



# **POET**

## **TECHNOLOGIES INC.**

**Management's Discussion  
and Analysis  
For the Year Ended December 31, 2017**



**POET Technologies Inc.**  
Suite 1107 – 120 Eglinton Avenue East  
Toronto, Ontario, Canada M4P 1E2  
Tel: (416) 368-9411 Fax: (416) 322-5075

## **MANAGEMENT’S DISCUSSION AND ANALYSIS FOR THE YEAR ENDED DECEMBER 31, 2017**

The following discussion and analysis of the operations, results, and financial position of POET Technologies Inc., (the “Company”) for the year ended December 31, 2017 (the “Period”) should be read in conjunction with the Company’s audited consolidated financial statements for the year ended December 31, 2017 and the related notes thereto both of which were prepared in accordance with International Financial Reporting Standards (“IFRS”). The effective date of this report is April 27, 2018. All financial figures are in United States dollars (“USD”) unless otherwise indicated. The abbreviation “U.S.” used throughout refers to the United States of America.

### ***Forward-Looking Statements***

This management discussion and analysis contains forward-looking statements that involve risks and uncertainties. It uses words such as “may”, “would”, “could”, “will”, “likely”, “expect”, “anticipate”, “believe”, “intend”, “plan”, “forecast”, “project”, “estimate”, and other similar expressions to identify forward-looking statements. Forward-looking statements are subject to a variety of risks and uncertainties which could cause actual events or results to differ from those reflected in the forward-looking statements, including, without limitation, risks and uncertainties relating to the early stage of the Company’s development and the possibility that future development of the Company’s technology and business will not be consistent with management’s expectations, difficulties in achieving commercial production or interruptions in such production if achieved, inherent risks of operating a manufacturing facility, including risks associated with supplier delays, factory uptime, inventory management and other operating uncertainties, the inherent uncertainty of cost estimates and the potential for unexpected costs and expenses, the uncertainty of profitability and failure to obtain adequate financing on a timely basis. The Company undertakes no obligation to update forward-looking statements if circumstances or Management’s estimates or opinions should change, except to the extent required by law. The reader is cautioned not to place undue reliance on forward-looking statements.

The Company is incorporated under the laws of the Province of Ontario. The Company’s shares trade under the symbol “PTK” on the TSX Venture Exchange in Canada and under the symbol “POETF” on the OTCQX in the U.S.

## **BUSINESS**

### **Overview**

We are an advanced semiconductor development and manufacturing company dedicated to enabling the integration of photonics and electronics through novel approaches to device design and packaging. We have developed, or are in the process of developing, solutions that provide dramatic reductions in the cost of key components of photonic devices. Through integration and the adaptation of silicon processing methods to photonic device fabrication, we believe that the Company can capture a meaningful portion of the market for photonics devices that address the need for increased bandwidth, speed, sensitivity and cost across a range of high growth data communications and photonic sensing applications. We believe that the integration of discrete functions onto fewer devices is the optimal way to lower cost, reduce size, limit power consumption and increase the performance, scalability and value of photonics devices, making opto-electronics a more viable economic proposition.

The cost of building silicon-based devices today contrasts sharply with the cost of building photonics-based devices. While the majority of the cost of building silicon-based devices is in fabricating the device on the wafer, the majority of the cost of building photonics devices today is in the packaging and testing process. It is inevitable that these costs will be reduced through integration. In addition, integration opens up entirely new markets for photonics, including on-board and on-chip data transfer (“inside the box”).

Until early to mid-2017, our Company had been focused on “monolithic” integration, based on a proprietary design fabricated into a single Gallium Arsenide (GaAs) chip that has all of the elements needed to communicate data at the speed of light, yet with the lower cost profile of copper. POET’s GaAs design integrates at least three essential discrete devices onto a single GaAs chip: a vertical-cavity surface-emitting laser (VCSEL), a photodetector and an electronic circuit based on either a thyristor or a heterostructure field-effect transistor (HFET).

In 2017 we began to develop solutions based on a novel “hybrid” integration approach, which combines Indium Phosphide (InP)-based photonics chips and dielectric-based waveguide devices into a single package. This approach enables the replacement of high-cost optical components, such as mirrors and lenses, with embedded dielectric passive devices, dramatically lowering the cost of data communications transceiver solutions for data center operators and telecom companies. Our ability to address hybrid integration is a direct result of our acquisitions, in 2016, of DenseLight Semiconductor Pte. Ltd. (“DenseLight”) based in Singapore, and BB Photonics, Inc. based in New Jersey.

By mid-2017 it became apparent that the majority of transceiver applications in the data center market was biased strongly in favor of InP-based solutions. This, and the fact that our GaAs development efforts faced a number of challenges that could only be solved by working closely with a well-resourced strategic partner, we decided to focus our own resources on hybrid integration, utilizing the unique capabilities that we acquired with DenseLight and BB Photonics. By late-2017, we demonstrated that we could dramatically reduce the cost of conventional transceivers through the integration of discrete devices employing a novel approach that we call an “Optical Interposer”.

POET’s Optical Interposer™ facilitates the co-packaging of electronics and optics in a single Multi-Chip Module (MCM), paving the way for “Photonics-in-a-package”. Based on our dielectric waveguide technology, the Optical

Interposer provides the ability to run electrical and optical interconnections side-by-side on the same interposer chip at a micrometer scale. Hybrid Integrated Photonics Packaging (HiPP) enabled by the Optical Interposer plays a critical role in improving electrical and thermal performance, power consumption and form factor of photonics sub-assemblies. The Optical Interposer currently forms an integral part of POET's hybrid integrated optical engines and leverages the manufacturing processes and unique capabilities of its dielectric waveguides.

## **Industry Background**

In the ten years since the introduction of the smartphone, people have fundamentally changed the way they communicate, socialize, and interact with themselves and the data around them. Today, smartphones and other such devices allow us to capture, create and communicate enormous amounts of content. The explosion in data, storage and information distribution is driving extraordinary growth in internet traffic and cloud services.

The expected growth in the networking and data communication market is the result of many factors, among them being, the growth of wireless and mobile traffic (which will account for two-thirds of total IP traffic by 2021<sup>1</sup>), social media activity, the progression of video transmission, the ramp of imaging such as virtual/augmented/mixed reality and 3D video, the continued migration to cloud storage, the propagation of sensors feeding the Internet of Everything, and the evolution of big data analytics and machine learning/artificial intelligence. These factors will continue to drive a long term increased demand for capacity and higher speeds.

Photonics has traditionally been employed to transmit data over long distances because light can carry considerably more content and data at faster speeds. Optical transmission becomes more energy efficient as compared to electronic alternatives when the transmission length and speed increase. As a natural consequence, optics are systematically replacing copper in much of the data center communication links.

Data center operators are increasing the size and scale of their facilities, while simultaneously looking to component suppliers for solutions capable of providing higher data transmission rates. Within data centers, data communications over distances of up to 2 km have already been transitioned from inherently lower speed copper cable to optical fibers. Furthermore, short reach communications, either rack-to-rack or within the rack as well as those requiring speeds of up to 100G, are now increasingly being converted from copper to optical cables.

