

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): October 25, 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 a power point presentation the Company will use during its presentation at the LD Micro Conference on Tuesday, October 25, 2022 at 10:00 am PST, at the Luxe Sunset Boulevard Hotel in Los Angeles, CA. The presentation is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

**Item 9.01 Financial Statements and Exhibits.**

(d) Exhibits.

Exhibit Number	Exhibit
99.1	<a href="#">Power Point Presentation</a>
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: October 25, 2022





Sensing Reimagined™

# Investor Presentation

October 25, 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. 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: 12 (including six PhDs with 75+ years of experience)

## Highlights

Broad and defendable **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 raise; 15c2-11 approved; approved for listing on OTCQB ("ALMU"); awaiting DTC eligibility

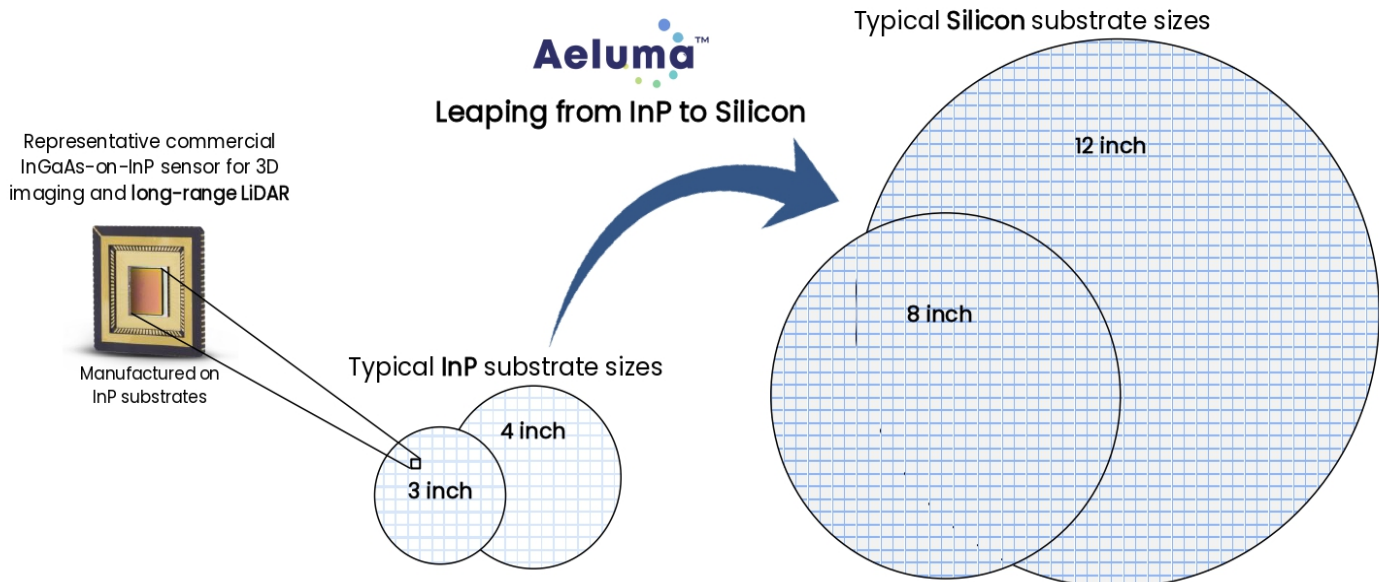


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# The Aeluma Approach to Sensor Manufacturing



Bringing High-Performance Technology to Low-Cost Silicon Manufacturing

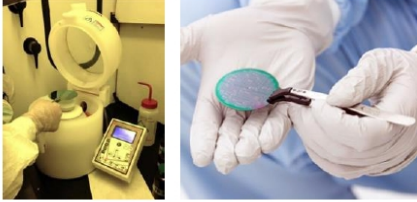


# Aeluma's Technology Breakthrough



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

Conventional manufacturing of InGaAs photodetector arrays



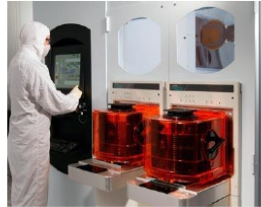
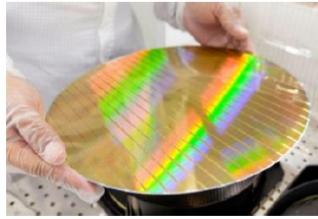
16X wafer area



