Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
POET’s Vision and Mission Statements

**Vision:** To become the global leader in chip-scale integrated photonics solutions by deploying our Optical Interposer technology, enabling seamless integration of electronics and photonics for a broad range of vertical market applications.

**Mission:** Establish an industry leadership position in chip-scale integrated photonics with validated disruptive, IP protected, Optical Interposer platform components for Datacenter, 5G and Co-packaged Optics.
POET Technologies – Photonics Design & Development

POET Technologies Inc. (HQ)
Ontario, Toronto, CANADA

ODIS Inc.
Allentown, Pennsylvania

POET Technologies Pte. Ltd.
Singapore

POET Optoelectronics Shenzhen Co. Ltd
Shenzhen, PRC

Exchanges:  TSXV: PTK   OTCQX: POETF

PTK: TSXV | POETF: OTCQX

30 Employees

74 Patents and 12 Pending

02 Technology Offerings

03 Operating Subsidiaries

01 Joint Venture Company

POET Optical Interposer Platform

Device Design (Lasers) Packaging & Integration

Super Photonics Xiamen Co. Ltd.
Xiamen, PRC

Joint Venture Company

Technology Offerings

Operating Subsidiaries

Employees

Patents and Pending

01

02

03

01
Joint Venture for World Class Manufacturing and Scalability

Super Photonics Xiamen - POET and Sanan IC Joint Venture (JV)
- Vertically integrated manufacturing for Optical Engines
- Ability to rapidly scale production

Sanan IC | Xiamen Sanan Integrated Circuit Co., Ltd.
- Xiamen Torch High-Tech Industrial Development Zone
- US$500 million investment on 180,000 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)
### Strategic Supply Chain

- POET controls the supply chain to ensure performance, cost and delivery to customers.

<table>
<thead>
<tr>
<th>Optical Interposer</th>
<th>Photonic Devices</th>
<th>Electronics</th>
<th>Assembly &amp; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>POET Owned and Designed</td>
<td>Strategic Sourcing Co-Designed POET Specified</td>
<td>Off-the-Shelf or Customer Specified</td>
<td>Strategic Sourcing Co-Designed POET Specified</td>
</tr>
</tbody>
</table>

**Materials and Suppliers**:
- **SilTerra**
- **Almae Technologies**
- **DenseLight**
- **Xiamen Sansan Integrated Circuit Co., Ltd.**
Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
What is Photonics and Why is Photonics Important?

Photonics devices create, detect and manipulate light. Laser generated light is fundamental to sensing, computing, data and telecommunications - the biggest trends in computing today.

- Proliferation of Cloud Computing
- Growth of Artificial Intelligence
- Adoption of 5G and Edge
- Data Centers
- Network Switching
- Neuromorphic Optical Computing
- Communications Internet of Things
Photonic Transceivers Convert Digital Electric Signals Into Light Signals and Back Again

Photons and light waves compared to copper:
- 100X more data per second
- 10X lower power consumption
- 10X less heat produced
Conventional Approaches are Expensive and Slow

- Making reliable photonics devices are expensive in both capital and labor
  - Cost declines have not kept up with Moore’s Law- most photonics modules are built individually

- Multiple different components must be able to interconnect seamlessly

- Integration of components at wafer-scale has not been fully implemented even by the largest companies working for the past 20 years

<table>
<thead>
<tr>
<th>Photonics</th>
<th>Electronics</th>
<th>Optics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lasers</td>
<td>Controllers</td>
<td>Mirrors</td>
</tr>
<tr>
<td>Detectors</td>
<td>Amplifiers</td>
<td>Lenses</td>
</tr>
<tr>
<td>Modulators</td>
<td>ASIC’s</td>
<td>Prisms</td>
</tr>
<tr>
<td>Multiplexers</td>
<td>Monitors</td>
<td>Collimators</td>
</tr>
<tr>
<td>De-multiplexers</td>
<td>Micro-processors</td>
<td>Polarizers</td>
</tr>
<tr>
<td>Size Converters</td>
<td>Memory</td>
<td>Beam Splitters</td>
</tr>
</tbody>
</table>

- Controllers
- Amplifiers
- ASIC’s
- Monitors
- Micro-processors
- Memory

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

- Receiver subassembly
- Transmitter subassembly
- Housing subassembly
Why Integration Matters