Outside the Data Centers, future 5G build-out of mobile communications will drive speed and capacity requirements closer to the user with significant reduction in latency. Compared to 4G, 5G technology standard offers much faster download and upload speed, minimum delay in data communication and processing, as well as much higher density in device connections. 5G will enable advances in virtual reality, augmented reality, autonomous driving, high-definition video, and the Internet of Things, among others. 5G networks requires substantial capacity expansion for base stations, which is driven by three factors: more spectrum, higher density of base stations in each region, and higher spectral efficiency.

## **Photonics Markets**

The two target markets in which we currently sell or plan to sell products near-term are Photonic Sensing and Data Communications. The global photonics market is forecasted to grow at a compound average growth rate

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<sup>1</sup> Cisco *Visual Networking Index: Forecast and Methodology, 2016-2021*, June 6, 2017

(CAGR) of 8% to 12% through 2021, reaching an estimated \$54 billion.<sup>2</sup> This market includes Photonic Sensing (which consists of devices for test and measurement, navigation, LIDAR systems) and Data Communications (both telecom applications and optical data communications).

The growth of the overall Data Communications market is forecasted to grow at a 27% CAGR over the period 2015 to 2020 and is being driven largely by cloud data centers, which have a forecasted CAGR of 29.6% over the same period. This compares to traditional data centers at only a 9% CAGR<sup>3</sup>. The expected growth in the networking and data communication market is the result of many factors, including smartphone use, over-the-top video consumption, social networking and the “Internet of Things”. Increased consumer demand for data requires both data storage and data communications at higher speeds. As a result, data center operators are increasing the size and scale of their facilities, while simultaneously looking to component suppliers for solutions capable of providing higher data transmission rates. Within data centers, data communications over distances of up to 2km have already been transitioned from inherently lower speed copper cable to optical fibers.

Photonic transceivers will represent a \$25 billion market opportunity in 2025, according to *Oculi, llc*. The primary segments for photonic transceivers are Ethernet, wide area network (WAN) and dense wavelength division multiplexing (DWDM), all of which are predominantly addressed by InP-based optical technologies. Ethernet transceivers are forecasted to grow to \$7.4 billion by 2025 with 100G driving a majority of the growth. Within Ethernet, singlemode transceivers based on InP devices are forecasted to outgrow multimode transceivers based on GaAs devices by a factor of 6:1. Segmented by distance, the majority of growth is expected in the <10km segment (\$4.3 billion by 2025).<sup>4</sup>

Integrated photonic transceivers, incorporating approaches comparable to what POET has, are expected to overtake those using discrete components by 2021, growing from a current \$3.2 billion to \$20 billion in 2025<sup>5</sup>. Within this market, POET is focused on the highest growth segments, including Wavelength Division Multiplexing (WDM) for medium-reach (500m – 2km) Ethernet datacom connections and Wide Area Network protocols for long-reach or metro applications (2km – 10km). The majority of today’s discrete transceiver suppliers are shipping 100G transceivers in a 4x25G format, having developed assembly methods for placing multiple laser chips on one substrate and coupling the output into one fiber using micro-optic filters and other elements. POET’s approach is to use the Optical Interposer to combine multiple active and passive devices into a single package, or “optical engine”, which when combined with control electronics and an outer housing, constitutes a pluggable optical transceiver. We plan to sell our optical engines to manufacturers and assemblers of optical transceiver modules. We believe our optical engine solution will be cost competitive with conventional modules as well as silicon photonics in the <2km data center market, and it should be scalable to 10km, and support 200G and 400G datacom speeds.

In addition to building optical engines for transceivers, we believe the Company has the opportunity to sell individual components to other suppliers of optical transceivers, including single-chip local area network (LAN) wavelength division multiplexing (WDM) lasers, receiver optical sub-assemblies (ROSA) and transmit optical sub-assemblies (TOSA) in advance of selling optical engines for transmit and receive assemblies (TXRX).

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<sup>2</sup> MarketsandMarkets *Photonics Market by Application – Global Forecasts to 2021*, September 2016

<sup>3</sup> Cisco *Global Cloud Index, 2015-2020*, November 2016

<sup>4</sup> Oculi, llc, *Estimates for 2025 commissioned by POET Technologies, Inc.*, March 2017

<sup>5</sup> Ibid

The Photonics Sensing market<sup>6</sup> represents a Total Available Market (“TAM”) of approximately \$23 billion of system sales and comprises the following segments: 1) Test & Measurement (TAM: \$10 billion), which includes monitoring equipment for communication, components and material testing, as well as sensing equipment such as distributed temperature and strain measurement; 2) Structural Health Monitoring (TAM: \$6 billion), which includes devices to monitor the power grid, and fiber optic-based sensors in rail lines, nuclear facilities, etc.; 3) Guidance and Navigation (TAM: \$4.5 billion), which includes navigational guidance systems, gyrocompasses, and optical-based systems for navigating self-driving automobiles; and 4) Medical and Health Care (TAM: \$2.5 billion), which includes devices for non-invasive blood glucose monitoring, pulse-oximeter devices, and ophthalmic examination. Component sales to systems providers typically represent approximately 10% of system market TAM’s. We plan to address these high growth markets with component sales in a combination of current and expected new products from our DenseLight subsidiary.

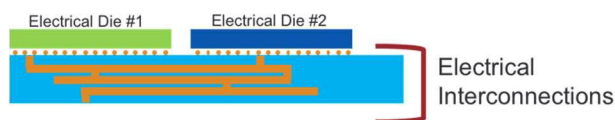
### **POET’s Optical Interposer Platform**

The Optical Interposer extends the functionality of traditional electrical interposers – by adding a parallel lane of optical interconnections to an electrical interposer. Optical Interposers enable the concept of “photonics-in-a-package” by eliminating traditionally used micro-optics such as lenses, filters and prisms from the optical assembly and by further simplifying fiber alignment and coupling.

POET’s Optical Interposer utilizes our proprietary dielectric waveguide technology. The unique manufacturing process and capabilities of this technology enables us to fabricate an optical communication fabric within the context of a traditional CMOS process. Consequently, it enables a novel and differentiated extension to the more traditional electrical interposers.

The waveguides incorporated in POET’s Optical Interposers perform more than just waveguide transmission functions. They act as gratings, splitters, couplers and allow for manipulation of the light with built in functionality suited to the application. For example, POET’s 100G family of Optical Interposer would include gratings that both function to enable narrow line width operation of its light sources and to perform critical Wavelength Division Multiplexing (WDM) operations.

### **A Typical Electrical Interposer**

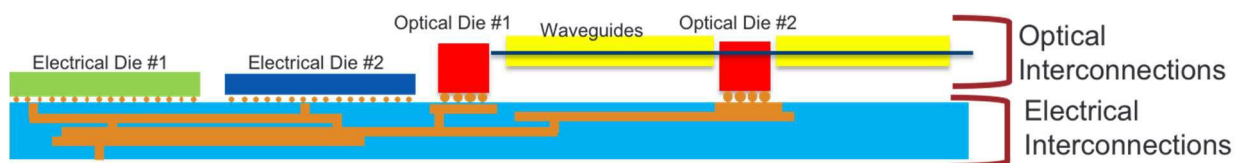


Shown above is a typical cross-section of an electrical interposer that enables a closer placement of electronic chips and minimizes communication lengths.

