POET Technologies Inc.

POET: NASDAQ | PTK: TSXV

Business Update Conference Call - Wednesday, April 27, 2022 - 8:00am Pacific / 11:00am Eastern

Dr. Suresh Venkatesan, Chairman & CEO

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Safe harbor

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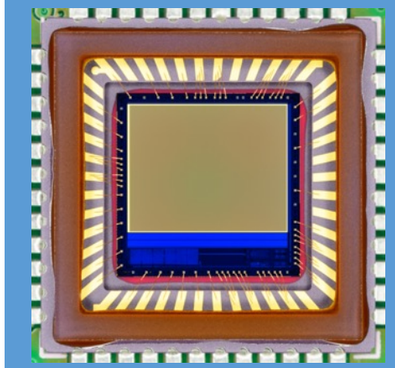
Presentation Outline

- Photonics and Technology Overview
- Markets and Potentials
- Products and Roadmap
- Customer Engagement
- Operations, Strategy and Capital

Photonics Enables Many New Products

Photonics is the technology of generating and harnessing light

- Cutting-edge uses of lasers, optics, fiber-optics, and electro-optical devices in numerous and diverse fields
- Photonics applications and devices require the integration of electronic, photonic and optical devices



Photonics

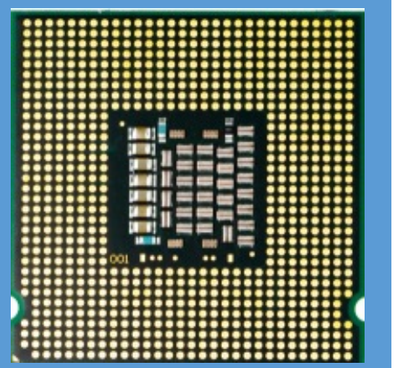
- Lasers
- Detectors
- Modulators
- Multiplexers
- De-multiplexers
- Mode Converters

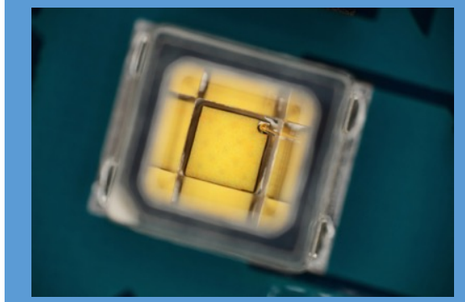
Electronics

- Controllers
- Amplifiers
- ASIC's
- Monitors
- Microprocessors
- Memory

Optics

- Mirrors
- Lenses
- Prisms
- Collimators
- Polarizers
- Beam Splitters





Optical Transceivers for Data Centers

POET is focused on a market with high potential for disruption and growth

Data and Tele-Communications

Data Centers
Switching / 5G Networks

- **Large Market:**
  >$3B market growing to >$6B by 2025
- **High Volume:**
  Products made to known industry standards
- **Sales:**
  Competition is based on performance and price
- **Industry Trends:**
  To less than $1.00/GB cost of transceivers

Opportunity:

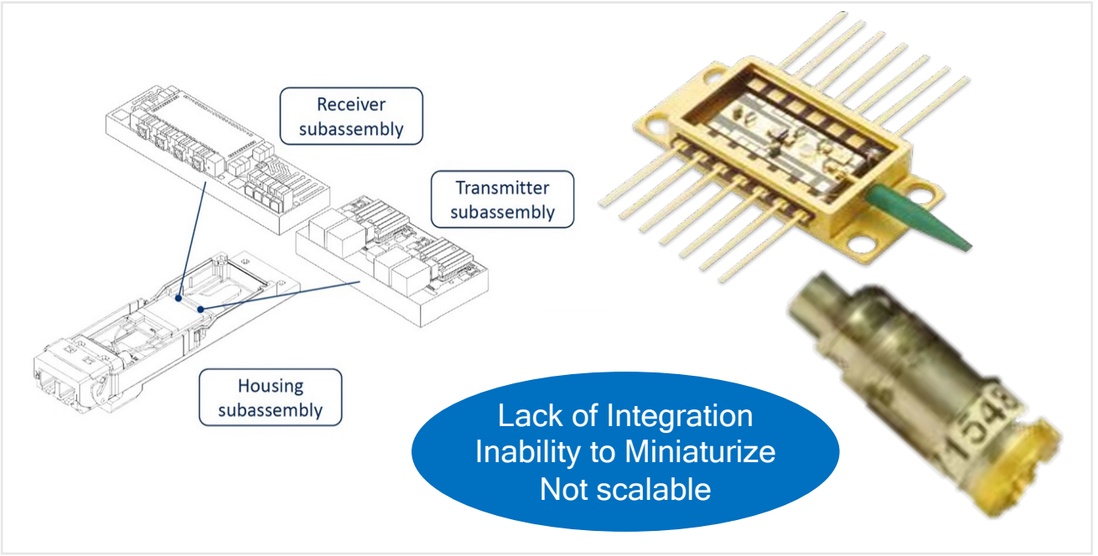
Lack of a method to fully integrate electronic, photonic and optical devices in the same package after 20+ years of trying

Conventional Assembly of Transceivers Not Sustainable

- Assemble multiple components and sub-assemblies one at a time - align and optimize signal ("active alignment") with each component and sub-assembly placement
- No Economies of Scale - linear (1 to 1) relationship between unit output and capital invested
- **Massive market demand is currently unmet by existing technology**

Existing Sub-Assembly Operations are Capital and Labor Intensive

Existing Solutions utilize a large # of Components and Sub-assemblies

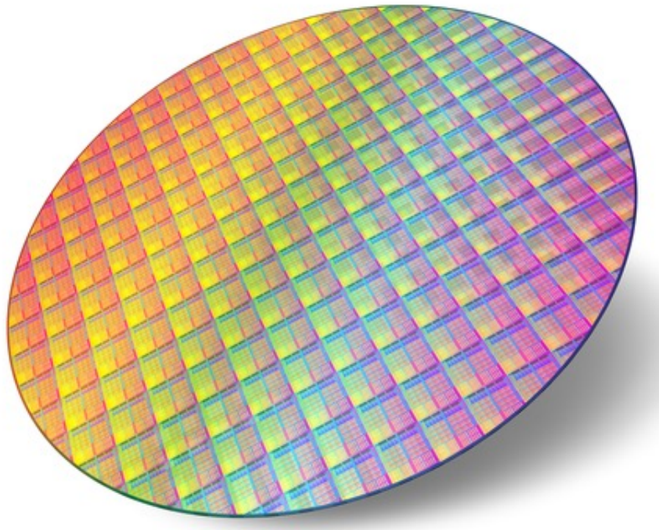


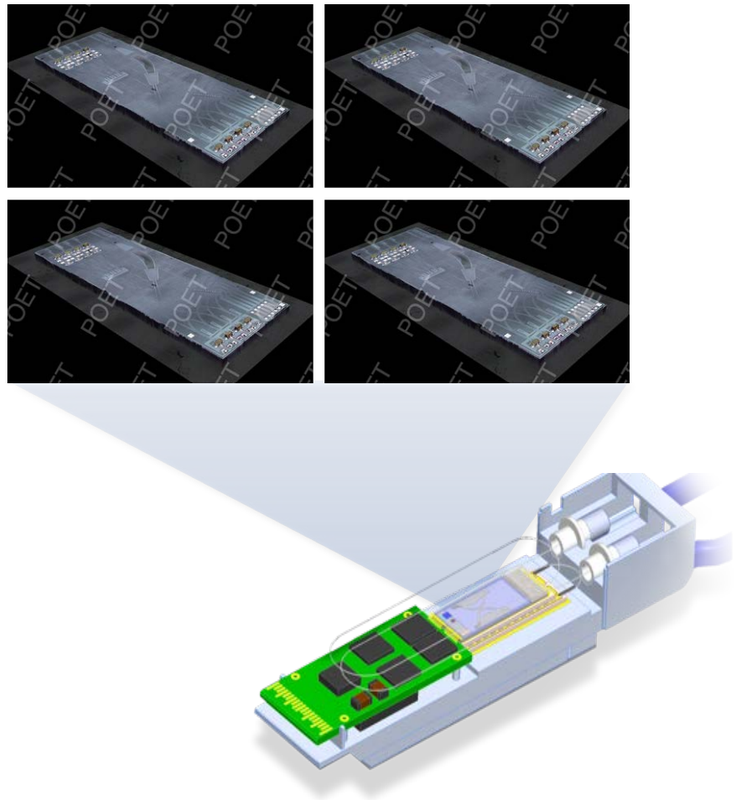
Integration and Wafer Scale Production

- Full integration of multiple active components with passive alignment at wafer scale using semiconductor assembly techniques
- **Large Economies of Scale - non-linear (> 1 to 1) relationship between unit output and capital invested**

How POET Wins

- ✓ Simplified Packaging
- ✓ Lower Bill of Materials (BOM) Cost
- ✓ Highly Automated Wafer Scale Manufacturing
- ✓ Dense, Smallest Form Factor
- ✓ Excellent Electrical and Optical Performance

