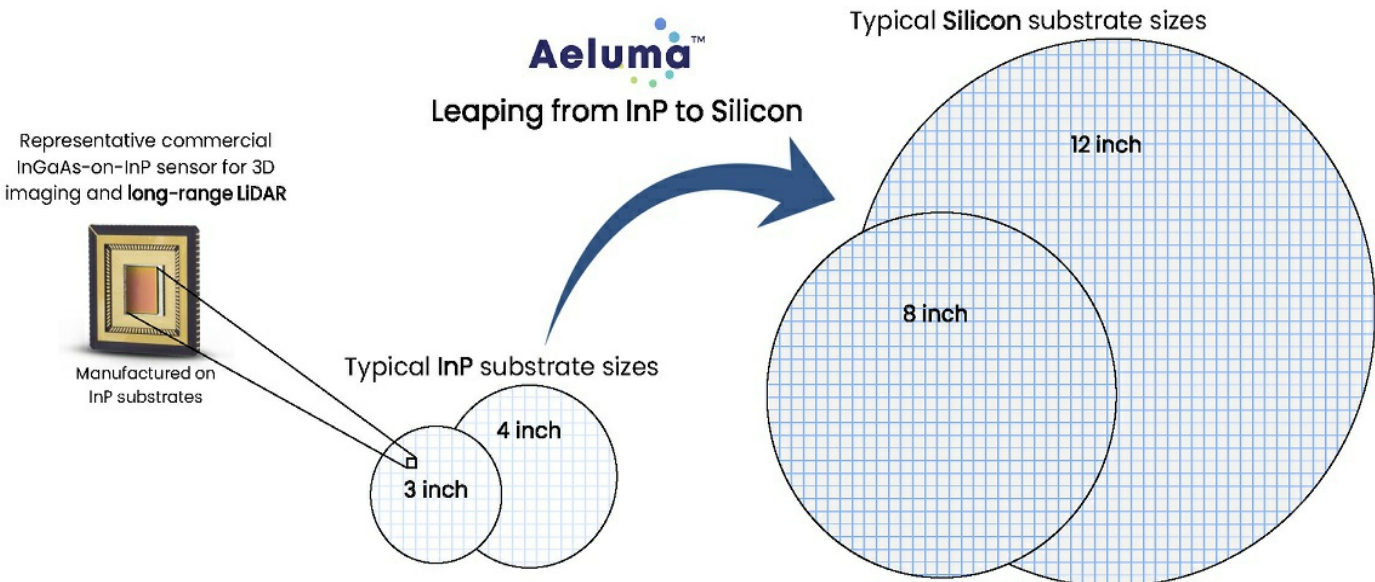
High performance at low cost

© Aeluma, Inc. All Rights Reserved. LiDAR: Light detection and ranging; InGaAs: Indium Gallium Arsenide; InP: Indium Phosphide; FPA: Focal plane array
Sources of images: <https://www.flir.com/support/products/swir-ingaas-fpa/>; <https://www.biphotovideo.com/>; <https://www.wardsauto.com/vehicles/lidar-house-battery-production-volvo-4-sights/>; <https://ouster.com/blog/inhttps://www.fore sightauto.com/thermal-cameras-solve-autonomous-trucks-dust-problem/lake-intersections-safe-ttb/>; <https://www.dellaquad.com/ai-ai-drones/inspect/>; www.digkey.com

The Aeluma Approach to Sensor Manufacturing



Bringing High-Performance Technology to Low-Cost Silicon Manufacturing



© Aeluma, Inc. All Rights Reserved. InGaAs: Indium Gallium Arsenide; InP: Indium Phosphide; LiDAR: Light detection and ranging; FPA: Focal plane array
Source of image: <https://www.flir.com/support/products/swir-ingaas-fpa/>

Aeluma's Technology Breakthrough



Scalable, Cost-Effective Manufacturing Enabled by Cutting-Edge Intellectual Property

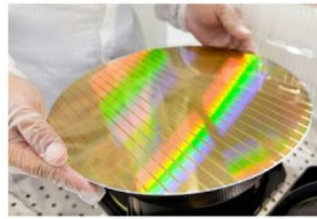
Conventional manufacturing of InGaAs photodetector arrays



Non-scalable, manual and low throughput

16X wafer area
 Moving from 3-inch to 12-inch wafers

Aeluma high-performance InGaAs photodetector arrays with Silicon manufacturing



- ✓ Highly automated and ability to produce many arrays per wafer
- ✓ 10X lower manufacturing cost for mass market applications