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<sup>6</sup> Global Market Insights *Optical Sensors Market Size By Product, By Application, Industry Analysis Report, Regional Outlook, Application Potential, Price Trends, Competitive Market Share & Forecast, 2016 – 2024*, August 2016

## POET's Optical Interposer



In much the same way as the electrical interposer incorporates electrical passive functionality, the POET Optical Interposer incorporates passive optical functionality. Furthermore, the Optical Interposer enables the conversion of electrical signals to optical signals and the manipulation and transmission of these optical signals outside the package.

POET's Optical Interposer provides the following advantages compared to conventional optical modules:

- ✓ Wafer-level integration into silicon
- ✓ Waveguides formed and integrated with embedded passive optical components (SSC, mux-demux, filters, waveguides) at chip level
- ✓ Ultra-low loss waveguide dielectric with high coupling efficiency
- ✓ Pick and place assembly and passive alignment of components
- ✓ Elimination of lenses and active alignment
- ✓ Athermal waveguide dielectric allows multi-channel scalability
- ✓ Wafer-level hermetic sealing, testing and burn-in of active components to produce known good die
- ✓ Small form factor and platform architecture readily scalable
- ✓ High frequency metal traces managed in the dielectric platform
- ✓ Fully compatible with conventional CMOS processing allowing integration with complex electronics at chip or module level

Compared to semiconductors, where packaging accounts for 10% of the final die cost, packaging and assembly is generally 80-90% for a photonic die. POET's Optical Interposer represents a new and potentially disruptive approach to photonics packaging and assembly that could allow more functionality to be integrated into a single package, similar to the system-in-package (SiP) trends observable in the industry today.

### Our Strategy

Our vision is to become a global leader in photonics by deploying an Optical Interposer-based approach to the integration of photonics devices into a wide variety of vertical market applications. Our strategy includes the following key elements:

· *Introduce the Optical Interposer concept to suppliers of transceivers and data center operators and form commercial partnerships for product development.* Because of the magnitude of the cost savings that may be derived from the use of POET's optical engines for transceiver applications, we expect to generate significant interest among both the suppliers of transceiver modules and their ultimate customers, the data center operators. In addition, the POET Optical Interposer provides a straightforward and cost-effective path to higher speed transceivers, including up to 400G and higher, thus providing a single platform that can span several device generations. We anticipate that several companies will be interested in pursuing commercial partnerships with POET in order to qualify and design-in our optical engines.

· *Promote the POET Optical Interposer as a true platform technology across several photonic applications and markets.* The POET Optical Interposer is designed to be a flexible platform for the combination or integration of various photonic and electronic components. The anticipated low cost makes it suitable for applications like automotive LIDAR. The compatibility of the Optical Interposer manufacturing process with standard silicon CMOS processing opens up a wide variety of other applications where high-speed data communications is needed, such as integration with ASICs, graphics generators and high-speed switches.

· *Pursue multiple potential sources of non-product revenue and strategic partnerships.* In addition to product sales, we have been pursuing Non-Recurring Engineering ("NRE") revenues from end-use customers and/or from strategic partners. In particular, we believe our 100/200/400G transceiver components represent a uniquely attractive opportunity for collaborative development with a strategic partner(s). We also believe that the continued development of our GaAs platform is dependent on securing a strategic partner.

· *Continue to invest in our capabilities and infrastructure.* We intend to continue to invest in new products, new technology and our production infrastructure and facilities to maintain and strengthen our competitive position. Our R&D programs in Singapore are partially reimbursed by the Singapore Economic Development Board, whose support will help to defer the costs associated with bringing innovative new products to market.

· *Selectively pursue other opportunities that leverage our existing expertise.* Our expertise in designing and manufacturing photonics devices, both discrete and integrated, positions us well to pursue applications in high growth markets and our Singapore operation is ideally located to support customers in Asia, where much of the growth in photonics is occurring.

· *Pursue complementary strategic alliance or acquisition opportunities.* We intend to evaluate and selectively pursue strategic alliances or acquisition opportunities that we believe will accelerate our penetration of specific applications or vertical markets with our technology or products.

## Our Products

- We are currently engaged in the development of 100Gbs ROSA (Receiver Optical Sub-Assemblies) and TOSA (Transmitter Optical Sub-Assemblies) for 100G Transceiver assemblies.

We expect our InP-based solutions from our DenseLight subsidiary will add to the Company's current and future product portfolio, including:

- Broadband Super-Luminescent LEDs (Light Emitting Diodes)
- Narrow Linewidth Lasers
- DFB (Distributed Feedback) Lasers for Data Communications
- High Power ELEDs (Edge Emitting Light Emitting Diodes)



- Integrated CWDM (Coarse Wavelength Division Multiplexing) Solutions

#### Intellectual Property

We have 57 issued patents and 12 patent applications pending, including seven related to our optical interposer platform. The patents cover device structures, underlying technology, applications of the technology and fabrication processes. We believe these patents provide a significant barrier to entry against competition, along with trade secrets and know-how acquired from DenseLight and BB Photonics. We intend to continue to apply for additional patents in the future. Currently, we are working on the design of integrated devices, manufacturing processes, and products for data communication applications in the data center market, along with products for photonic sensing markets that employ novel packaging technologies.

#### Fabrication and Assembly Capabilities

We provide one-stop design and manufacturing solutions, from photonics design and simulation, epitaxial growth, wafer fabrication, chip production, in-line optical coating, sub-mounting, photonic measurements, product testing and screening. We are operationally ready for responsive prototyping and quality production. The 50,000 sq. ft. purpose-built facility in Singapore houses our R&D, product design and manufacturing operations under one roof. Its 15,000 sq. ft. clean room is fully equipped for enabling vertically integrated volume manufacturing, from wafer fabrication to test and packaging. We are ISO9001 certified in Singapore processing Indium Phosphide (InP) and Gallium Arsenide (GaAs) based opto-electronic devices and photonic integrated circuits through our in-house wafer fabrication and assembly & test facilities.

We have an experienced team with deep know-how in GaAs and InP semiconductors wafer processing and we continue to build on this technical base. Together with our operationally ready manufacturing and photonics design center, various ODM and design-in programs can be supported for both discrete and integrated optical components.

#### Summary for 2017

Revenue was \$2,794,044 for the year ended December 31, 2017 and gross margin for the Period was \$1,451,353 or 52%. Reported revenue and gross margin for 2016 was \$1,861,747 and \$915,746 or 49% respectively. It is important to note, however, that revenue and gross margin for the comparable period in 2016 was only reported since the acquisition of DenseLight on May 11, 2016. Our net loss from operations, before taxes for the year ended December 31, 2017 was \$13,095,737 compared to a net loss from operations, before taxes of \$13,431,941 in 2016.

#### *Significant Events and Milestones During 2017*

In 2017, we continued to execute on our stated strategic plan. We achieved the following significant milestones during the first half of 2017:

- 1) On January 16, 2017, the Company announced certain organizational changes that included the addition of Rajan Rajgopal as the president and general manager of DenseLight and Soma Sankaran as vice president of sales for the Asia-Pacific region.
- 2) On January 31, 2017, the Company announced the development of micro multiplexer and de-multiplexer

solutions. The Company also unveiled its next generation Constellation Series of Narrow Linewidth Laser solutions for test and measurement applications.