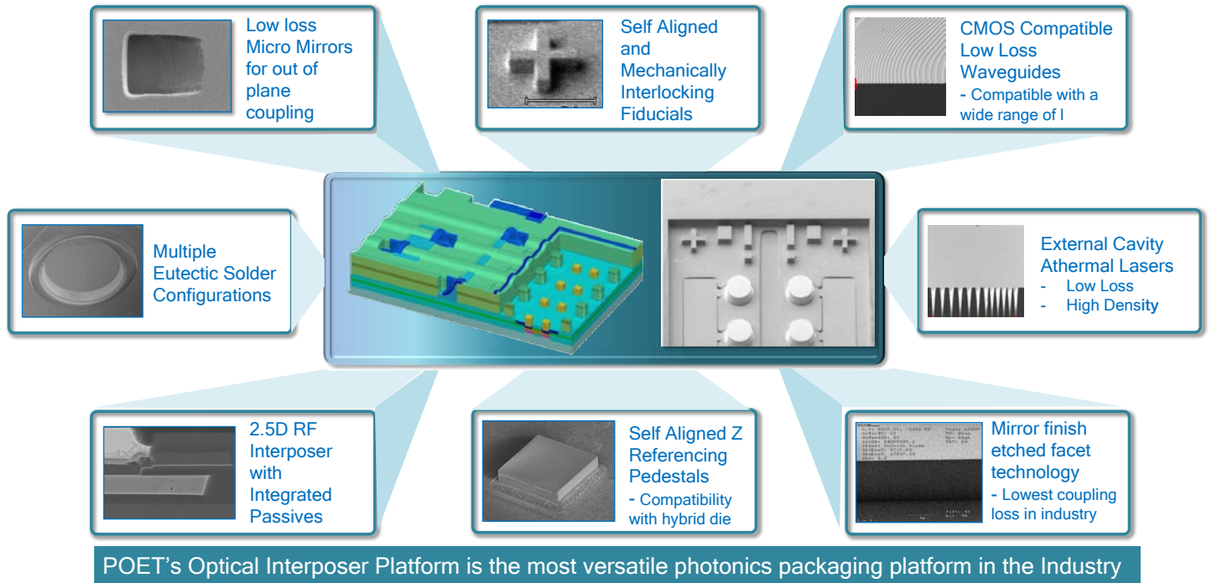




Producing the World's Smallest and Lowest Cost 100G/200G Optical Engine including all Active and Passive Photonics Devices

POET's Hybrid Integration Platform

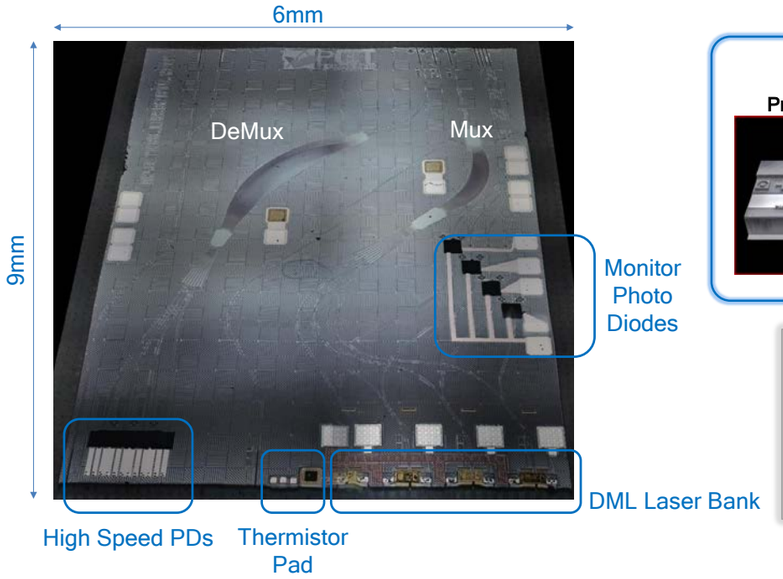
POET's Optical Interposer : A Co-Packaging Solution

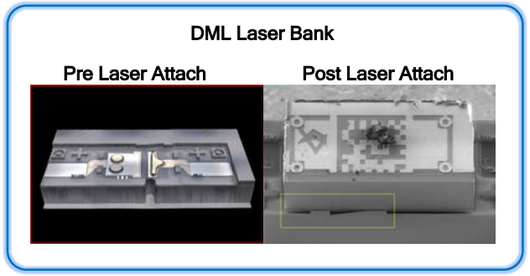


POET's Optical Interposer Platform is the most versatile photonics packaging platform in the Industry

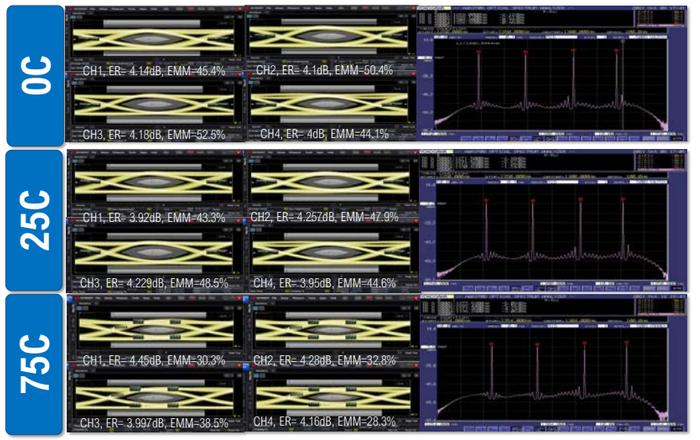
- Two layers of low loss optical interconnects
- Multiple electrical redistribution layers with low RF insertion loss
- High throughput visually assisted passive "pick and place" assembly of electronics and photonics ICs and components
- In plane and Out of plane Optical Interfaces

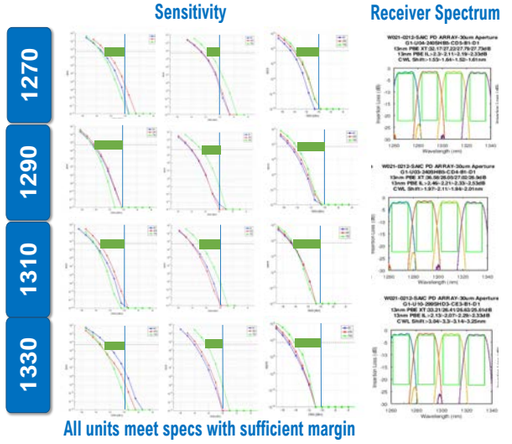
Implementation into a 100G-800G Optical Engine





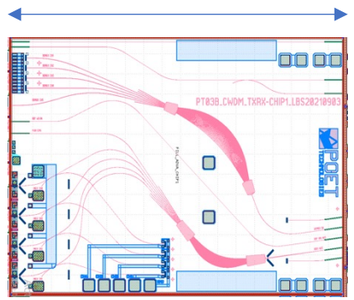
World's smallest single chip implementation of optical engines for 100-400G communications and beyond





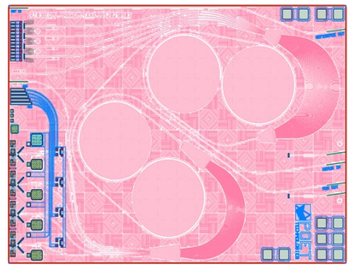
Platforms and Solutions

Directly Modulated Laser Platform



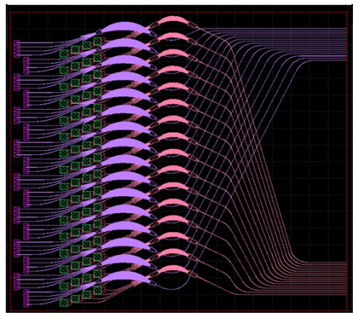
FR4

- 100Gbps
- 200Gbps
- 400Gbps
- 800Gbps



LR4

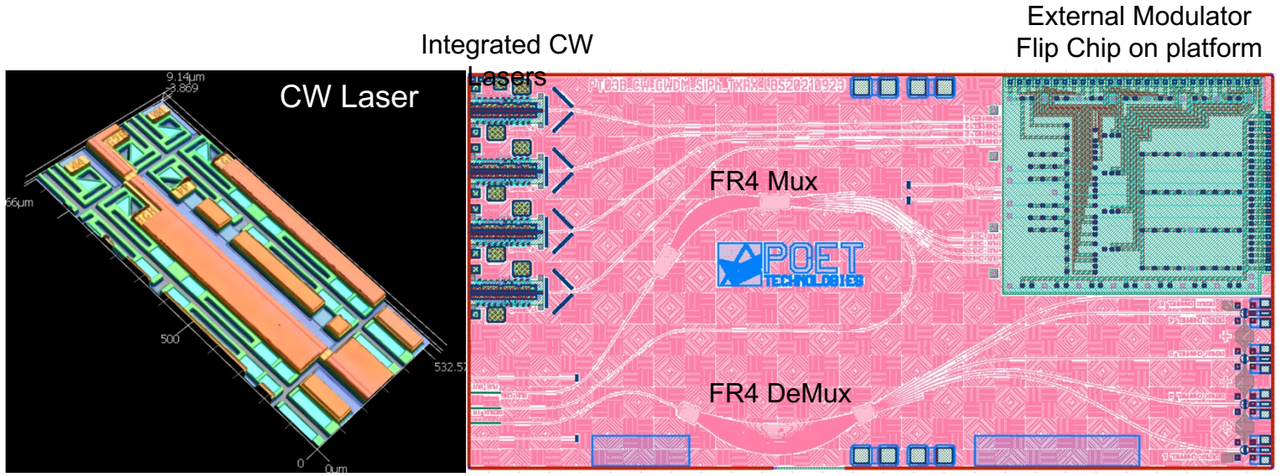
- 100Gbps
- Custom Configurations with 2-4 engines inside a QSFP



6.4Tbps

- DML/EML Implementation
- Custom Configurations
- Industry leading form factor with two layer waveguides (optical chiplet : 18mmx18mm)