Moving from 3-inch to 12-inch wafers

Non-scalable, manual and low throughput

**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

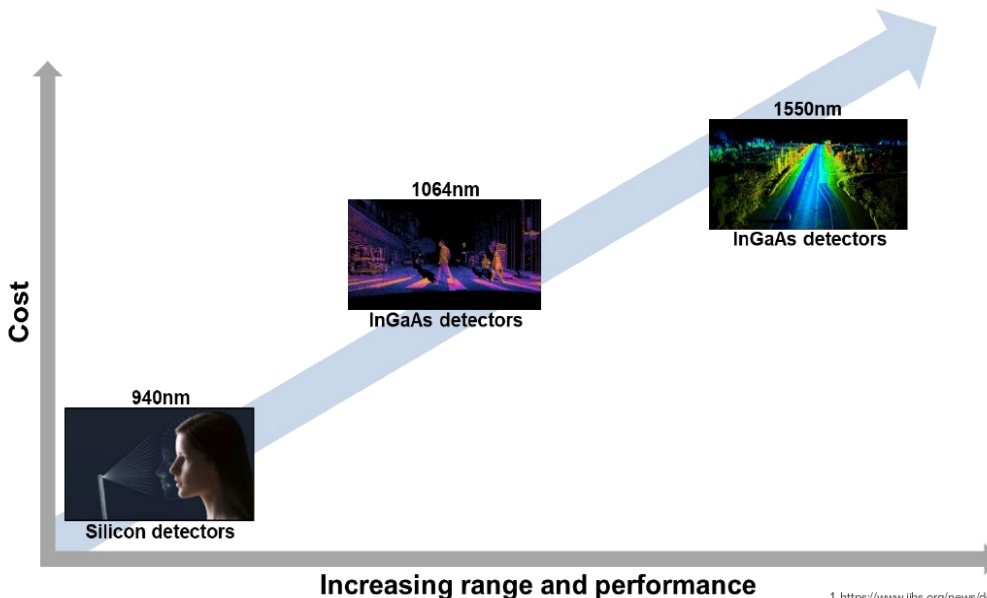
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Note: Outcomes cannot be guaranteed.

## Aeluma's Initial Focus on Automotive LiDAR



- LiDAR is essential for Autonomous Driving and Advanced Driver Assistance Systems (ADAS)!<sup>1</sup>
- Mid- and long-range LiDAR sensors require InGaAs-based receivers<sup>2</sup>, however, InGaAs manufacturing is expensive and low volume therefore preventing scaling and broad adoption.<sup>3</sup>



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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; novuslight.com; techcrunch.com; i-microwaves.com

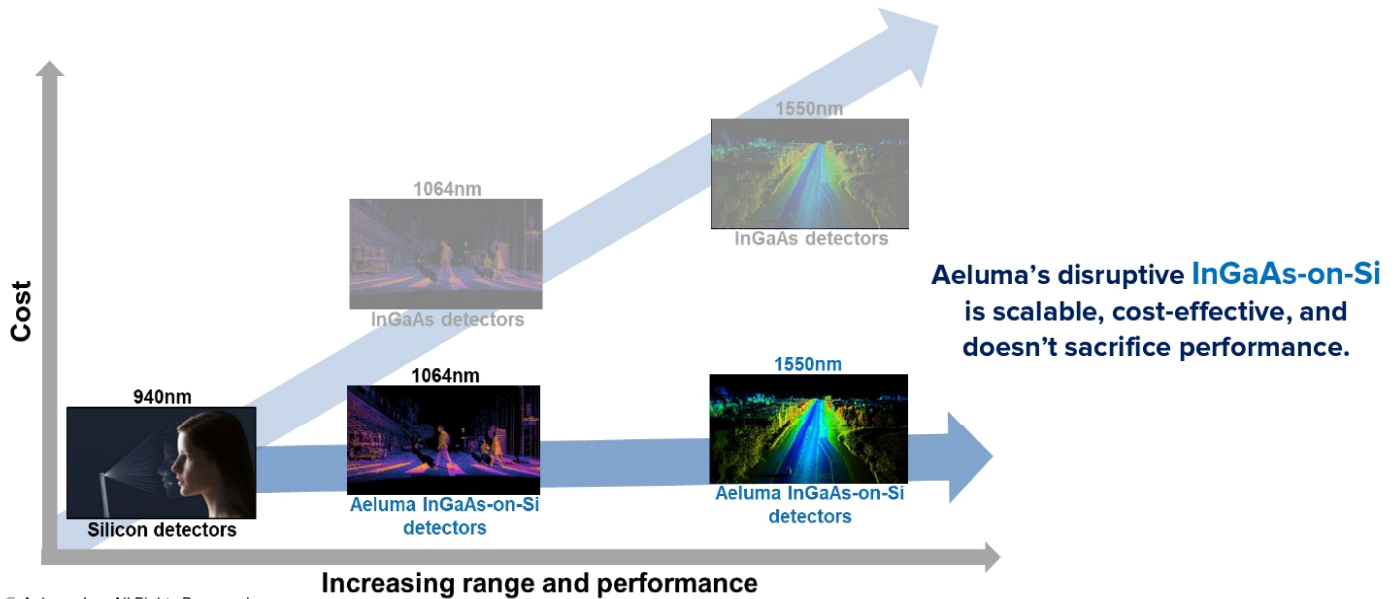
1. <https://www.ihs.org/news/detail/pedestrian-crash-avoidance-systems-cut-crashes-but-not-in-the-dark>  
2. C. Rablau, "LiDAR - A new (self-driving) vehicle for introducing optics to..." ETOP 2019, paper 1143\_138.  
3. <https://www.mdpi.com/2076-3417/9/19/4093>