- Materials, Assembly & Testing = 80% of total cost of an optical module, with the optical components and packaging representing => 70% of the total
- The opposite is true for semiconductors
- The only way to reduce optical module cost is to address the cost of optical components, materials, assembly and test.
- By applying proven wafer-scale semiconductor manufacturing techniques to achieve Integration, POET:
  - Dramatically reduces component cost
  - Improves size, power, cost, speed, reliability and scalability
  - Enables new functionalities

Breakdown of Optical Module Costs

Indirect Costs: 20%
Materials, Assembly & Test 80%
Total Cost 100%

Breakdown of Materials, Assembly & Test Costs

Electrical Components: 10%
Optical Components: 40%
Packaging: 50%

90% of Material, Assembly & Test Costs => 70% of Total Cost
POET’s Approach

POET took on the dual challenge of INTEGRATION and PLATFORM to develop a unique, disruptive and differentiating new entry into photonics markets.

**Integration** is the practice of combining different parts or functions so that they work together seamlessly.

A **platform** is a group of technologies that are used as a base upon which other applications, processes or technologies are developed.

*A popular example of the combination of Integration and Platform Technology*
From Platform to Products

“A product platform is not a product. It is a collection of common elements, especially the underlying core technology, implemented across a range of products.”

Product Platform Strategy:
- defining product generations
- supporting extensions
- creating derivatives
- enhancing capability

Expanding capabilities of the platform to enable next gen solutions
POET is doing for Photonics what Semiconductors did for Electronics - Achieving Lower Cost and Higher Performance through Device Integration and Wafer-Level Fabrication

The POET Optical Interposer™ is an integration platform that combines photonic, electronic and optical devices in the same chip-scale package - fabricated, assembled and tested all at wafer scale.
Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
POET’s Optical Interposer™ Platform
- A unifying hybrid optoelectronics WAFER SCALE integration platform

Photonics ; Optics ; Electronics

- Passive Optical Device Integration
- Interposer Functionality
- Micro Optic Assembly
Rethinking Conventional Photonics Assembly

Reducing Components; Reducing Capital; Reducing Time
Rethinking the Optical Transceiver

- Combining All Photonics / Optics Components into One Chip
- And building them hundreds at a time instead of one at a time, at wafer scale

<table>
<thead>
<tr>
<th>Competing Technologies</th>
<th>POET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco</td>
<td>Simpler BOM and reduced number of build/test steps</td>
</tr>
<tr>
<td>Finisar</td>
<td>Standard assembly technologies</td>
</tr>
<tr>
<td>AOI</td>
<td>Scalable for future higher density products</td>
</tr>
<tr>
<td>Innolight</td>
<td>Single Chip including RF connectivity</td>
</tr>
<tr>
<td>Kalam LS1</td>
<td>Discrete micro-optics or TOSA/ROSA approach</td>
</tr>
<tr>
<td></td>
<td>Lots of components, assembly and alignment</td>
</tr>
<tr>
<td></td>
<td>Limited scalability: no space for high channel count products</td>
</tr>
<tr>
<td></td>
<td>Limited cost scalability</td>
</tr>
</tbody>
</table>
The World’s Smallest and Lowest Cost 100G Optical Engine

- 4 x 25G DML Lasers, 4 High Speed Photodiodes, 4 Monitor Photodiodes, Multiplexers, DeMultiplexers, Power Taps and Fiber Attach - all on a 9mm x 6mm POET Optical Interposer platform

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
POET’s Optical Interposer - Low Cost AND High Performance

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

- **Dramatically lower module cost**: 25% - 40% less
- **Lower CAPEX investment for module assembly & test**: 1/10th of others (discrete or SiPh PIC based)
- **Chip-scale package**: Reduces power consumption
- **Wafer-level assembly and test**: Built 100’s at a time, not 1 at a time
- **Planar architecture**: Ease of production and flexibility in design
- **Platform technology**: Adaptable to multiple applications (e.g., 5G, AI, IOT)
Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
# Product Roadmap driven by Customer Engagement

## 100/200G CWDM4 Optical Engines
- **2020**: Pre-Alpha
- **Q1 2021**: Alpha
- **Q2 2021**: Beta
- **Q3 2021**: Production
- **Q4 2021**: Optical systems and module customer