CW Laser Platform



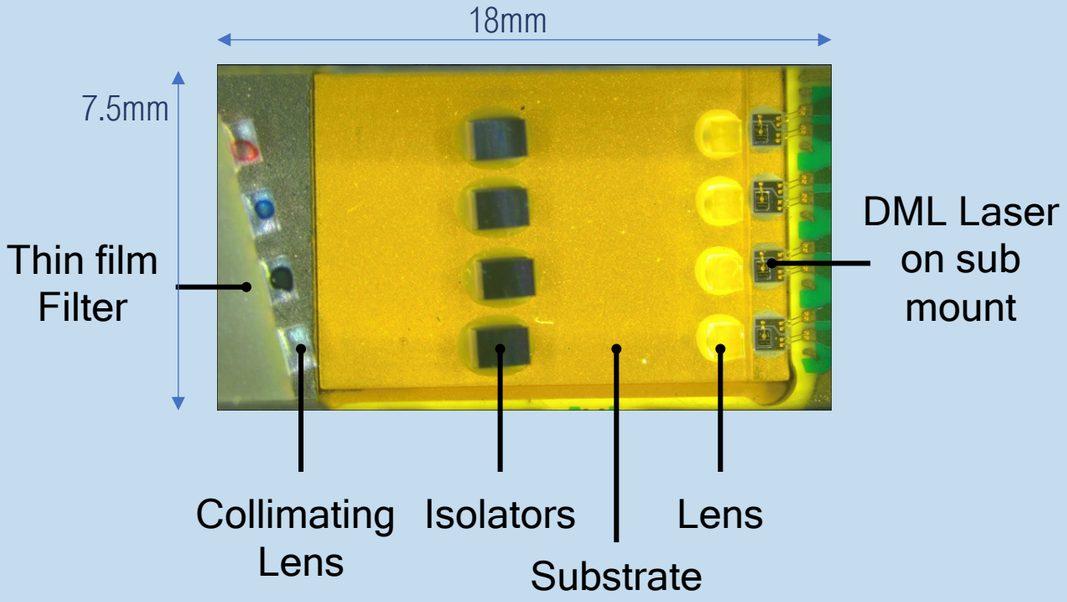
800Gbps (2x400FR4) and beyond

- Platform with CW lasers compatible with external modulators like Si Photonics
- Extensible to 200G/l with TFL (thin film LiNbO3) modulators

Remote Light Sources for Data Communications and other co-packaged applications

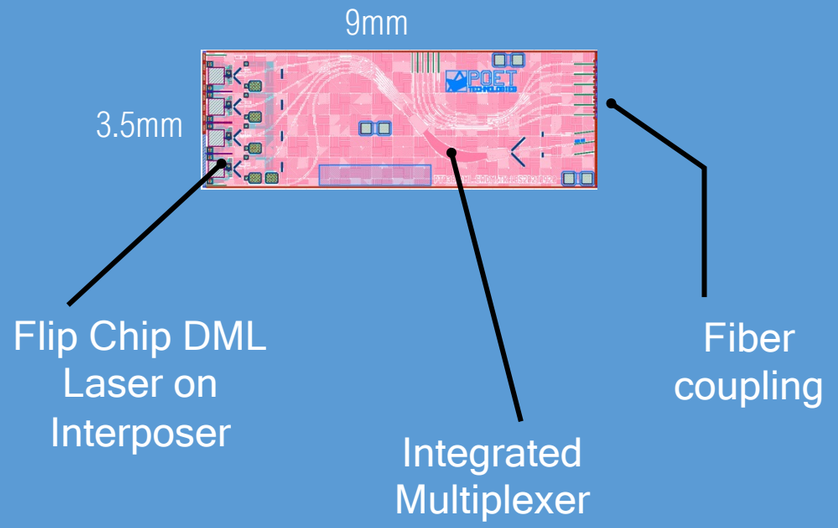
POET's Advanced Chip on Board Solution (100G)

Conventional Chip on Board



- Bill of materials : 30 separate pieces including carriers
- Active Alignment : 8

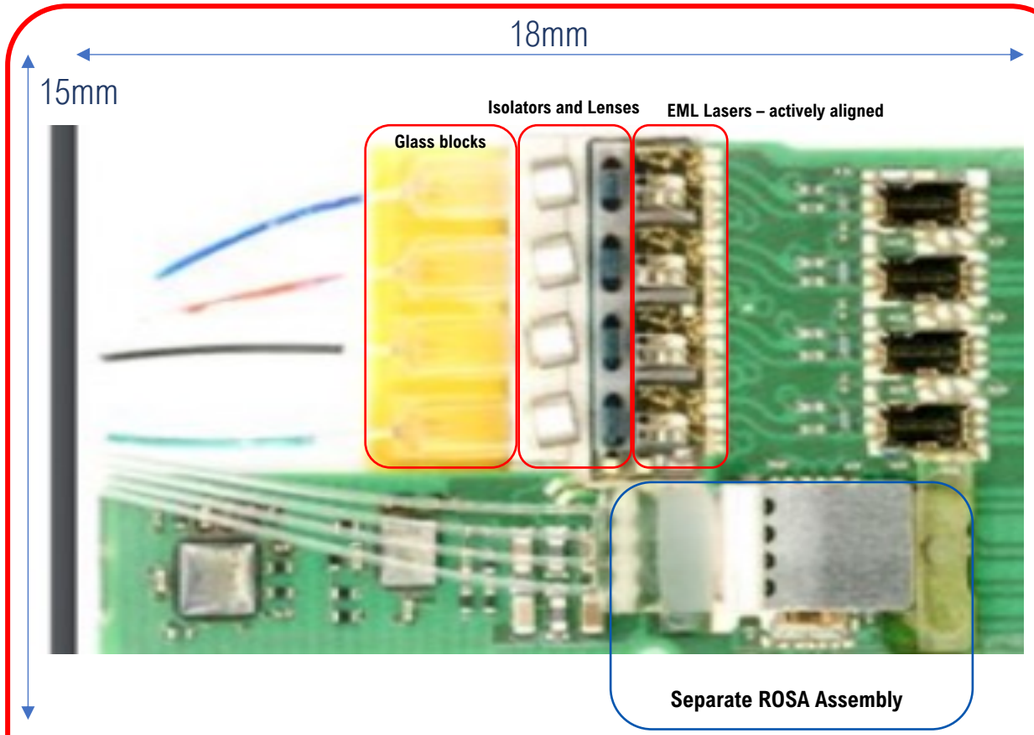
POET's Optical Engine



- Bill of materials: 6 (one for the module manufacturer)
- Active Alignment: 0
- POET SOLUTIONS ARE >4X SMALLER THAN THE SMALLEST CHIP ON BOARD SOLUTIONS IN USE

POET's Advanced Chip on Board Solution (400G)

Innolight – DR4



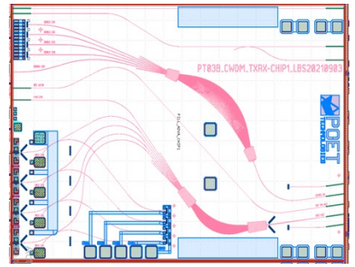
Conventional solutions are un-competitive for multiplexed FR4 applications

POET – FR4

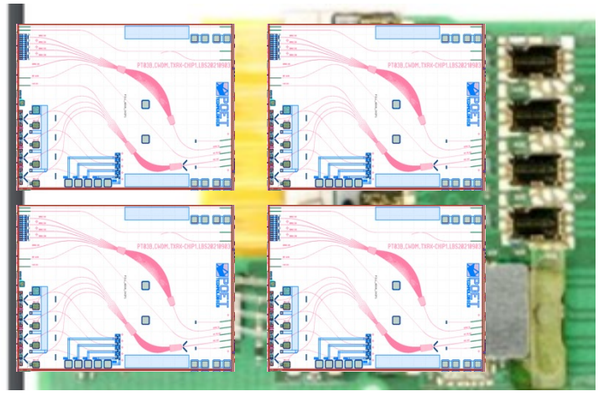
9mm

6mm

400Gbps



1.6Tbps



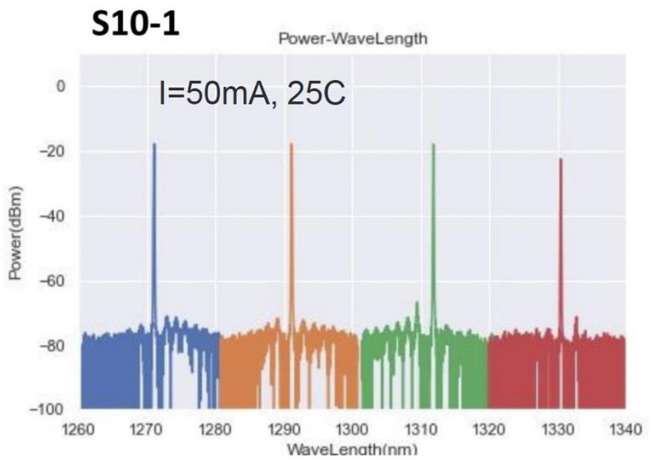
POET's Interposer solutions pack a punch

DML Engines : 5X smaller
SiPh Engines : 3X smaller

The only DML integration platform in the world

Industry Leadership

- Wafer Scale Hybrid Integrated Photonics Packaging Platform
- Low Loss Transmission and Coupling
- DeMux and Mux monolithically integrated into Interposer
- 28G/56G Flip Chip compatible CWDM and LR4 Lasers

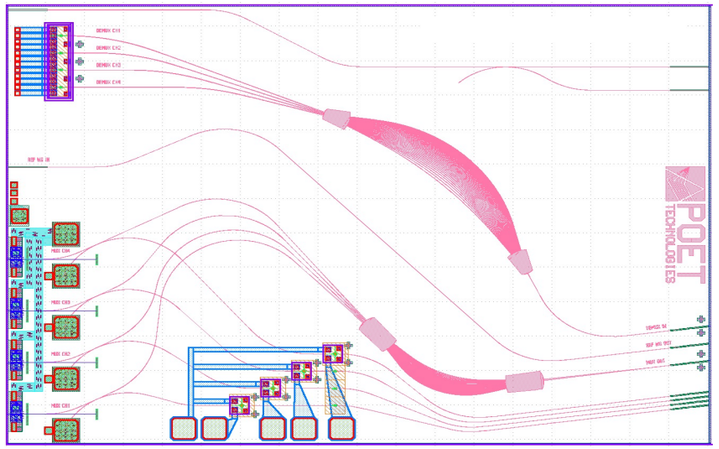


Avg ER : 4.0dB; Avg EMM - 45%

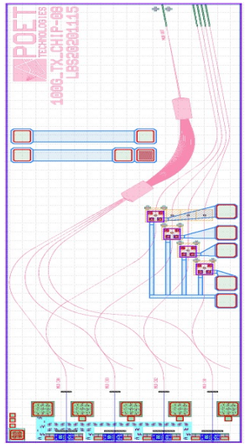
Markets

- CWDM4 and LR4 Data Center Applications
- Custom CWDM/LR4 solutions for Telecom (multiple integrated optical engines in a module)
- 5G Connectivity
- Extensibility 400G-800G-1.6T-3.2T