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; novuslight.com; techcrunch.com; i-microwaves.com

St. Silicon

## Aeluma Outperforms the Competition



### Technology Comparison

Metric	Aeluma InGaAs-on-Si	Incumbent for		Incumbent for	
		long-range	short-range	long-range	short-range
Wavelength range	1000-1700nm	1000-1700nm	<950nm	<1550nm	<1550nm
Sensitivity	High	High	Moderate	Moderate	Moderate
Outdoor environments	Suitable	Suitable	Not as suitable	Somewhat suitable	Somewhat suitable
Long range LiDAR	Suitable	Suitable	Not suitable	Somewhat suitable	Somewhat suitable
Eye safe at high power	Yes	Yes	No	Yes	Yes
Manufacturing cost	Low	High	Low	Low	Low
Scalability	High	Low	High	High	Not proven

**Aeluma's technology enables high-performance with scalable, cost-effective manufacturing.**

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Note: Outcomes cannot be guaranteed. Metrics values are not based on actual data and are provided for qualitative illustration purposes only.

SPAD: Single-photon avalanche diode

# Aiming to Service a Broad Market

High Performance Imaging for a Variety of Markets



## Initial target markets

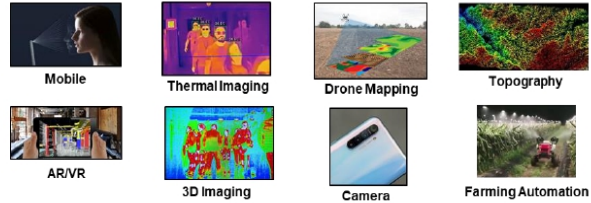


Autonomous Vehicles

Industrial Automation and Machine vision

Robots

## Future potential markets



Mobile

Thermal Imaging

Drone Mapping

Topography

AR/VR

3D Imaging

Camera

Farming Automation

LiDAR for Automotive and Industrial 2030 TAM: \$5B-\$42B<sup>1,2</sup>

### 2024 Market Projections<sup>3</sup>

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.idc.com](http://www.idc.com); Note: Outcomes cannot be guaranteed.

## Market: Automotive OEM LiDAR Demand is Increasing



Source: TESLARATI Aug 3, 2022



### Israeli Startup To Supply Volkswagen With Lidar In '\$4B Deal'

By Ariel Grossman, NoCamels August 03, 2022 2 minutes

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

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# 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/>

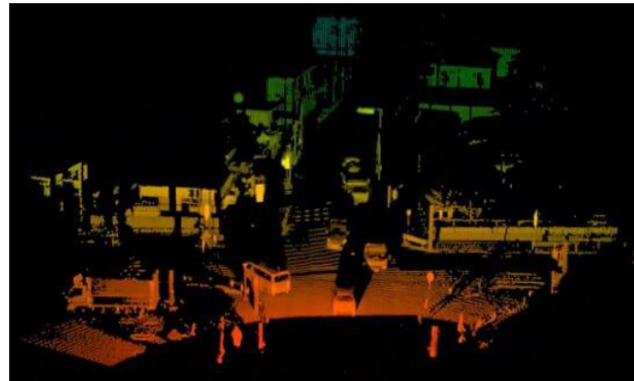


Image Credit: MIRISE (DENSO / Toyota)