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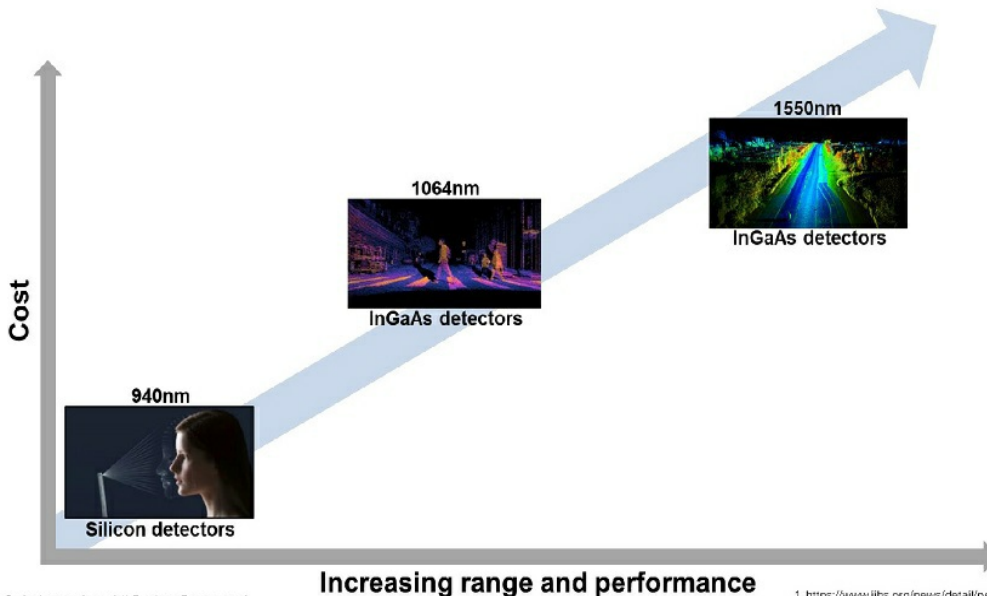
Note: Outcomes cannot be guaranteed.

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Aeluma's Initial Focus on Automotive LiDAR



- LiDAR is essential for Autonomous Driving and Advanced Driver Assistance Systems (ADAS).¹
- Mid- and long-range LiDAR sensors require InGaAs-based receivers², however, InGaAs manufacturing is expensive and low volume therefore preventing scaling and broad adoption.³



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Note: Outcomes cannot be guaranteed. Range and cost estimates are not based on actual data. Sources of images: blog.laserto.com; novuslights.com; techcrunch.com; i-microwaves.com

1. <https://www.ihs.org/news/detail/pedestrian-crash-avoidance-systems-cut-crashes-but-not-in-the-dark>
 2. C. Rablau, "LiDAR - A new (self-driving) vehicle for introducing optics to..." ETOP 2019, paper 11143_138.
 3. <https://www.mdpi.com/2076-3417/9/19/4093>

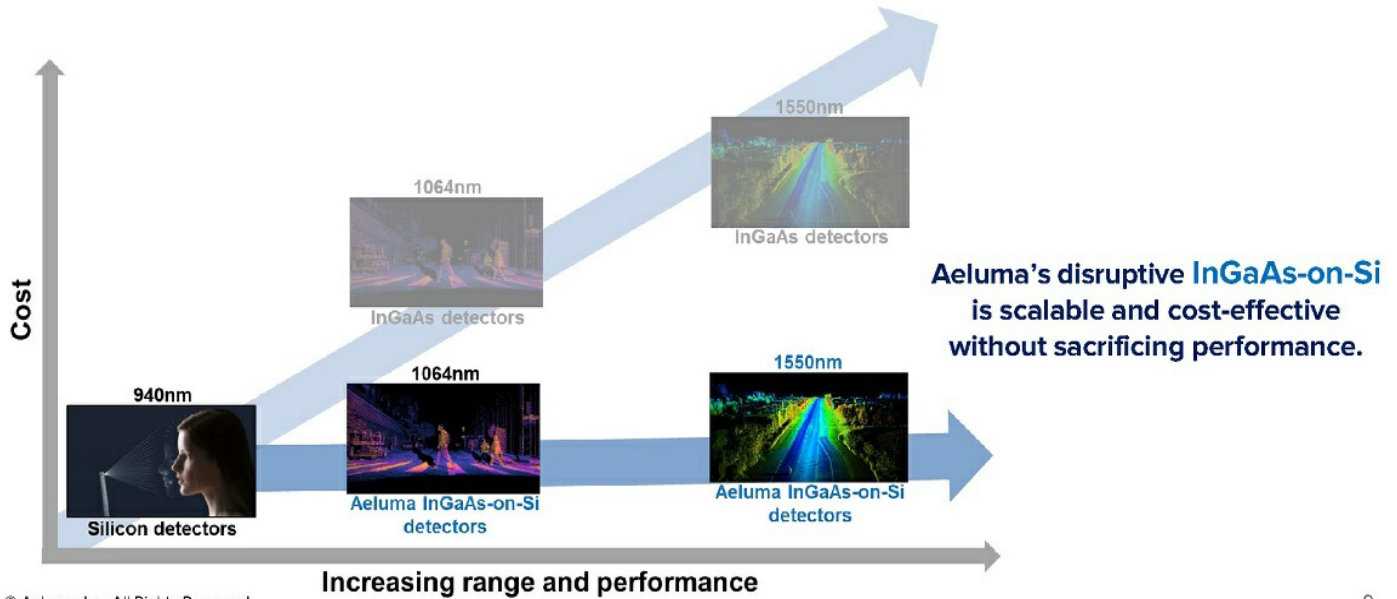
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Aeluma's Goal:

To Provide Increased Visibility and Longer Range Cost Effectively



Manufacturing high-performance InGaAs photodetector arrays at Silicon cost levels



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Note: Outcomes cannot be guaranteed. Range and cost estimates are not based on actual data. Sources of images: blog.laserto.com; novuslights.com; techcrunch.com; i-microwaves.com

Si: Silicon

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Aiming to Service a Broad Market

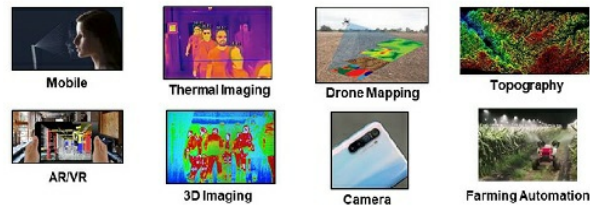


High Performance Imaging for a Variety of Markets

Initial target markets



Future potential markets



LIDAR for Automotive and Industrial 2030 TAM: \$5B-\$42B^{1,2}

2024 Market Projections³

- 113 million automotive vehicles
- 131 million tablets
- 1.73 billion mobile phones

Aeluma's technology can support this level of scale.

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1. <https://www.bloomberg.com/press-releases/2022-05-31/lidar-market-size-to-be-worth-4-71-billion-by-2030-grand-view-research-inc>;
2. AEye Presentation, LD Micro Invitational 2022; 3. www.jdc.com; Note: Outcomes cannot be guaranteed.

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Emerging Market: Automotive OEM LiDAR Demand is Increasing



Mercedes Taps Luminar for Laser Sensors, Takes Stake in the Company

- Technology company also has production pacts with Volvo, SAIC
- European automakers 'ahead of the game' on lidar, CEO says

By Gabrielle Coppola

January 20, 2022, 6:00 AM PST Updated on January 20, 2022, 9:41 AM PST

From **Hyperdrive**



Volvo Will Install Lidar on All New Vehicles

Recently it was announced that Volvo will install LiDAR systems onto all new vehicles to help identify potential dangers at extreme distances.

Source and Image: LIDAR News, October 12, 2022
<https://blog.lidarnews.com/volvo-will-install-lidar-on-all-new-vehicles/>

Emerging Market: Automotive OEM LiDAR Demand is Increasing



Toyota's LS 500h and Mirai models with short and long-range LiDAR
Image Credit: Toyota

<https://www.motor1.com/news/499716/lexus-toyota-advanced-drive-system/>



Image Credit: MIRISE (DENSO / Toyota)

Emerging Market: Automotive OEM LiDAR Demand is Increasing



Nissan Motor Corporation: "Nissan aims to expand ProPILOT technology to over 2.5 million Nissan and INFINITI vehicles by fiscal year 2026. The company will also further develop its autonomous vehicle technologies, aiming to incorporate next generation LiDAR systems on virtually every new model by fiscal year 2030."