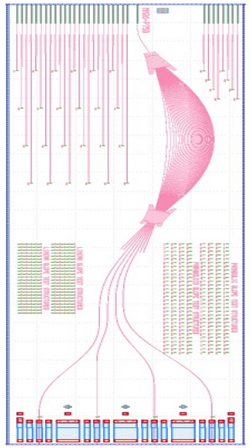
Integrated TRx : CWDM ; 9mm x 6mm



Stand Alone Tx



Stand Alone Rx



POET Wins with Optical Interposer Platform

The benefits of POET's Optical Interposer add up to a truly disruptive entry into large-scale photonics markets

Module cost	20-40% Lower
CAPEX investment for module assembly & test	10X Lower
Chip-scale package	20% Lower Power
Wafer-level assembly and test	>100X More Scale
Planar architecture	Greater Flexibility
Platform technology	More Versatility for Multiple Applications

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- Photonics and Technology Overview
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- Products and Roadmap
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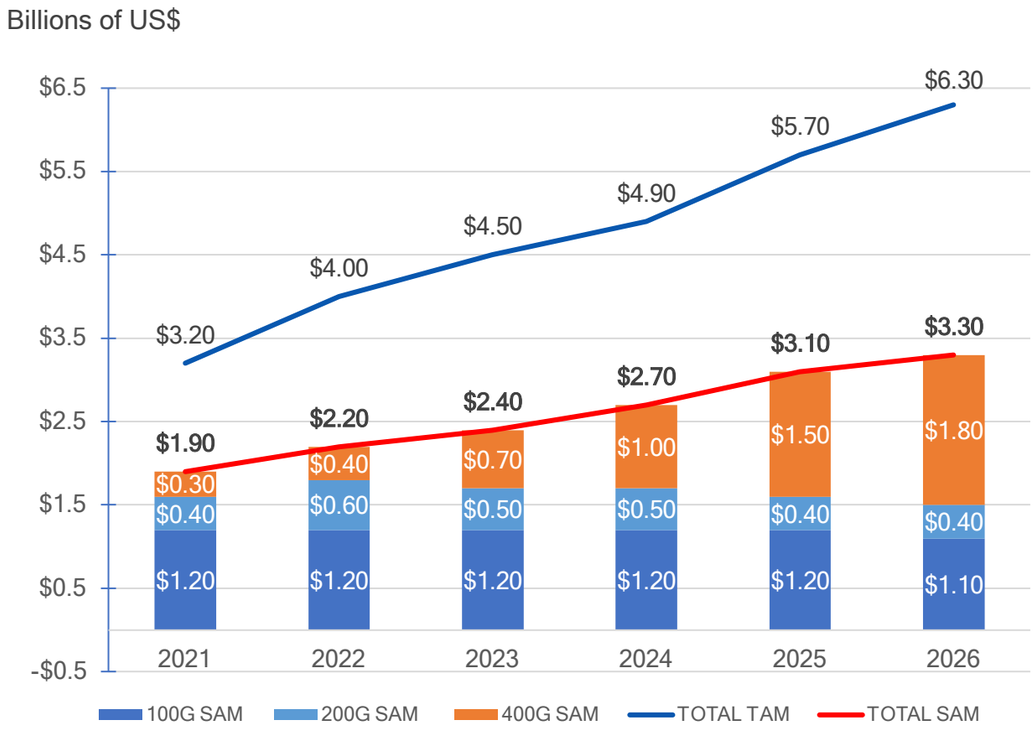
Large Market for Optical Transceivers

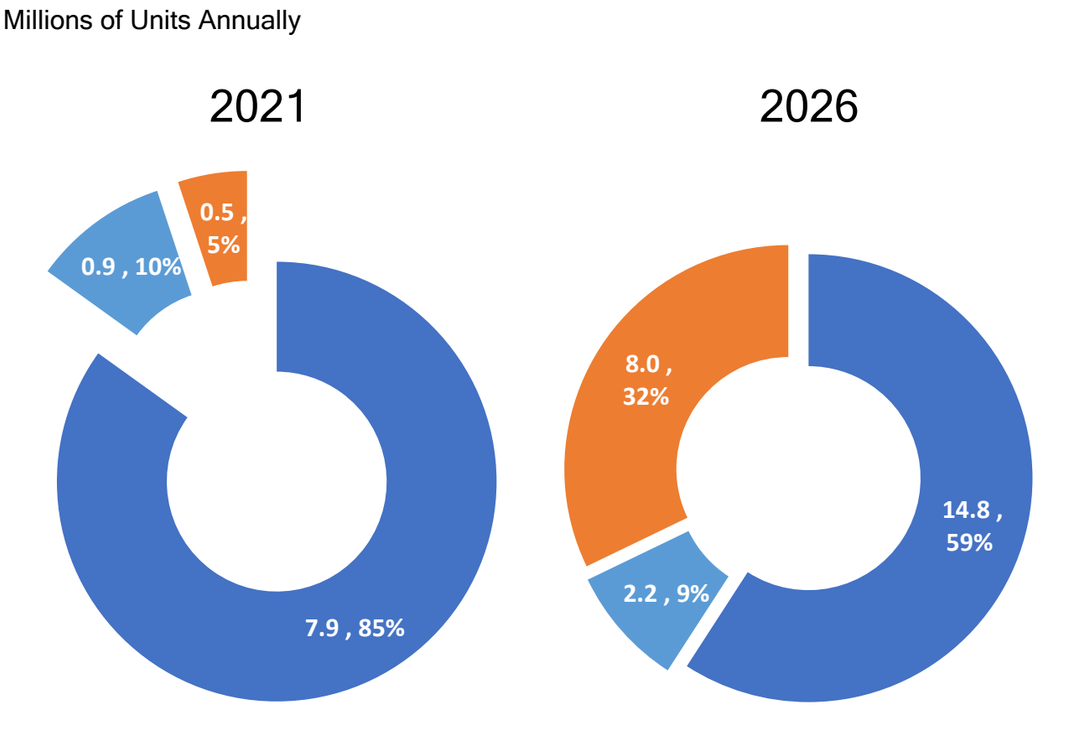
Even as 400G emerges, the100/200G segments continue to be large and attractive served markets for POET

Optical Transceiver Market Forecast - SALES



TAM = Total Available Market; SAM = Serviceable Available Market

Optical Transceiver Market Forecast - UNITS



Many Other Large Markets Need POET's Optical Interposer

The Global Market for Photonics* was >$576B in 2019 and growing to >$1.2T in 2030, nearly a 7% annual CAGR

Communications

Data and Tele-Communications

Data Centers
Switching / 5G Networks

Edge Computing

Machine to Machine
Internet of Things

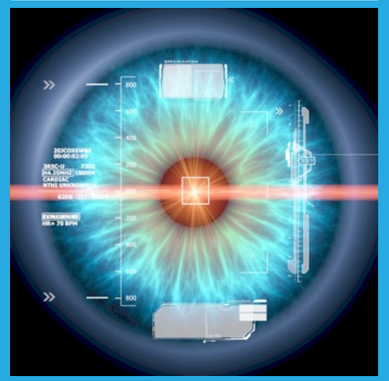
Computing

Artificial Intelligence

Neuromorphic
Optical Computing

Sensing

Health Technology



Wearables
Point-of-Use

Autonomous Vehicles

LIDAR Systems

* Source: Prescient & Strategic Intelligence, *Photonics Market Research Report*, *2019* - Includes LEDs & Lasers, Sensors & Detectors, Optical Components & Systems

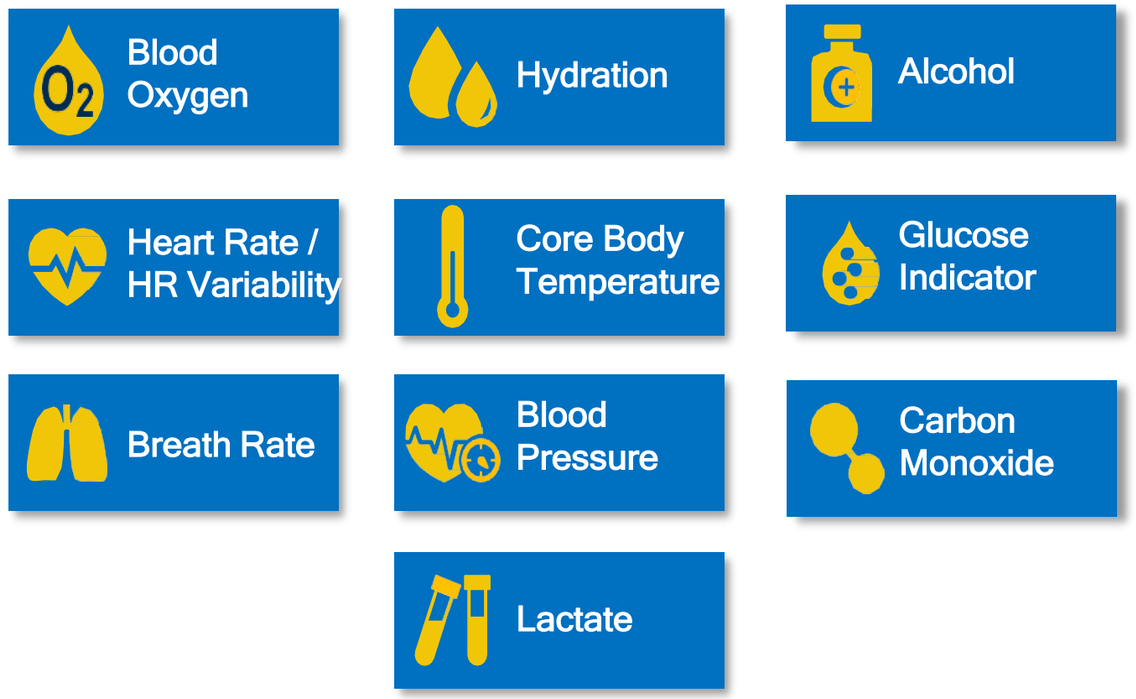
POET's Tech is key to unlocking new Health Tech Apps