# 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>



# 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**



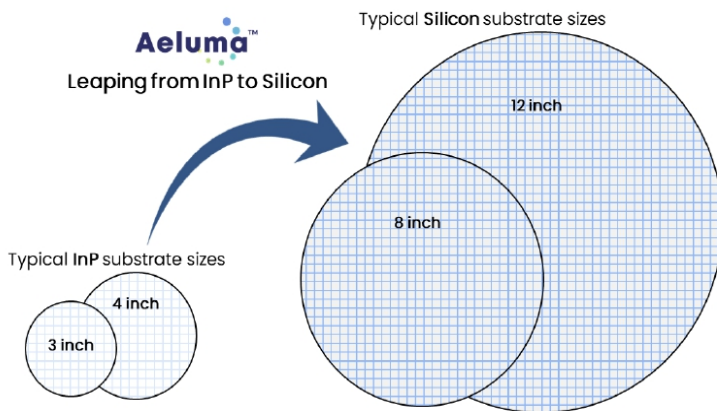
### Volvo Will Install Lidar on All New Vehicles

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.lidamews.com/volvo-will-install-lidar-on-all-new-vehicles/>

# Large-Diameter Silicon Manufacturing

## Large-Scale and Cost-Effective Manufacturing Economies of Scale



	Number of chips per wafer	Wafers for 5,000,000 LiDAR FPA sensors
<b>InP substrate</b>		
○ 3-inch:	47 chip per wafer	106,383 wafers
○ 4-inch:	94 chips per wafer	53,192 wafers
<b>Si substrate</b>		
○ <b>8-inch:</b>	<b>467 chips per wafer</b>	<b>10,706 wafers</b>
○ <b>12-inch:</b>	<b>1,130 chips per wafer</b>	<b>4,425 wafers</b>

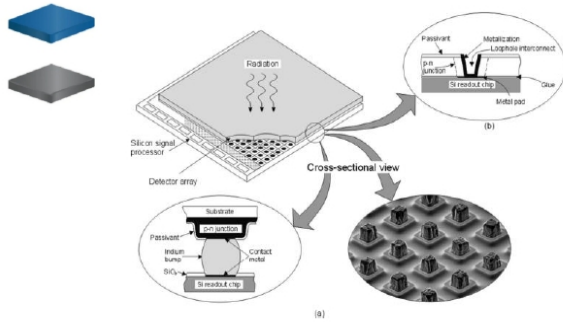
Silicon manufacturing also enables wafer-scale integration

# Wafer-Scale Integration



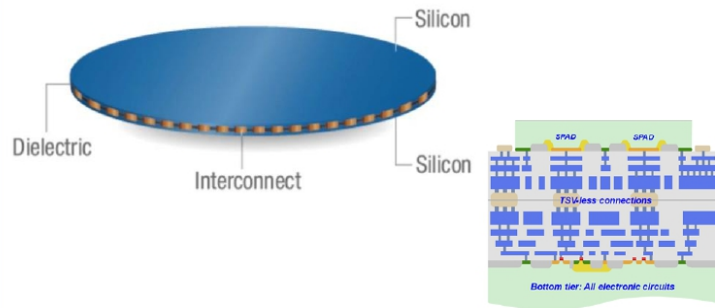
Silicon Manufacturing Environment Enables Advanced Integration and Packaging

## Conventional chip-to-chip hybridization



- Expensive packaging with low throughput
- Limited performance indium bumps
- Pixel sizes limited to  $\sim 5 \mu\text{m}$  ( $>10 \mu\text{m}$  typical)

## Wafer-to-wafer 3D Integration



- ✓ Low cost and high throughput
- ✓ Higher performance with low capacitance copper interconnect
- ✓ Small pixels ( $<1 \mu\text{m}$  possible)
- ✓ 3D stacking of multiple CMOS layers

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Sources of images: A. Rogalski, Optical Engineering, 42(12), 2003; <https://www.allaboutcircuits.com/news/moores-law-xperi-new-die-to-wafer-bonding-technology-ic-package/>; E. Charbon, et al., ICECS, 2018; CMOS: complementary metal-oxide semiconductor

15

# 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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## World's First

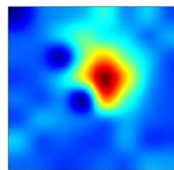
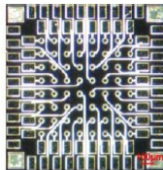
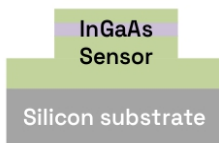
Direct Growth **InGaAs-on-Si** Detector Array Prototype