- 3) On February 1, 2017, the Company announced the appointment of David Lazovsky as Executive Chairman of the Board of Directors.
- 4) On April 3, 2017, the Company announced that it successfully demonstrated the functionality of the VCSEL for the integrated GaAs opto-electronic platform.
- 5) On August 8, 2017, the Company announced that announced that Rodman & Renshaw, a unit of H.C. Wainwright & Co. LLC, initiated research coverage on the Company in a detailed report published on August 7, 2017.
- 6) On September 5, 2017, the Company announced the appointment of Jean-Louis Malinge to the Board of Directors. The Company also announced that Ajit Manocha, who served on the Board from July 2014, resigned from the Board to devote his time to his new role as president and CEO of SEMI. Mr. Malinge currently serves as partner to ARCH Venture Partners an early-stage venture capital firm with nearly \$2 billion under management. Additionally, he also serves as a managing director for YADAIS, a leading consulting firm in the photonics and telecommunications industries, and is a board member of EGIDE SA, which designs, manufactures and sells hermetic packages for the protection and interconnection of several types of electronic and photonic chips.
- 7) On September 6, 2017, the Company announced that it will start sampling high-power, continuous wave 1310nm Distributed Feedback (DFB) lasers for 100G Silicon Photonics applications in the fourth quarter of 2017. During this this time frame, the Company will also begin sampling long wavelength 1650nm DFB lasers for the Test and Measurement, Optical Time Domain Reflectometry (OTDR) and Photonics/Biomedical sensing markets.
- 8) On September 7, 2016, the Company announced the availability of Avalanche Photodiodes (APD) and PIN Photodiodes (PIN) for the 10G Datacom and Telecom markets. In addition, the Company also began sampling its Monitor Photodiode (MPD) arrays for applications in 100G datacom applications.
- 9) On September 8, 2017, the Company announced that it introduced a new family of its specialized external cavity narrow linewidth (NLW) laser products with enhanced capabilities. These new NLW lasers are assembled in integrated laser modules (ILM) and provide feature rich extensions to the existing BF series ILMs.

### ***Summary of Quarterly Results***

Following are the highlights of financial data of the Company for the most recently completed eight quarters, which have been derived from the Company's consolidated financial statements prepared in accordance with IFRS:

	<u>Dec. 31/17</u>	<u>Sep. 30/17</u>	<u>Jun. 30/17</u>	<u>Mar. 31/17</u>	<u>Dec. 31/16</u>	<u>Sep. 30/16</u>	<u>Jun. 30/16</u>	<u>Mar. 31/16</u>
Sales	\$ 717,692	\$ 715,420	\$ 648,382	\$ 712,550	\$ 423,461	\$ 861,545	\$ 576,741	\$ -
Cost of sales	385,456	348,187	320,857	288,191	346,462	318,976	280,563	-
Research and development	1,661,887	1,078,934	1,186,042	1,147,003	1,104,733	581,354	576,073	530,469
Depreciation and amortization	616,514	559,334	558,919	540,393	643,344	550,420	239,958	87,844
Professional fees	203,372	98,101	167,726	155,742	96,009	207,220	272,287	140,200
Wages and benefits	698,814	625,676	604,608	645,880	586,596	676,700	1,054,413	483,169
Management and consulting fees	42,439	42,877	40,330	103,931	51,303	230,352	172,401	157,805
Stock-based compensation <sup>(1)</sup>	1,032,158	1,088,170	159,783	894,813	903,253	1,019,970	887,990	1,259,051
General expenses and rent	591,462	567,721	653,933	547,052	758,947	508,178	546,626	260,764
Impairment and other loss	-	-	-	-	29,807	-	-	80,453
Change in fair values	-	-	-	-	-	(283,130)	-	-
Other (income), including interest	<u>(1,599,170)</u>	<u>(4,990)</u>	<u>(142,557)</u>	<u>(19,807)</u>	<u>(19,647)</u>	<u>(11,473)</u>	<u>(14,950)</u>	<u>(20,802)</u>
Net loss before taxes	<u>\$ 2,915,240</u>	<u>\$ 3,688,590</u>	<u>\$ 2,901,259</u>	<u>\$ 3,590,648</u>	<u>\$ 4,077,346</u>	<u>\$ 2,937,022</u>	<u>\$ 3,438,620</u>	<u>\$ 2,978,953</u>

(1) Stock based compensation allocated between General & Administrative and Research & Development issuances are combined for MD&A purposes. For financial statement presentation purposes, stock-based compensation is split between *General & Administrative* and *Research & Development*.

### ***Explanation of Quarterly Results for the three months ended December 31, 2017 ("Q4 2017") compared to the same three-month period in the prior year ("Q4 2016")***

Net loss before taxes for Q4 2017 was \$2,915,240 compared to a net loss before taxes of \$4,077,346 in Q4 2016, a 29% decrease in net loss before taxes. The following discusses the significant variances between Q4 2017 and Q4 2016.

During Q4 2017, the Company reported revenue of \$717,692 through its DenseLight subsidiary compared to \$423,461 in Q4 2016, a 70% increase. Sales in Q4 2016 were unusually low due to backlog pushed into 2017 resulting from production challenges with one large customer. Expected Q4 2016 NRE was also delayed and was not recognized until 2017. Q4 2017 revenue represents the consistent quarter over quarter revenue for the Company's sensing products. The unusually low revenue in Q4 2016 resulted in gross margin of 18% as compared to 46% in Q4 2017.

Research and development ("R&D") increased by 50% or \$557,154 to \$1,661,887 in Q4 2017 from \$1,104,733 in Q4 2016. Since the acquisition of DenseLight and BB Photonics in May and June of 2016 respectively, the Company has systematically increased its R&D activities in an effort to bring new products to market and expand its product portfolio. As a result of increased R&D spending in Q4 2017, the Company announced the development of its new POET Optical Interposer Platform and demonstrated the functionality of PIN photodetectors targeting 100G to 400G optical transceivers. New skilled technical human resource represents the largest area of increase in R&D.

Professional fees in Q4 2017 increased by 112% or \$107,363 to \$203,372 from \$96,009 in Q4 2016. Increased professional services were required as the Company initiated co-development partnerships for activities disclosed in early 2018.

General expenses and rent decreased by 22% or \$167,485 to \$591,462 in Q4 2017 from \$758,947 in Q4 2016, primarily resulting from lower repairs and maintenance during the quarter as compared to Q4 2016.

Wages and benefits increased by 19% or \$112,218 from \$586,596 in Q4 2016 to \$698,814 in Q4 2017. The increase is a result of the new employees and other payroll related obligations.

Non-cash stock-based compensation increased by 14% or \$128,905 to \$1,032,158 during Q4 2017 from \$903,253 in Q4 2016. The valuation of stock options is driven by a number of factors including the number of options granted, the strike price and the volatility of the Company's stock. The stock option expense is dependent on the timing of the stock option grant and the amortization of the options as they vest. The stock options vest in accordance with the policies determined by the Board of Directors at the time of the grant consistent with the provisions of the Stock Option Plan, as amended (the "Plan").

Other income in Q4 2017 was \$1,599,170 as compared to \$19,647 in Q4 2016. The Company is entitled to a recovery of certain qualifying expenses from the Economic Development Board (EDB) in Singapore. The increase is a result of both collected recoveries and an amount accrued during 2017 to be received in 2018. During Q4 2016 anticipated EDB recoveries were not accrued as the company did not have sufficient experience with the EDB recovery process to confidently accrue the recovery.