POET's commercial focus about to turn to wearable devices, and mobile and medical devices, representing an attractive 2025 TAM of >$48B

POET's Optical Interposer enables a seamless integration of visible to IR spectroscopy components

Chip scale integration of spectrometers for smart watches and mobile devices

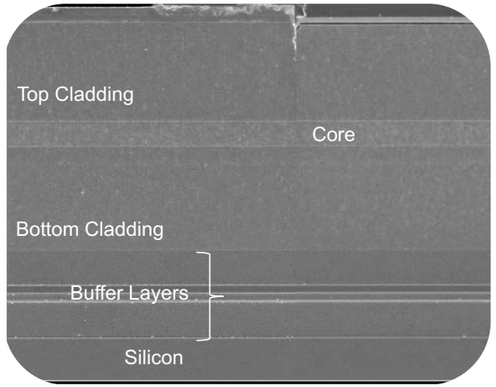
Miniature 3D Sensing and Imaging solutions for Robotic Surgery applications



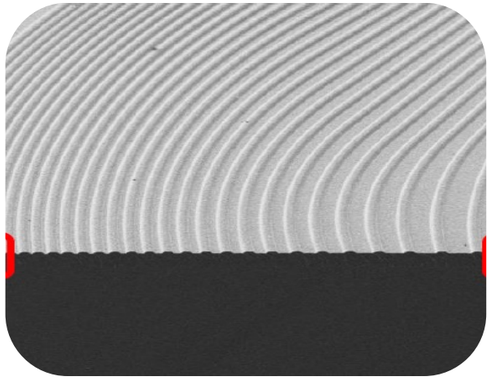
Several critical Bio-markers are detectable using optical spectroscopy methods

POET's Datacoms deployment has matured many building blocks relevant to Chip Scale Spectrometers

Multi-level Waveguide technology scalable from VISIBLE to NIR

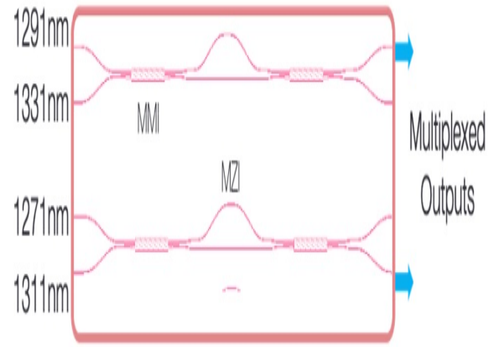


High Resolution Gratings with minimal phase errors

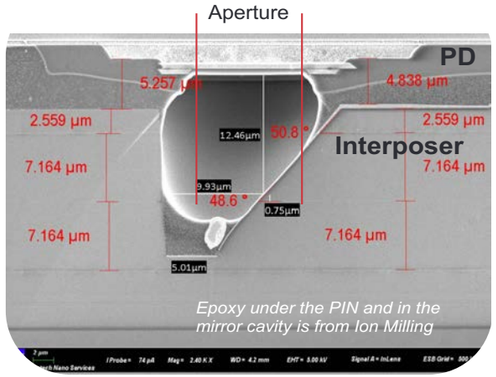


Co-packaging of Electronics and Photonics on a common platform

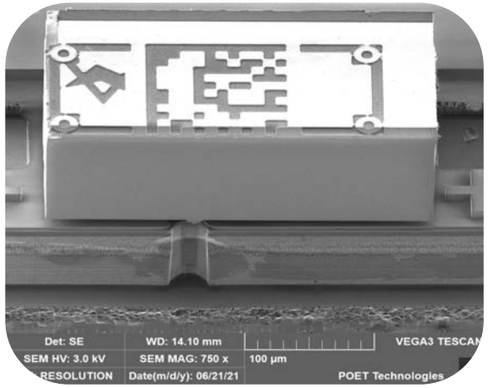
Interferometers, Directional Couplers and Delay Lines



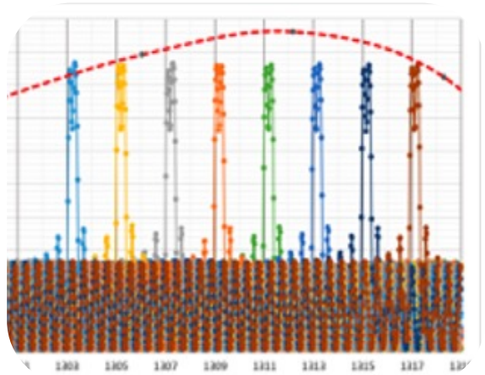
Low Loss out of plane coupling and efficient light detection



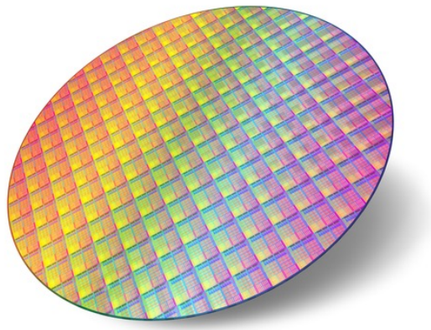
Low Loss In plane coupling of lasers and gain chips



Novel Multi-wavelength athermal external cavity tunable lasers



Wafer Scale Integration to enable Size, Weight, Cost and Performance



POET to Target Medtech / Wearables Markets

$48B+ TAM in 2025

Large market opportunity as growing universe of healthcare monitoring devices incorporate additional sensing capabilities

Short Term Target Markets

Wearables

Smartphones

Point-of-Care

Additional Market Opportunities

- Internet of Things
- Hearing Assist
- Smart Patches
- Smart Bands

Sources: Rockley Photonics, IDC, Counterpoint Research, Strategy Analytics, TrendForce Research, leading consumer electronics manufacturer investor materials.

>$1B Annual Sales Opportunity in Current and Target Markets

>$1 Billion Annual Revenue Potential	Transceivers for Datacom	5G Networks	Co-Packaged Optics	Optical Computing and Edge Applications	BioSensing Watches and Mobile Devices	LIDAR
Market Size SAM (peak 2021-28) :	$2-3.5B annually	$3-5B annually	$2-3B annually	$3-5B annually	$30B annually	$1-3B annually
Development Partners:	Tier 1 NA European	Several in play	Several in play	US-based Start-up	Major Chinese or Korean Company	TBD
Strategic Partner(s):	Sanan IC JV Super Photonics	Sanan IC JV Super Photonics	TBD	TBD	Major Chinese or Korean Company	TBD
Potential Customers:	Multiple module makers	Multiple module makers	Data Center Operators and Equipment Suppliers	Computing Platform and Chip Suppliers	Consumer Markets	Auto Sub-Assembly Companies
Revenue Potential:	$250M+ annually	$250M+ annually	$250M+ annually	$250M+ annually	>$250M+ annually	>$250M+ annually

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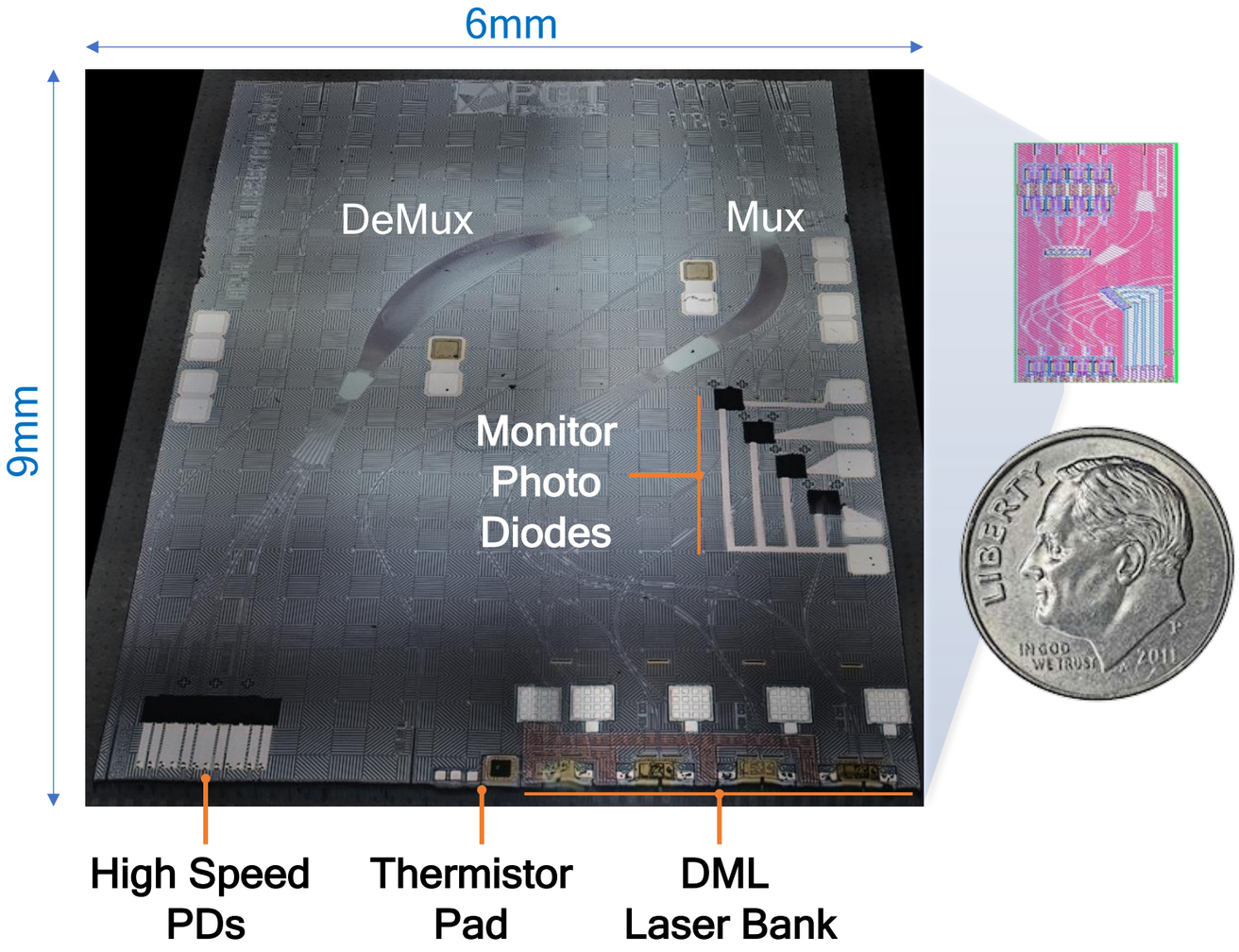
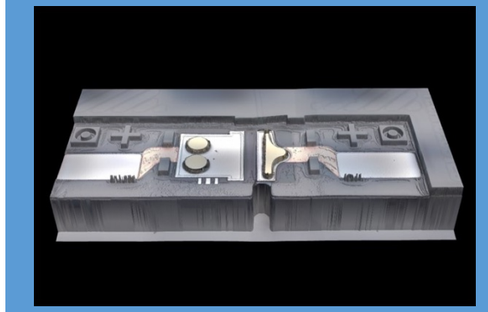
100G/ 200G CWDM Optical Engine