<https://usa.nissannews.com/en-US/releases/nissan-unveils-ambition-2030-vision-to-empower-mobility-and-beyond>

Emerging Market: Automotive OEM LiDAR Demand is Increasing



Source: TESLARATI Aug 3, 2022



Israeli lidar startup [Innoviz](#) struck a deal reported to be worth [\\$4 billion](#) with Volkswagen to supply advanced ADAS (advanced driver-assistance system) features for its next generation of automated vehicles. The deal will run for eight years starting "mid-decade", when the first Innoviz-equipped Volkswagen group vehicles are expected to ship. [Innoviz expects to supply units for between 5 million and 8 million Volkswagen Group vehicles in total.](#)

Source: NoCamels Aug 3, 2022

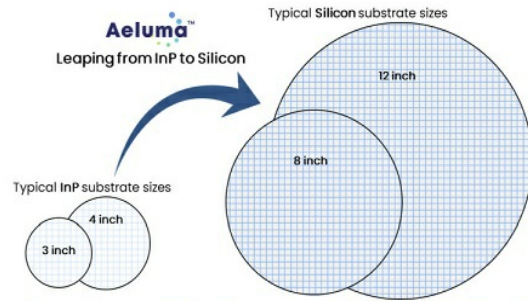
Manufacturing for a Mass Market

Aeluma's Large-Diameter Silicon Manufacturing Economies of Scale

Cars will have Radar, LiDAR, and Camera sensors



- Market: **113 million** automotive vehicles in 2024¹
- Each vehicle may have **1-5 LiDAR sensors**
- Note: Some LiDARs require **more than 1 FPA**



Example case: Manufacturing 5,000,000 FPA units

Number of wafers required

3-inch: 106,383 wafers

4-inch: 53,192

Number of wafers required

8-inch: 10,706 wafers

12-inch: 4,425

3-inch: 47 chips per wafer

4-inch: 94 chips per wafer

8-inch: 467 chips per wafer

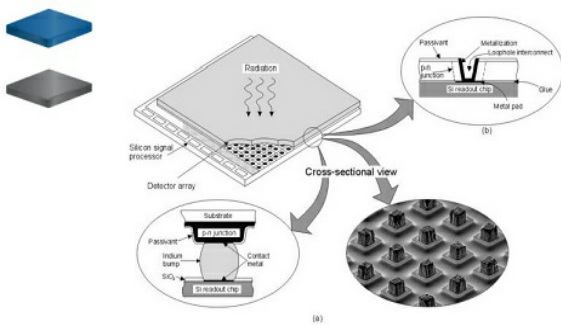
12-inch: 1,130 chips per wafer

Aeluma's manufacturing approach can enable the scaling and cost reduction required for mass market applications.

Wafer-Scale Integration

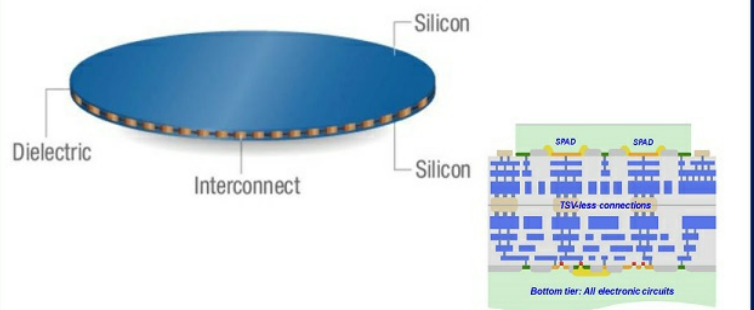
Silicon Manufacturing Environment Enables Advanced Integration and Packaging

Conventional chip-to-chip hybridization



- Expensive packaging with low throughput
- Limited performance indium bumps
- Pixel sizes limited to ~5 μm (>10 μm typical)

Wafer-to-wafer 3D Integration



- ✓ Low cost and high throughput
- ✓ Higher performance with low capacitance copper interconnect
- ✓ Small pixels (<1 μm possible)
- ✓ 3D stacking of multiple CMOS layers

Aeluma Outperforms the Competition



Technology Comparison



	Incumbent technologies		Technologies under consideration for scaling and cost reduction		
Technology:	Silicon SPAD	InGaAs-on-InP	Ge-on-Si	Thin film	InGaAs-on-Si
Status:	Incumbent for short-range	Incumbent for long-range	Considered for long-range	Considered for long-range	Considered for long-range
Performance:	Good	Very good	Okay	Okay	Very good
Multiplication (ex. APD, SPAD):	Yes	Yes	Maybe	No	Yes
Wafer-scale integration:	Yes	No	Yes	Yes	Yes

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

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Note: Outcomes cannot be guaranteed. Metrics not based on actual data and are provided for qualitative illustration purposes only. Typical InP substrate sizes are 3- or 4-inch. Typical Si substrate sizes are 8- or 12-inch. APD: Avalanche photodiode. SPAD: Single-photon avalanche diode.