Top-Illuminated  
Mesa Device Pixel

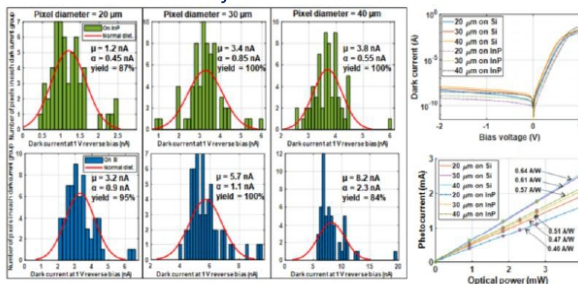
Imaging Detector  
Array Prototype

Captured and  
Processed Image



- World's first InGaAs imaging detector array realized directly on Silicon
- Performance on Silicon similar to that on conventional InP

Summary of Performance Data



Reference to university research: B. Song, et al., CLEO 2021 (UCSB).  
Internal testing, no third party verification. Past results are not a guarantee of future results.

Demonstration performed with small Silicon wafer and is transferable to large Silicon wafers for cost-effective manufacturing

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# Milestone Achievements and Traction



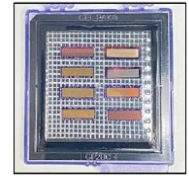
UCSB



transphorm



Continental



Concept and early-stage demonstration

Seed Funding APO

1. Prepare facility  
2. Install and qualify equipment

3. First 12-inch wafer

4. Prototype fabrication

5. Deliver engineering samples to customer (Tier 1 automotive supplier)

2019 2020 Q2-2021 Q3-2021 Q4-2021 Q1-2022 Q3-2022

**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**

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Note: Outcomes cannot be guaranteed.

# Our Team



Visionary Leadership and Seasoned Entrepreneurs



Jonathan Klamkin, PhD  
Co-Founder & CEO



Shuji Nakamura, PhD  
Seed Investor



Thomas Laux  
VP of Business Development



Steven DenBaars, PhD  
Advisor & Seed Investor



Lee McCarthy, PhD  
Co-Founder & COO



Jeffrey Shealy, PhD, MBA  
Advisor & Seed Investor



Richard Ogawa, JD  
Advisor & Seed Investor



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# Our Board of Directors

Highly Experienced Strategists and Finance Experts



**Jonathan Klamkin, PhD**  
Co-Founder & CEO / Director



**Palvi Mehta**  
Director



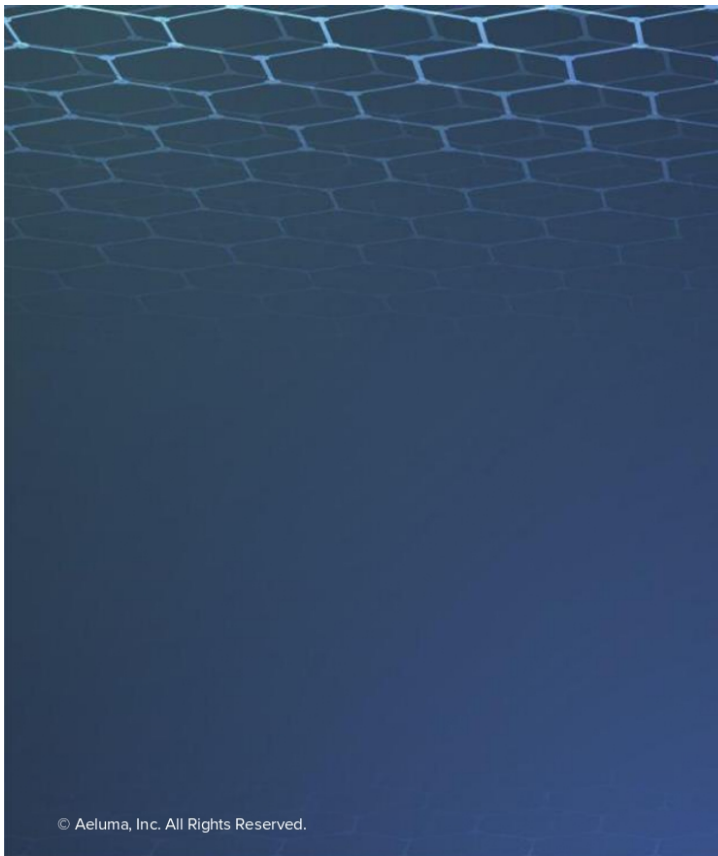
**Steven DenBaars, PhD**  
Advisor & Seed Investor / Director



**John Paglia, PhD**  
Director



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### Summary:

Shares outstanding: 10,650,002  
Post-Money Valuation at time of APO (June 22, 2021): ~\$21.3M

### Company Contact:

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jonathan.klamkin@aeluma.com

### Investor Contact:

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