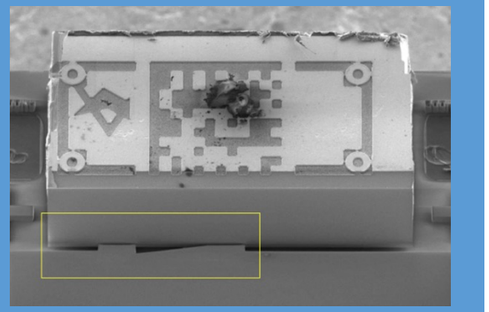


DML Laser Bank

Pre Laser Attach



Post Laser Attach

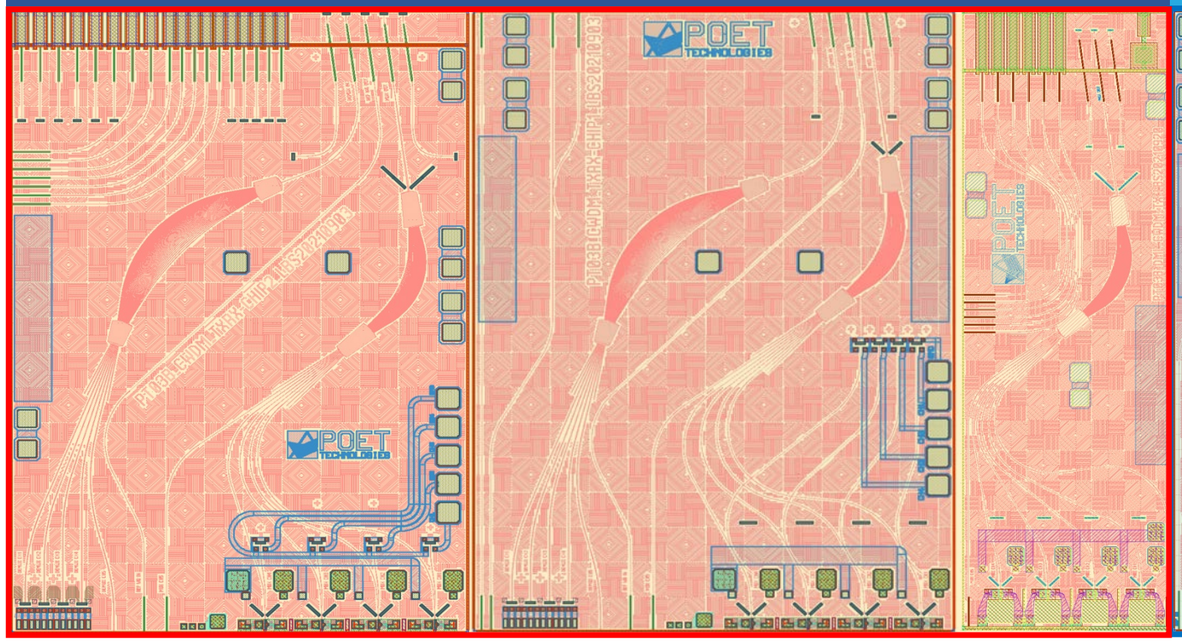


- POET's DML-compatible Optical Interposer Platform produces complete single chip optical engines that can be assembled PASSIVELY and at WAFER SCALE
- Platform is flexible for both Ridge Waveguide and BH Laser structures (CW and EML)
- Platform can support the flexible requirements of CWDM, LAN WDM, single channel 5G (SFP+), 400G FR4 and co-packaged optics

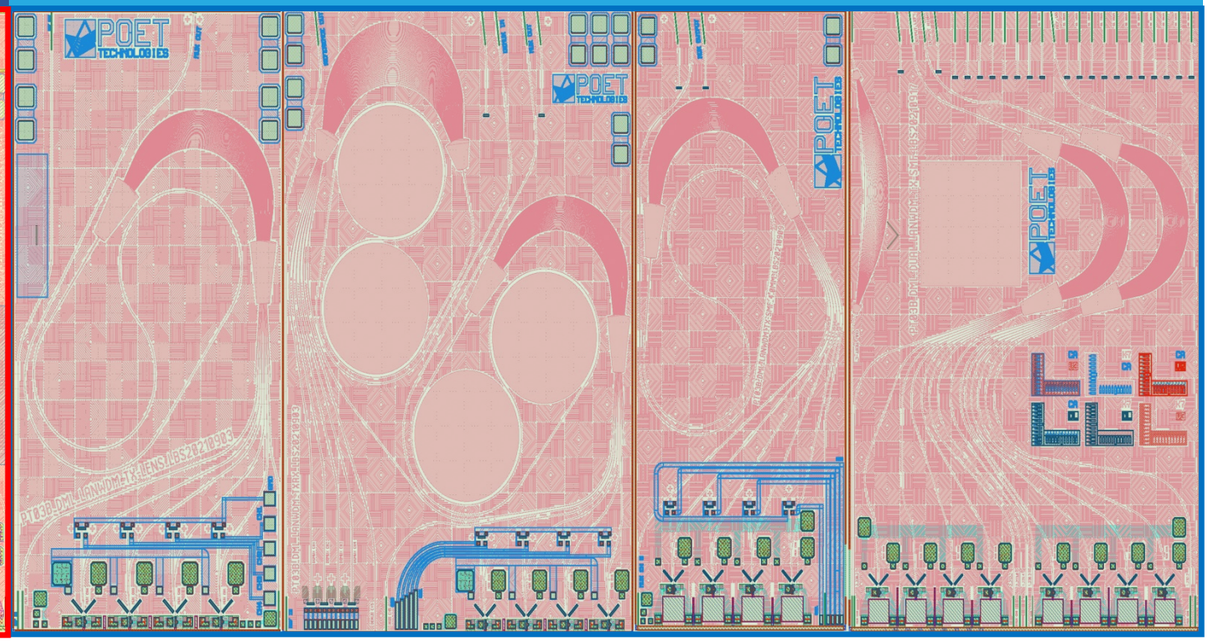
POET's Platform Enables Rapid Deployment

POET's Platform technology enables the reuse of key features and tools, shortening the development process and allowing the launch of multiple products simultaneously

100G/200G FR4 PRODUCTS



100G LR4 PRODUCTS



With the only integration platform in the world for DML/EML type lasers, POET can extend to 400G by changing out the lasers on the 100G / 200G products

Roadmap to Commercial Products

	Alpha	Beta	Production
100G CWDM Solutions TX, RX, TXRX	2H 21	1H 22	2H 22
100G LR4 Solutions TX, TXRX		1H 22	2H 22
200G CWDM and LR4 Solutions	2H 21	1H 22	2H 22
400G Solutions DR1, DR4, FR4 Si Photonics Modulator	1H 22	2H 22	1H 23
Custom Light Bar Solutions*	1H 22	2H 22	1H 23

** Custom implementations ; schedule driven by customer adoption*

POET Products Match Datacenter Market Needs

200G FR4:

- Meta (Facebook) is deploying 200G FR4
- Tencent in China is deploying 200G FR4
- Google is deploying 2x200G FR4
- 200G FR4 is an attractive market for the next 2-3 years with several million units of planned deployment.

400G DR4/FR4:

- Several transceiver companies are focusing on cost reducing 400G DR4 and FR4 modules.
- 400G DR4 and FR4 have the highest growth potential in the next 3-4 years.
- DR4 is shipping in volume today (Mainly deployed by Amazon). FR4 is expected to ramp in volume in 2022/2023

800G:

- Google planning to deploy 2x400G FR4 as a migration path from 2x200G FR4
- Several companies working on 800G DR8 transceivers

CPO: Optical Engines and Chiplets for Co-packaged optics: demos/announcements by Broadcom, HPE, Ayar Labs

200G/Lambda: using Lithium Niobate modulators: Hyperlight, Liobate (Modulator), E-Optolink (800G DR8 Module)

Presentation Outline

- Photonics and Technology Overview
- Markets and Potentials
- Products and Roadmap
- **Customer Engagement**
- Operations, Strategy and Capital

POET Enters China Market to High Acclaim!