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Aeluma's Headquarters



Facility with manufacturing cleanroom in ideal location for development

- Located in Goleta, California High-Tech Corridor
- In the heart of the Infrared Capital of the World
- 9,000 sq. ft. space with cleanroom facility
- Close to University of California Santa Barbara



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Aeluma's Cost-Effective Scalable Manufacturing



Unique 12-inch Wafer Capability and Strong Intellectual Property

- Commercial 12-inch state-of-the-art deposition tool
- Set up for cassette loading production
- One of only a few such tools worldwide
- Extensive patent protection and trade secrets



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Timeline, Milestones and Traction



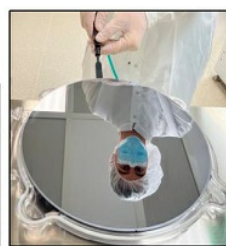
Aeluma's Go-to-Market Strategy: Partner with strategic system integrators, Tier 1 automotive suppliers, and semiconductor foundries to implement Aeluma's technology in LiDAR sensor products



UCSB



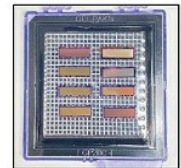
transphorm



Continental



Prototype fabrication



Deliver engineering samples to customer (Tier 1 automotive supplier)

Concept and early-stage demonstration

Seed Funding APO

Prepare facility

Install and qualify equipment

First 12-inch wafer

2019

2020

Q2-2021

Q3-2021

Q4-2021

Q1-2022

Q3-2022

Aeluma has beat all of its milestones and more...

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Note: Outcomes cannot be guaranteed. As of the date of this presentation, no definitive agreements have been signed.

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Aeluma Milestone Achievements



Planned milestones

July 1, 2021 – December 31, 2022 (18 months)

1. Prepare facility
2. Install and qualify equipment
3. First run on 12-inch Silicon wafer
4. Wafers in R&D fab for development
5. First customer/contract wafers

How have we done?

Milestone Achievements Status

1. → Completed at Month 2
2. → Completed at Month 4
3. → Completed at Month 8
4. → Completed at Month 8
5. → Completed at Month 16

Notable achievements not planned for first 18 months

6. Prototype fabrication process developed
7. Delivered engineering samples to Tier 1 Automotive Supplier
8. Contract with RFSUNY - AIM Photonics
9. Patents: ~19 applications (including foreign filings)
10. Invited to join the Lidar Coalition
11. Developed preliminary foundry process
12. CEO interviewed on NBC to discuss Aeluma and the CHIPS Act
13. Invited to and participated in 3 investor conferences
14. Aeluma joins major Hub to respond to CHIPS Act program

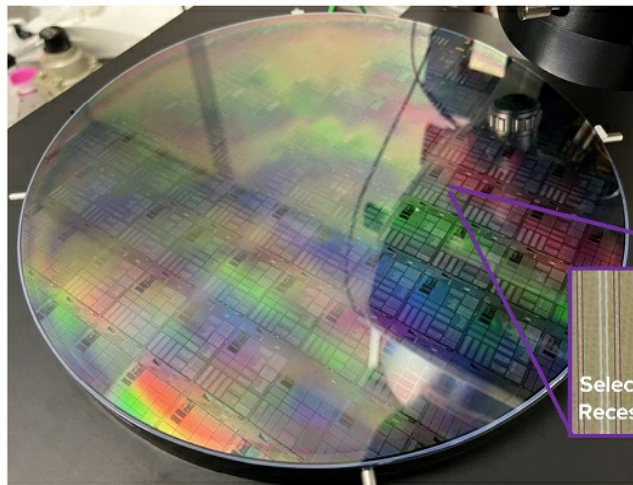
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Selective Growth for Laser Integration

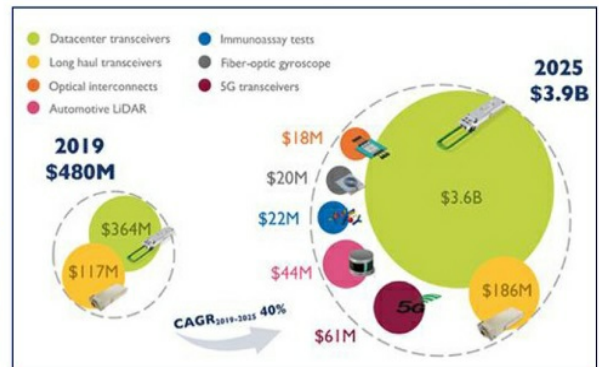


Deposition of GaAs compounds in recesses for Silicon Photonics

12-inch AIM Photonics Silicon Photonics Wafer with Selective Growth by Aeluma – This can enable process integration!