***Explanation of the results for the year ended December 31, 2017 compared to the same twelve-month period in the prior year (the "prior-year")***

Net loss before taxes for the twelve-month period ended December 31, 2017 was \$13,095,737 compared to net loss before taxes of \$13,431,941 for the twelve months ended December 31, 2016, a 2.5% increase. The loss before taxes for the year ended December 31, 2017 includes the operations of DenseLight and BB Photonics for the entire year, while the loss for the prior-year reflected the operations of the Company with those subsidiaries for less than the full twelve months (i.e., from May 11, 2016 for DenseLight and June 22, 2016 for BB Photonics).

During the twelve-month period ended December 31, 2017, the Company reported revenue of \$2,794,044 through its DenseLight subsidiary compared to revenue of \$1,861,747 for the same period in 2016, a 50% increase. Revenue for the period ended December 31, 2017 was for twelve months, while the revenue in 2016 was only from May 11, 2016 through December 31, 2016.

R&D increased by 82% or \$2,281,237 to \$5,073,866 in 2017 from \$2,792,629 in 2016. R&D costs in 2016 included the activities of POET for the full twelve-month period and R&D of DenseLight and BB Photonics only from May 11, 2016 and June 22, 2016, respectively. The twelve months of 2017 include R&D costs for the GaAs platform and the programs in InP integrated dielectrics and wafer-level packaging all associated with the Company's efforts to expand its product portfolio in datacom. In addition to 2016 costs only representing R&D costs of a partial year for DenseLight and BB Photonics, increased HR and related costs in 2017 also contributed to the increase over the prior year.

General expenses and rent increased by 14% or \$285,653 to \$2,360,168 in 2017 from \$2,074,515 in 2016. This increase was also a result of shortened activity during the prior-year related to the dates of acquisition of DenseLight and BB Photonics (i.e., May 11, 2016 and June 22, 2016, respectively).

Non-cash stock-based compensation decreased by 22% or \$895,340 to \$3,174,924 in 2017 from \$4,070,264 in 2016. Departing employees and consultants who had unvested stock options contributed to the substantial reduction in 2017, as their unvested options were returned to the Company. The valuation of stock options is driven by a number of factors including the number of options granted, the strike price and the volatility of the Company's stock. The stock option expense is dependent on the timing of the stock option grant and the

amortization of the options as they vest. The stock options vest in accordance with the policies determined by the Board of Directors at the time of the grant consistent with the provisions of the Stock Option Plan, as amended (the “Plan”).

Management and consulting fees decreased by 62% or \$382,284 from 2016. The expense in 2017 was \$229,577 as compared to \$611,861 in 2016. The resignation of Mr. Manocha from the position of Executive Chairman of the Board in February 2017 contributed to the decrease. This reduction in management and consulting fees was partially offset by an increase in wages and benefits for the compensation paid to Mr. Lazovsky who replaced Mr. Manocha as the Executive Chairman of the Board. Mr. Lazovsky is paid \$200,000 annually in his capacity as Executive Chairman as compared to \$500,000 that was previously paid to Mr. Manocha

Wages and benefits decreased by 8% or \$225,900 to \$2,574,978 in 2017 compared to \$2,800,878 in the prior-year. Three principal factors contributed to the decrease: (1) 2016 wages included an accrued bonus of \$550,000 to the CEO and the former COO which was deferred to 2017. \$450,000 due to the CEO was paid in 2017 and \$100,000 due to the former COO was subsequently reversed; (2) 2016 wages also included wages paid to the former Executive Co-Chairman of the Board of \$136,655; and (3) 2016 wages included twelve months of wages for the former COO, Dr. Deshmukh who resigned in Q1 2017. These decreases were offset by: (1) the inclusion of the compensation of the new Executive Chairman of the Board; and (2) wages of DenseLight and BB Photonics for the entire 2017 as compared to only the period from May 11, 2016 and June 22, 2016 respectively.

Depreciation and amortization increased by 50% or \$753,594 to \$2,275,160 in 2017 from \$1,521,566 in the prior-year. The increase was a result of depreciation and amortization related to the property and equipment, patents and licenses, and intangible assets acquired during and after the acquisition of DenseLight and BB Photonics in 2016. The Company acquired \$11,118,460 of property and equipment, patents and licenses and intangible assets since May 2016.

Other income in 2017 was \$1,766,524 as compared to \$66,872 in 2016. The Company is entitled to a recovery of certain qualifying expenses from EDB in Singapore. The increase is a result of both collected recoveries and an amount accrued in 2017 to be received in 2018. During 2016 anticipated EDB recoveries were not accrued as the company did not have enough experience with the EDB recovery process to confidently accrue the recovery.

### ***Explanation of Material Variations by Quarter for the Last Eight Quarters***

#### ***Q4 2017 compared to Q3 2017***

R&D increased by 54% or \$582,953 to \$1,661,887 in Q4 2017 from \$1,078,934 in Q3 2017. Head count and recruitment costs were the largest contributing factors to the period over period increase. As a result of increased R&D spending in Q4 2017, the Company announced the development of its new POET Optical Interposer Platform and demonstrated the functionality of PIN photodetectors targeting 100G to 400G optical transceivers. Skilled technical human resource represents the largest area of increase in R&D.

Professional fees in Q4 2017 increased by 107% or \$105,271 to \$203,372 from \$98,101 in Q3 2017. Increased professional services were required as the Company initiated co-development partnerships for activities disclosed in early 2018.

Wages and benefits increased by 12% or \$73,138 from \$625,676 in Q3 2017 to \$698,814 in Q4 2017. The increase is a result of the new employees and other payroll related obligations as the Company ramped its technical resource and production-related capabilities.

Other income in Q4 2017 was \$1,599,170 as compared to \$4,990 in Q3 2017. The Company is entitled to a recovery of certain qualifying expenses from EDB in Singapore. The increase is a result of both collected recoveries and an amount accrued in 2017 to be received in 2018.

### Q3 2017 compared to Q2 2017

Sales were \$67,038 higher to \$715,420 in Q3 2017 from \$648,382 Q2 2017. The increase is a function of shipping more units in Q3 2017 than in Q2 2017.

Professional fees decreased by 42% or 69,625 to \$98,101 in Q3 2017 from \$167,726 in Q2 2017. The Company had less professional service activity in Q3 2017 than in Q2 2017, including lower recruitment fees, legal and audit-related expenses.

Non-cash stock-based compensation increased by \$928,387 or 581% to \$1,088,170 in Q3 2017 from \$159,783 in Q2 2017. The departure of employees and consultants who had unvested stock options contributed to the unusually low expense in Q2 2017. The valuation of stock options is driven by a number of factors including the number of options granted, the strike price and the volatility of the Company's stock. The stock option expense is dependent on the timing of the stock option grant and the amortization of the options as they vest. The stock options vest in accordance with the policies determined by the Board of Directors at the time of the grant consistent with the provisions of the Stock Option Plan, as amended (the "Plan").

General expenses and rent decreased by \$86,212 or 13% to \$567,721 in Q3 2017 from \$653,933 in Q2 2017. In Q2 2017, the Company had significant facility and factory maintenance costs. While the company continues to have facility and factory maintenance costs on a period over period basis, the expense was lower in Q3 2017 than Q2 2017.

### Q2 2017 compared to Q1 2017

Gross margin was 51% in Q2 2017 as compared to 60% in Q1 2017. The reduced gross margin was a result of lower absorption of factory costs from reduced revenue of \$648,382 in Q2 2017 compared to \$712,550 in Q1 2017. Cost of sales includes certain fixed costs that do not change in a linear fashion with revenue.