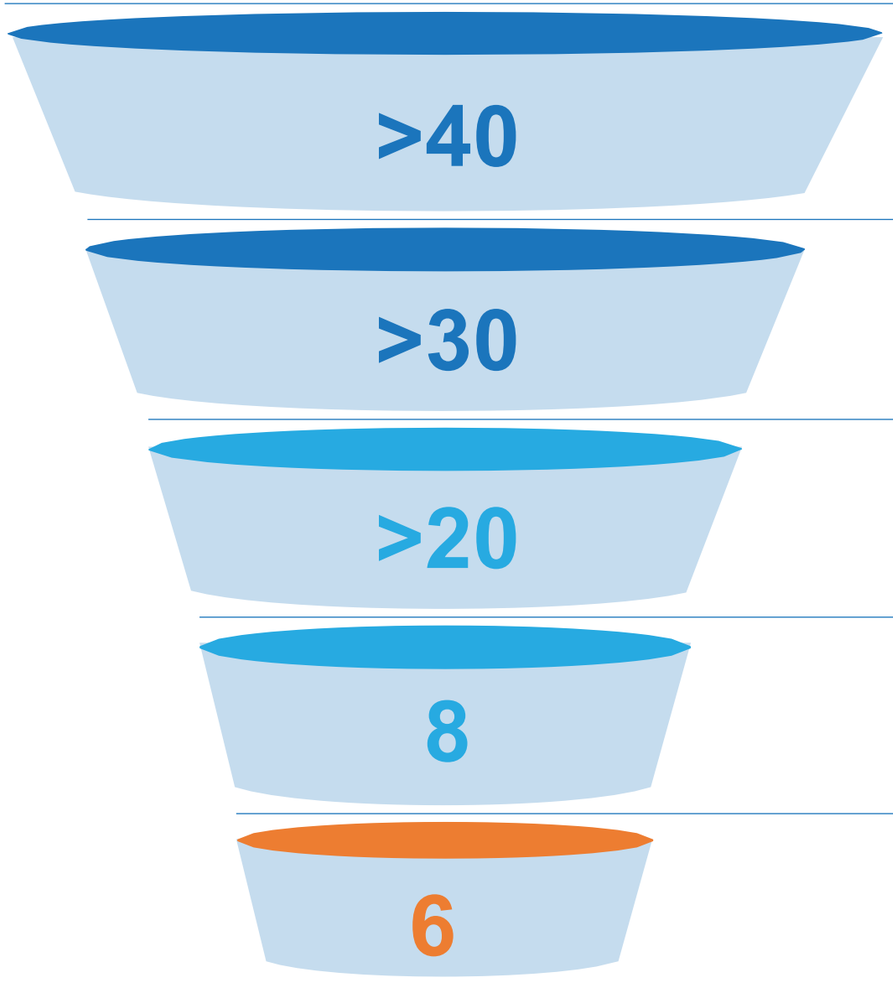
6	Product Demonstrations
60	C-Suite and Exec Staff
20	Leading Optics Companie
2	Committed Customers
>10	Sample Backlog
>2	Strategic Discussions

OFC in San Diego – March 8 -10, 2022

- Live demos of two products
  - 200G FR4 TX Optical Engine
  - 400G FR4 RX Optical Engine
- Reactions from Industry Leaders:
  - “It’s a work of art!”
  - “You will never find anything smaller”
- Potential strategic engagements with six new companies
- Eight additional customer opportunities for optical engines identified, on top of six current customers

Engaged with Leading Companies

Customer Traction at Leading Module and System Companies



Illustrative Pipeline of Customers

cloudlight, Google, ARISTA, DELTA, eoptolink, SOURCE PHOTONICS, ADVA Optical Networking, HENGTONG GROUP, Amphenol, NOKIA, Hisense, JABIL, molex, XGIGA, Alibaba.com, HUAWEI, CISCO, HISILICON, Accelink, aws, JUNIPER NETWORKS

Presentation Outline

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Leadership Team

Executive Team

Dr. Suresh Venkatesan

CEO and Chairman

- SVP Technology at GlobalFoundries
- Various Senior roles at Motorola & Freescale Semiconductors

Vivek Rajgarhia

President & General Manager

- SVP and GM, MACOM
- CEO and Co-Founder, Optomai (MACOM)
- Lucent ME (Broadcom), OpNext (Lumentum), GigOptix (Renesas)

Thomas Mika

Exec. Vice President & CFO

- Chairman, Rennova Health
- Chairman & CEO, Tegal Corporation
- Co-Founder IMTEC (M&A Boutique)

Leadership Team

James Lee

VP and GM, Singapore

- VP Logic Technology, IMEC
- Various Senior roles at GlobalFoundries and Chartered Semiconductor

Dr. Jinyu Mo

SVP & GM, Asia

- Sr. Director and Chief Scientist, MACOM Technology Solutions
- Founder/CTO, Nexwave Photonics
- Huawei, Oclaro, I2R

Kevin Barnes

VP, Finance and Administration

- Controller, EC English
- Duguay and Ringler Corporate Services

Dan Meerovich

VP, Product Engineering

- Director, Product Engineering at MACOM
- Broadcom, Multiplex

Raju Kankipati

VP, PLM

- Sr. Director, Product Management at MACOM
- Arista, Cisco, OpNext (Lumentum)

Dr. Robert Ditizio

VP, Intellectual Property

- CTO, Tegal Corporation
- Patent and process consultant for POET since 2017

Global Development and Manufacturing

Employees:
50 (POET) + 30 (Super Photonics)
>60 Engineering
14 PhDs

TORONTO, CANADA
Corporate Headquarters

ALLENTOWN, USA
Product Design & Development
PLM

SZHENZHEN, CHINA
Development & Applications Engineering

XIAMEN CHINA
Super Photonics
Joint Venture with SAIC
Engine Manufacturing & Sales

KULIM, MALAYSIA
Silterra
Interposer Foundry

SINGAPORE
Interposer & Process Development

Asset and Capex Lite Manufacturing Strategy

POET Owned Processes and Design including Consigned Equipment

High-Volume Wafer Foundry (Silterra)

Optical Interposer Fabrication

- ✓ 30 K+ wafers per month capacity

High-Volume III-V Semiconductor Foundry (SAIC)

III-V Semiconductor Active Optics

- ✓ Largest III-V Compound Semiconductor manufacturer in the world
- ✓ Large scale

POET - SAIC Joint Venture

Wafer Scale Integration and Test (Super Photonics)

Joint Venture between POET and SAIC

- ✓ SAIC invests capex to scale manufacturing
- ✓ Large local market in China

POET, SAIC and Super Photonics constitute a pseudo-vertically integrated model for unparalleled cost efficiency

JV Adds World-Class Manufacturing and Scale

Super Photonics Xiamen – POET and Sanan IC Joint Venture (JV)

- Virtual vertical integration of manufacturing for Optical Engines
- Ability to rapidly scale production to thousands of devices per month

Sanan IC | Xiamen Sanan Integrated Circuit Co., Ltd.

- Xiamen Torch High-Tech Industrial Development Zone
- US$500 million investment on180,000 square meters
- Compound semiconductor manufacturing platform
- Process technologies for microwave radio frequency, high power electronics & lasers

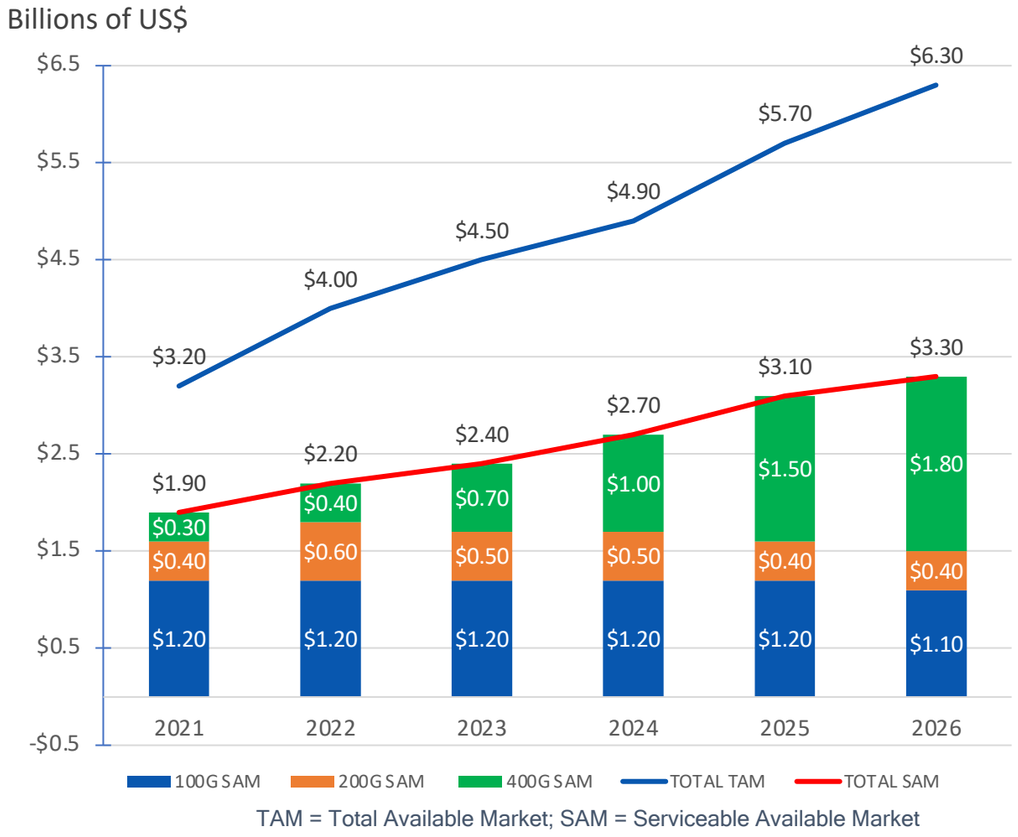
Sanan Optoelectronics Co. Ltd. (Parent)

- LED, filters, power electronics, microwave integrated circuits and optical comms.
- Produces 25 million 6” wafers per year with 4 locations and over 8,500 acres
- US$1 billion Revenue; US$14 billion market cap
- Shanghai Stock Exchange (600703)