## 400G LightBar Engine
- **2020**: Pre-Alpha
- **Q1 2021**: Beta
- **Q2 2021**: Alpha
- **Q3 2021**: Beta
- **Q4 2021**: Leading Optical systems customer

## 400G FR4 Receiver
- **2020**: Pre-Alpha
- **Q1 2021**: Alpha
- **Q2 2021**: Beta
- **Q3 2021**: Production
- **Q4 2021**: Optical module customer

## 400G FR4/DR Tx Optical Engines
- **2020**: Pre-Alpha
- **Q1 2021**: Alpha
- **Q2 2021**: Beta
- **Q3 2021**: Production
- **Q4 2021**: Multiple optical module customers
Presentation Outline

- Corporate Overview and Organization
- Photonics, Integration and Wafer-Scale Manufacturing
- Interposer Platform & Features
- Product Roadmap
- Market Opportunities
Market Application for POET’s Optical Interposer

- POET’s Optical Interposer can lower the cost and improve the performance of any photonics device targeted at the highest growth areas of computing today and in the future.

- Proliferation of Cloud Computing & HPC
- Growth of Artificial Intelligence
- Adoption of 5G and Edge

- Data Centers
- Network Switching
- Neuromorphic Optical Computing
- Communications Internet of Things
Initial Target Markets in Optical Transceivers

- Serviceable Available Market (SAM) for 100G, 200G and 400G Optical Transceivers*
  *does not include recently increased TAM estimates for 200GLR4
## POET Potential Customers

- Partial List of Potential Customers for Optical Engines for Optical Transceivers and for Co-Packaged Optics

<table>
<thead>
<tr>
<th>Transceiver Module</th>
<th>Optical System</th>
<th>Cloud Data Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVA</td>
<td>Accelink</td>
<td>Cisco</td>
</tr>
<tr>
<td>Delta</td>
<td>Cloudlight</td>
<td>Huawei</td>
</tr>
<tr>
<td>Molex</td>
<td>GigaL</td>
<td>Juniper</td>
</tr>
<tr>
<td>Eoptolink</td>
<td>HG</td>
<td>Acacia</td>
</tr>
<tr>
<td>Hisilicon</td>
<td>Huali</td>
<td>Arista</td>
</tr>
<tr>
<td>Source</td>
<td>Xgiga</td>
<td>Nokia</td>
</tr>
<tr>
<td>Hisense</td>
<td>Hengtong</td>
<td>AWS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Google</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Facebook</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AliBaba</td>
</tr>
</tbody>
</table>
## POET Opportunity

<table>
<thead>
<tr>
<th>Market Size SAM (peak 2021-28)</th>
<th>Development Partners</th>
<th>JV / Assembly &amp; Test Partner(s)</th>
<th>Potential Customers</th>
<th>Revenue Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2-3.5B annually</td>
<td>Tier 1 NA European</td>
<td>Sanan IC JV SuperPhotonics</td>
<td>Multiple module makers</td>
<td>$250M+ annually</td>
</tr>
<tr>
<td>$3-5B annually</td>
<td>Several in play</td>
<td>Sanan IC JV SuperPhotonics</td>
<td>Multiple module makers</td>
<td>$250M+ annually</td>
</tr>
<tr>
<td>$2-3B annually</td>
<td>Several in play</td>
<td>TBD</td>
<td>Cisco Arista Juniper</td>
<td>$250M+ annually</td>
</tr>
<tr>
<td>$3-5B annually</td>
<td>US-based Start-up</td>
<td>TBD</td>
<td>Nvidia HPE</td>
<td>$250M+ annually</td>
</tr>
</tbody>
</table>

**Notes:**
- Transceivers for Datacom
- 5G Networks
- Co-Packaged Optics
- Optical Computing and Edge Applications
- "TBD" indicates that the information is to be determined or decided.
Summary

- POET successfully transitioned from technology development to product development in the second half of 2020
- Data from prototype devices assembled at wafer-scale showing performance that exceeds internal expectations
- Super Photonics Xiamen provides ability to meet customer demand and to scale rapidly
- POET has an opportunity to build a $1 Billion annual revenue business in just the 4 application areas that we are working in today