Management and consulting fees decreased by \$63,601 or 61% to \$40,330 in Q2 2017 from \$103,931 in Q1 2017. The resignation of Mr. Manocha as Executive Chairman of the Board contributed to this the decrease.

Non-cash stock-based compensation decreased by \$735,030 or 82% to \$159,783 in Q2 2017 from \$894,813 in Q1 2017. The departure of employees and consultants who had unvested stock options contributed to the substantial reduction from Q1 2017.

General expenses and rent increased by \$106,881 or 20% to \$653,933 in Q2 2017 from \$547,052 in Q1 2017. In Q2 2017, the Company had additional facility and factory maintenance.

### Q1 2017 compared to Q4 2016

Sales in Q1 2017 were \$712,550 as compared to \$423,461 in Q4 2016. Backlog from 2016 contributed to increased Q1 sales, along with \$80,000 of NRE revenue. Gross margin percent for the quarter was 60% compared to the 18% in Q4 2016.

R&D increased by \$42,270 or 4% to \$1,147,003 in Q1 2017 from \$1,104,733 in Q4 2016. Development costs of \$272,000, which were capitalized in prior periods, were expensed to R&D in Q4 2016 as the Company no longer felt those capitalized costs continued to meet the criteria for capitalization. The Company did not expense any capitalized R&D costs in Q1 2017.

Professional fees increased by \$59,733 or 62% to \$155,742 in Q1 2017 from \$96,009 in Q4 2016. Professional fees relating the Company's year-end audit contributed to the quarter over quarter increase.

Wages and benefits increased by 10% or \$59,284 to \$645,880 Q1 2017 from \$586,596 in Q4 2016. Wages and benefits were lower in Q4 2016 due to the reversal of an accrued and unpaid retention bonus of \$100,000 to the former COO in Q1 2017. Additionally, Q1 2017 wages and benefits included the wages of the new CFO, the new

President of DenseLight, the new VP of Sales for the Asia-Pacific region and the new Executive Chairman of the Board.

General expenses and rent decreased by \$211,895 or 28% to \$547,052 in Q1 2017 from \$758,947 in Q4 2016. General expenses were higher in Q4 2016 due to the ancillary costs such as travel, and other administrative costs associated with the \$9.3 million equity financing in Q4 2016.

Management and consulting fees increased by \$52,628 or 103% to \$103,931 in Q1 2017 from \$51,303 in Q4 2016. A reclassification of \$75,000 of consulting fees paid to a director in Q4 2016 from management and consulting to the cost of financing resulted in the lower expense in this category in Q4 2016.

#### Q4 2016 compared to Q3 2016

Sales in Q4 2016 were \$423,461 compared to \$861,545 in Q3 2016. The reduction in Q4 sales was a result of backlog pushed into Q1 2017 resulting from production challenges with one large customer. Expected Q4 NRE was also delayed and was not recognized until Q1 2017.

R&D expenses increased by \$523,379 or 90% to \$1,104,733 in Q4 2016 compared to \$581,534 in Q3 2016. Development costs of \$272,000, which were capitalized in prior periods, were expensed to R&D in Q4 2016 as the Company no longer felt those capitalized costs continued to meet the criteria for capitalization. Q3 2016 R&D was also limited in scope because of certain export restrictions. Those restrictions were resolved, resulting in the Company incurring costs in Q4 2016 that would have been incurred more evenly throughout the year.

Q4 2016 professional fees were \$96,009 compared to \$207,220 in Q3 2016. The quarter over quarter reduction of \$111,211 or 54% was a result of the Company settling most issues in Q3 and earlier periods relating to corporate acquisitions, financing and the export issues that required professional advisors.

Wages and benefits were \$586,596 in Q4 2016 and \$676,700 in Q3 2016. The reduction of \$90,104 or 13% was from cost savings resulting from the 10-20% temporary non-recoverable reduction in US management compensation, a recovery of an accrued but unpaid retention bonus of \$100,000 to the former COO, and staff reductions at DenseLight.

The reduction in management and consulting fees of \$179,049 or 78% to \$51,303 in Q4 2016 from \$230,352 in Q3 2016 was a result of a 10% to 20% reduction in management fees to head-office-based executives, along with a reclassification of \$75,000 of consulting fees paid to a director in Q3 2016. The fees were paid in Q3 2016 and classified as general consulting fees but were reclassified to financing cost in Q4 2016.

General expenses and rent increased by \$250,769 or 49% to \$758,947 in Q4 2016 from \$508,178 in Q3 2016. The increase included ancillary costs such as travel and other administrative costs related to the \$9.3M financing that were not included as finance costs.

#### Q3 2016 compared to Q2 2016

Sales in Q3 2016 were wholly related to the sales of products and services of DenseLight. Sales increased by \$284,804 or 49% to \$861,545 in Q3 2016 from \$576,741 in Q2 2016. The increase in sales also resulted in increased gross margin to 63% in Q3 2016 from 51% in Q2 2016. The increase in gross margin resulted from better absorption of fixed costs with increased revenue.

Q3 2016 was the first full quarter since the acquisition of DenseLight and BB Photonics. Depreciation increased by \$310,462 or 129% to \$550,420 in Q3 2016 from \$239,958 in Q2 2016 due primarily to the depreciation and amortization expense on property and equipment acquired through the acquisition of DenseLight and BB Photonics. The Company also acquired additional property and equipment during Q3 2016. Depreciation on the new property and equipment also contributed to the increase over Q2 2016.

Professional fees decreased by \$65,067 or 24% to \$207,220 in Q3 2016 from \$272,287 in Q2 2016. Professional fees in Q2 2016 included the cost of acquiring both DenseLight and BB Photonics. Professional fees in Q3 2016

were also higher due to professional fees incurred in dealing with export issues and responding to regulatory inquiries.

Wages and benefits decreased by \$377,713 or 36% to \$676,700 in Q3 2016 from \$1,054,413 in Q2 2016. The expense in Q3 2016 reflects a full quarter operating wages of DenseLight that was acquired on May 11, 2016, while representing only a partial quarter in Q2. Q2 2016 wages and benefits included the accrued but unpaid executive retention bonuses totaling \$550,000 to the CEO and COO that were payable in mid-June 2016 at the one-year anniversary date of commencement of the respective employment terms, but voluntarily deferred by them and paid in 2017. The \$100,000 bonus to the COO was reversed in Q1 2017.

Management and consulting fees increased by \$57,951 or 34% to \$230,352 Q3 2016 from \$172,401 in Q2 2016. The Q3 2016 expense included \$75,000 of fees paid to a director for consulting services, an expense which was later reclassified to financing costs in Q4 2016.

General expenses and rent decreased by \$38,448 or 7% to \$508,178 in Q3 2016 from \$546,626 in Q2 2016. Q3 2016 included a full quarter of operating costs of DenseLight, while the Q2 2016 expense included all the ancillary costs relating to the acquisitions of both DenseLight and BB Photonics.

Non-cash stock-based compensation increased by \$131,980 or 15% to \$1,019,970 in Q3 2016 from \$887,990 in Q2 2016. The valuation of stock options is driven by a number of factors including the number of options granted, the strike price and the volatility of the Company's stock. The stock option expense is dependent on the timing of the stock option grant and the amortization of the options as they vest. The stock options vest in accordance with the policies determined by the Board of Directors at the time of the grant consistent with the provisions of the Stock Option Plan, as amended (the "Plan").