Range of Forecasted Revenue for SPX

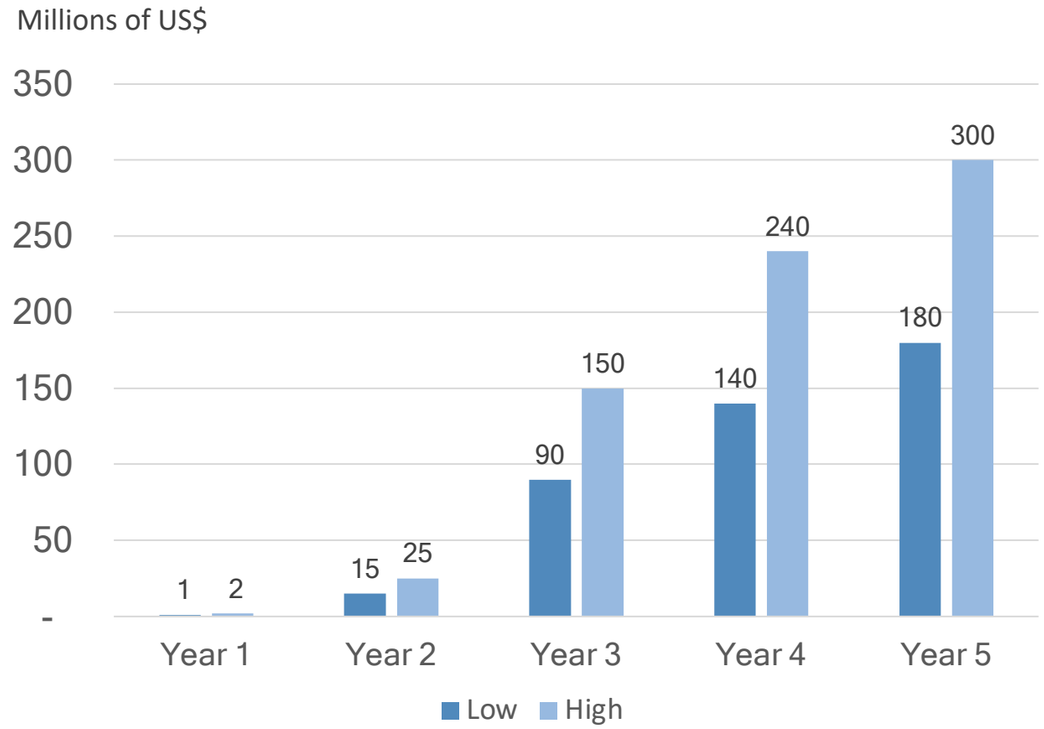
POET successfully competes in existing large segments (100/200G) of the optical transceiver market and in emerging segments like 400G

Optical Transceiver Market Forecast - SALES



TAM = Total Available Market; SAM = Serviceable Available Market

Forecasted Revenue for 100/200/400G*

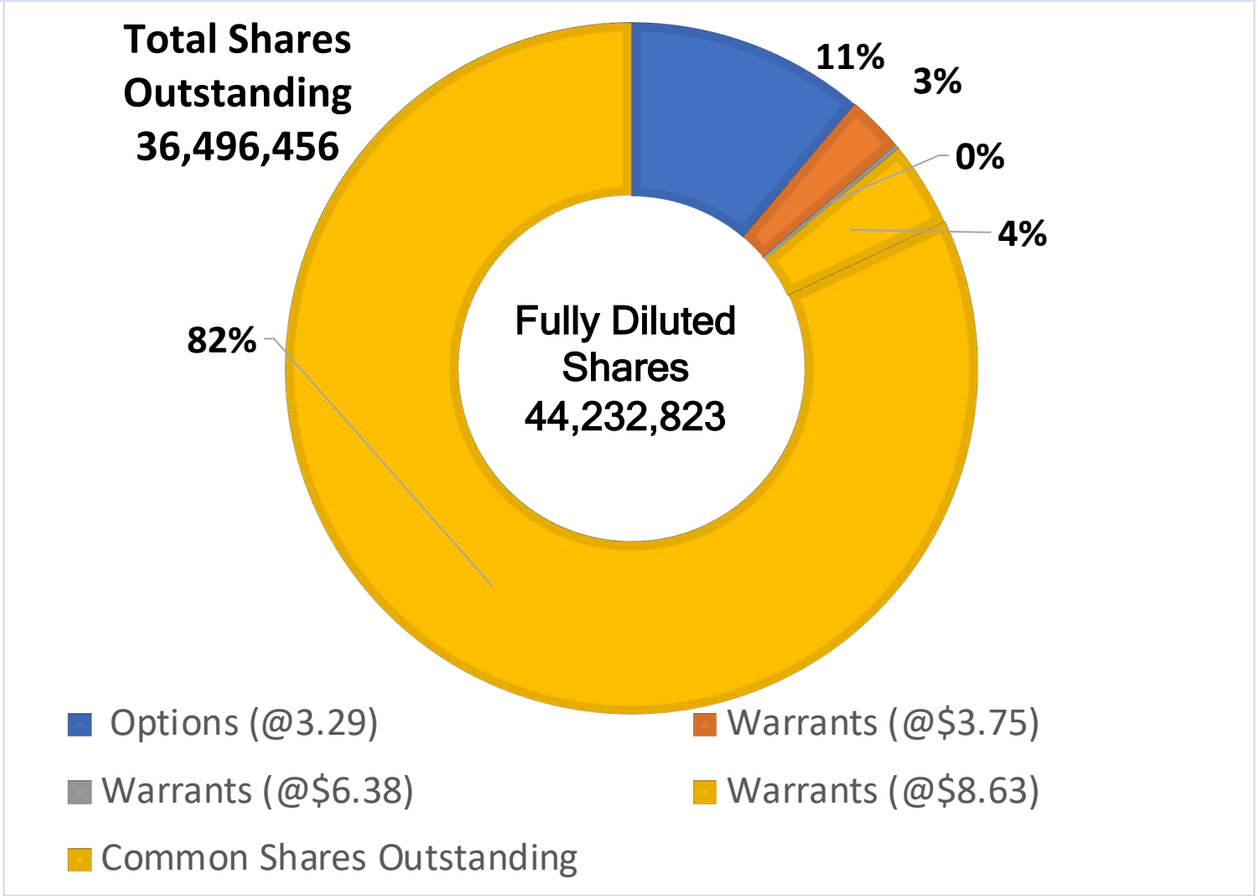


*Business Plan Forecast Range for Super Photonics Xiamen (SPX)

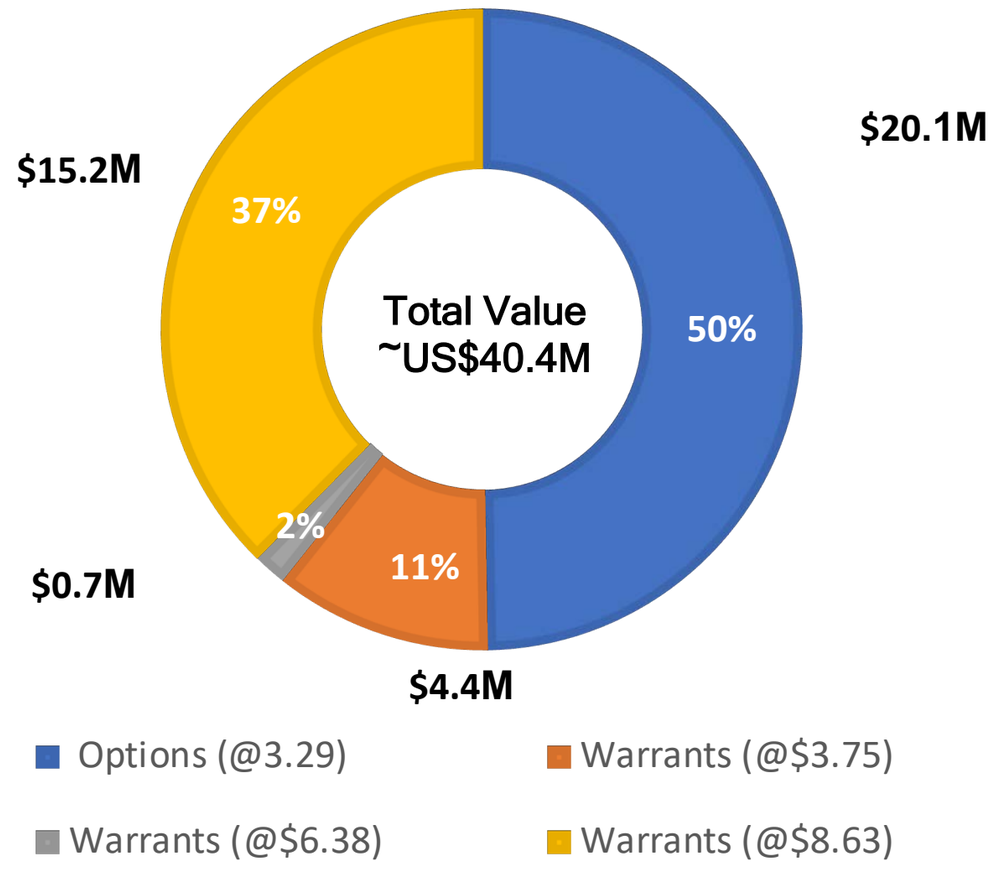
POET Capital Structure

- Cash at 12/31/21: US$21.3M; Cash Burn of ~$1.0M/month and NO Debt
- Closing Share Price Range (3-14-22 to 4-26-22): US$5.99 - $8.85 ($219M to $323M market cap)

Capital Structure



Value of Warrants & Options



Why Invest in POET Now?

- **Technology proven** out by leading companies
- **First rate management team** with public company track records
- **Disruptive technology** applying to large and known markets with **huge potential**
- Just entering **New Product Introduction / Commercialization** stage (revenue ramp in 2H 2022)
- **Not widely known** outside of Canada
- **Co-invested in China** with Sanan IC for manufacturing operations and local development and sales


POET
Technologies