Silicon Photonics Market Data – Applications include Automotive LiDAR, Datacenters, 5G, etc.



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Source of market data: <https://optics.org/news/11/5/12>

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Aeluma Intellectual Property Strategy



Strategy and Status

- Trade Secrets
 - Secret information that provides a competitive advantage
 - Reasonable precautions taken to preserve secrecy
 - Examples: confidential business information, process recipes, chip designs, layer structures, employees and skill levels
- Patents (~19 applications including country filings)
 - Aim to cover nearly all aspects of technology including systems, applications, architectures, circuits, materials, packaging and assembly, process, device manufacturing, testing, structures
- Trademarks (“Aeluma™” and “Sensing reimagined™”)
- Agreements including Non-Disclosure Agreements

Our Leadership Team



Vision, Entrepreneurship and Expertise



Jonathan Klamkin, PhD
Founder, CEO &
Director



Shuji Nakamura, PhD
Seed Investor



Thomas Laux
VP of Business
Development



Jeffrey Shealy, PhD, MBA
Advisor & Seed Investor



Steven DenBaars, PhD
Advisor, Seed Investor &
Director



Palvi Mehta
Director



Richard Ogawa, JD
Advisor & Seed Investor



John Paglia, PhD
Director



Aeluma: What's planned for the next ~12 months

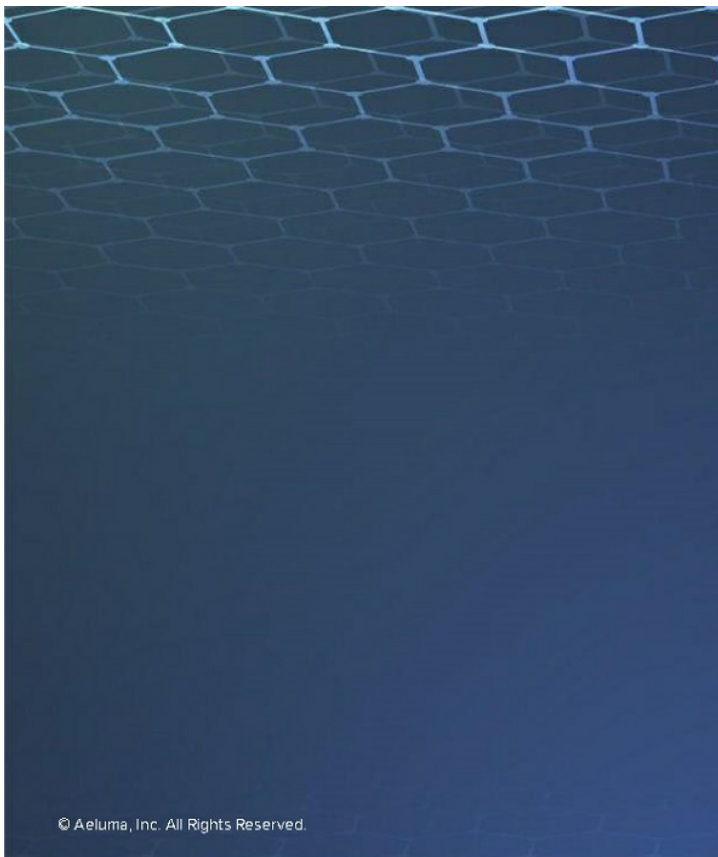


Building on our Momentum

- Early revenue from ongoing customer contracts
- Pending government contract with industrial partners
- CHIPS Act opportunities
- Further establish production-scale foundry process
- Further business development opportunities
 - Continue to focus on automotive LiDAR
 - Broaden scope to include industrial LiDAR, robotics, defense & aerospace, communications, mobile, AR/VR
- Next generation devices including APDs
- More inventions and patent protection



Ready Aeluma for Mass Market Scale



Sensing Reimagined™

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