Shareholders of DenseLight were entitled to an additional 1,000,000 shares of the Company if DenseLight met or exceeded a certain revenue target by December 31, 2016. On the date of the acquisition, this contingent consideration was valued at \$283,130. As of September 30, 2016, it was determined that DenseLight would not meet the revenue target, so the contingent consideration was reclassified to earnings during Q3 2016.

#### Q2 2016 compared to Q1 2016

The Company had sales of \$576,741 in Q2 2016 but no sales in Q1 2016. The sales in Q2 2016 were wholly related to DenseLight, which was acquired on May 11, 2016.

Depreciation and amortization in Q2 2016 increased by \$152,114 or 173% to \$239,958 from \$87,844 in Q1 2016. The increase included \$149,723 of depreciation relating to \$8,706,029 of new property and equipment acquired from DenseLight and BB Photonics.

Professional fees increased by \$132,087 or 94% to \$272,287 in Q2 2016 from \$140,200 in Q1 2016. The acquisition of DenseLight and BB Photonics contributed to the substantial increase from Q1 to Q2 2016. The Company required the services of various professional consultants including lawyers, accountants and appraisers to complete the acquisition of both companies.

Wages and benefits had a substantial increase of \$571,244 or 118% to \$1,054,413 in Q2 2016 from \$483,169 in Q1 2016. The increase was a result of accrued executive retention bonuses totaling \$550,000 to the CEO and COO that were payable in mid-June 2016, but voluntarily deferred by them and paid in 2017. Wages and benefits for Q2 2016 also included \$261,721 for DenseLight from the May 11, 2016 acquisition date to the quarter end. The \$100,000 bonus to the COO was reversed in Q1 2017.

General expenses and rent increased by \$285,862 or 110% to \$546,626 in Q2 2016 from \$260,764 in Q1 2016. DenseLight contributed \$203,402 to the increase during the period. The difference resulted from additional costs incurred relating to the acquisition of DenseLight and BB Photonics.

Non-cash stock-based compensation decreased by \$371,061 or 29% to \$887,990 in Q2 2016 from \$1,259,051 in Q1 2016. This resulted from the timing of stock-based compensation expense relative to the vesting date of the historical granted stock options. The valuation of stock options is driven by a number of factors including the



quantity of options granted, the strike price and the volatility of the Company's stock. The stock option expense is dependent on the timing of the stock option grant and the amortization of the options as they vest.

### **Segment Disclosure**

The Company and its subsidiaries operate in a single segment; the design, manufacture and sale of semi-conductor products and services for commercial applications. The Company's operating and reporting segment reflects the management reporting structure of the organization and the manner in which the chief operating decision maker regularly assesses information for decision making purposes, including the allocation of resources. A summary of the Company's operations is below:

#### **ODIS Inc. ("ODIS")**

Odis is the developer of the POET platform semiconductor process IP for fabrication of integrated circuit devices containing both electronic and optical elements on a single die ("monolithic integration") and in a single package ("hybrid integration").

#### **BB Photonics**

BB Photonics develops photonic integrated components for the datacenter market utilizing embedded dielectric technology that is intended to enable on-chip athermal wavelength control and lower the total solution cost of datacenter photonic integrated circuits.

#### **DenseLight**

DenseLight designs, manufactures, and delivers photonic optical light source products and solutions to the communications, medical, instrumentations, industrial, defense, and security industries. DenseLight processes compound semiconductor-based optoelectronic devices and photonic integrated circuits through its in-house wafer fabrication and assembly & test facilities. The Company operates geographically in the United States, Canada and Singapore. Geographical information is as follows:

2017					
As of December 31,	Singapore	US	Canada	Consolidated	
Current assets	\$ 3,190,298	\$ 4,621,318	\$ 139,096	\$ 7,950,712	
Property and equipment	8,018,900	259,270	-	8,278,170	
Patents and licenses	18,816	437,434	-	456,250	
Goodwill and intangible assets	6,756,181	1,764,459	-	8,520,640	
<b>Total Assets</b>	<b>\$ 17,984,195</b>	<b>\$ 7,082,481</b>	<b>\$ 139,096</b>	<b>\$ 25,205,772</b>	
2016					
Year Ended December 31,	Singapore	US	Canada	Consolidated	
Sales	\$ 2,794,044	\$ -	\$ -	\$ 2,794,044	
Cost of sales	1,342,691	-	-	1,342,691	
Selling, marketing and administration	4,955,497	4,872,902	1,042,342	10,870,741	
Research and development	3,237,713	1,877,966	327,194	5,442,873	
Other income	(1,748,244)	-	(18,280)	(1,766,524)	
<b>Net loss from operations</b>	<b>\$ 4,993,613</b>	<b>\$ 6,750,868</b>	<b>\$ 1,351,256</b>	<b>\$ 13,095,737</b>	
2016					
As of December 31,	Singapore	US	Canada	Consolidated	
Current assets	\$ 2,118,561	\$ 10,058,018	\$ 4,957,624	\$ 17,134,203	

Property and equipment	9,039,069	322,633	2,508	9,364,210
Patents and licenses	-	449,676	-	449,676
Goodwill and intangible assets	6,793,409	1,764,459	-	8,557,868
<b>Total Assets</b>	<b>\$ 17,951,039</b>	<b>\$ 12,594,786</b>	<b>\$ 4,960,132</b>	<b>\$ 35,505,957</b>

Year Ended December 31,	Singapore	US	Canada	Consolidated
Sales	\$ 1,861,747	\$ -	\$ -	\$ 1,861,747
Cost of sales	1,379,838	-	-	1,379,838
Selling, marketing and administration	2,908,465	7,200,243	1,151,868	11,260,576
Research and development	770,033	2,122,983	-	2,893,016
Impairment loss	-	63,522	-	63,522
Loss on disposal of property and equipment	-	29,807	16,931	46,738
Other income	(14,027)	-	(52,845)	(66,872)
<b>Net loss from operations</b>	<b>\$ 3,182,562</b>	<b>\$ 9,416,555</b>	<b>\$ 1,115,954</b>	<b>\$ 13,715,071</b>

### ***Liquidity and Capital Resources***

The Company had working capital of \$7,140,119 on December 31, 2017 as compared to \$15,509,859 on December 31, 2016.

The Company's balance sheet as of December 31, 2017 reflects assets with a book value of \$25,205,772, compared to \$35,505,957 as of December 31, 2016. Thirty-two percent (32%) of the book value as of December 31, 2017, or \$7,950,712, was in current assets consisting primarily of cash and other current assets, compared to 48%, or \$17,134,203 as of December 31, 2016.

The Company is in a position to cover its liabilities as they come due, however, due to the continuation of losses, the Company will need to seek debt or equity financing to fund its operations. Consistent with its needs for additional financing, on March 21, 2018, the Company completed a public offering of 25,090,700 units at a price of \$0.425 (CAD\$0.55) per unit for gross proceeds of \$10,663,548 (CAD\$13,799,885). Additionally, subsequent to December 31, 2017 the Company raised \$1,131,921 from the exercise of warrants and stock options. Refer to Subsequent Events for further details

### ***Acquisitions***

#### **DenseLight**

On May 11, 2016, the Company acquired all the issued and outstanding shares of DenseLight Semiconductors Pte. Ltd, a designer, manufacturer and provider of photonic sensing and optical light source products for consideration of \$10,500,000. The all-stock purchase was accomplished with the issuance of 13,611,150 common shares of the Company at a price of \$0.7714 per share. The Company also committed to issuing shares representing \$1,000,000 to the sellers in the event that DenseLight met or exceeded a pre-determined revenue target during calendar 2016. The revenue targets were not met.

This acquisition provides the Company with direct and preferred access to a fab infrastructure for future product development, access to product sales and channel distribution networks and a broader product portfolio of photonic products, technology and know-how.

Upon closing the acquisition, the Company negotiated a settlement agreement relating to obligations that were due to past or current employees of DenseLight. As part of the settlement agreement, the Company issued 1,738,236 common shares at a price of \$0.7714 per share for a total of \$1,343,629. The Company also paid \$240,266 to current and past employees as part of the debt settlement. Accounts payable and accrued liabilities included \$184,570 that was due to past and current employees have been settled

The Company also settled a loan of \$500,000 owing to EDB Investments Pte. Ltd., an investor in DenseLight, with the issuance of 648,150 shares at a price of 0.771 per share.

Former management shareholders of DenseLight agreed not to sell, transfer, pledge or otherwise dispose of the shares of the Company for a period of nine months, at which time they were each able to sell up to 25% of their shares. They were able to sell an additional 25% of the shares after twelve months. These restrictions expired on May 11, 2017. All management shareholders are able to sell any remaining shares after 24 months from closing (i.e., May 11, 2018). Former non-management shareholders of DenseLight are no longer restricted from selling their shares.

On acquisition, DenseLight held accounts receivable and unbilled revenue in the amount of \$198,898 that reflected their fair value. The billed receivables at closing have been subsequently collected.

The acquisition has been accounted for using the acquisition method of accounting. Acquisition related costs of \$197,284 were expensed in the year and included in selling, marketing and administrative expenses.

#### **Fair value of consideration paid**

Fair value of 13,611,150 shares issued	\$ 10,500,000
Contingent consideration payable	283,130
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Total consideration	\$ 10,783,130
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#### **Recognised amounts of identifiable net assets:**

Cash	\$ 2,971
Accounts receivables and unbilled revenue	198,898
Prepaid and other current assets	293,386
Inventory	319,257
Property and equipment	8,635,650
Customer relationships	186,131
Goodwill	6,630,544
Trade payables	(2,979,546)
Loans and advances	(1,000,000)
Deferred tax liability	(1,504,161)
<hr/>	
Net assets acquired	\$ 10,783,130
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Loans and advances include \$500,000 that was advanced to DenseLight by the Company prior to its acquisition. This advance was used by DenseLight to cover the expenses required for the development under the Development Services Agreement between DenseLight and the Company, based on the special pricing negotiated between the parties.

The purchase and sale agreement provided for an additional \$1,000,000 worth of shares to be issued to the sellers should gross revenue from DenseLight exceed certain targets for 2016. The fair value of this contingent consideration payable was determined by estimating the probability of the Company making that future payment and then discounting it to present value using a discount rate of 9% being the estimated cost of debt for the Company. At December 31, 2016, DenseLight did not exceed the established revenue targets for 2016. The Company has therefore adjusted the fair value of contingent consideration to nil through earnings.

A deferred tax liability of \$1,504,161 was created on the date of purchase relating to the fair value adjustment of the assets acquired. Deferred tax liability relating to the DenseLight acquisition at December 31, 2017 and 2016 was \$1,005,627 and \$1,303,567 respectively.

### **BB Photonics**

On June 22, 2016, the Company acquired all the issued and outstanding shares of BB Photonics, a designer of integrated photonic solutions for the data communications market for consideration of \$1,550,000. The all-stock purchase was accomplished with the issuance of 1,996,090 common share of the Company at a price of \$0.777 per share.

The acquisition of BB Photonics provides the Company with additional differentiated intellectual property and know-how for product development, which will enable the Company to better reach its first identified commercial market, the data communications market, as well as to augment its sensing roadmap.

The acquisition has been accounted for using the acquisition method of accounting. Acquisition related costs of \$59,930 were expensed in the year and included in selling, marketing and administrative expenses.

### **Fair value of consideration paid**

Fair value of 1,996,090 shares issued	\$	1,550,000
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### **Recognised amounts of identifiable net assets:**

Cash	\$	15,820
Property and equipment		70,379
Intangibles		714,000
Goodwill		1,050,459
Trade payables		(7,918)
Deferred tax liability		(292,740)

Net assets acquired	\$	1,550,000
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A deferred tax liability of \$292,740 was created on the date of acquisition and related to the value of the In-Process Research and Development (IPR&D). Externally generated IPR&D is subject to impairment whenever events or changes indicate that its carrying amount may not be recoverable. Since the Company is still in the process of completing its technology and related products, the IPR&D and related deferred tax liability have not been impaired or amortized.

### ***Related Party Transactions***

Compensation to key management personnel was as follows:

	2017	2016
Salaries	\$ 932,133	\$ 2,047,634

Share-based payments (1)	2,110,773	3,061,686
<hr/>		
Total	\$ 3,042,906	\$ 5,109,320
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(1) Share-based payments are the fair value of options granted to key management personnel and expensed during the various years as calculated using the Black-Scholes model.

In 2016, the Company paid or accrued \$150,000 in consulting fees to a director for strategic, technology, integration and general business consulting services.

The Company paid or accrued \$115,660 in fees for the year ended December 31, 2017 (2016 - \$113,250) to a law firm, of which a director is counsel, for legal services rendered to the Company.

All transactions with related parties have occurred in the normal course of operations and are measured at the exchange amounts, which are the amounts of consideration established and agreed to by the related parties.

### ***Critical Accounting Estimates***

#### *Accounts receivable*

Accounts receivable are amounts due from customers from the sale of products or services in the ordinary course of business. Accounts receivables are classified as current (on the consolidated statements of financial position) if payment is due within one year of the reporting period date and are initially recognized at fair value and subsequently measured at amortized cost.

The provision policy for doubtful accounts of the Company is based on the ageing analysis and management's ongoing evaluation of the recoverability of the outstanding receivables. A considerable amount of judgment is required in assessing the ultimate realization of these receivables, including the assessment of the creditworthiness and the past collection history of each customer. If the financial conditions of these customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. As at the balance sheet date, no provision was required for accounts receivable.

#### *Inventory*

Inventory consists of raw material inventory, work in process, and finished goods and are recorded at the lower of cost and net realizable value. Cost is determined on a first in first out basis and includes all costs of purchase, costs of conversion and other costs incurred in bringing the inventory to its present condition.

An assessment is made of the net realizable value of inventory at each reporting period. Net realizable value is the estimated selling price less the estimated cost of completion and the estimated costs necessary to make the sale. When circumstances that previously caused inventory to be written down no longer exist or when there is clear evidence of an increase in net realizable value because of changed economic circumstances, the amount of any write down previously recorded is reversed so that the new carrying amount is the lower of the cost and the revised net realizable value. Raw materials are not written down unless the goods in which they are incorporated are expected to be sold for less than cost, in which case, they are written down by reference to replacement cost of the raw materials, as this is the best indicator of net realizable value.

#### *Property and equipment*

Property and equipment are recorded at cost. Depreciation is calculated based on the estimated useful life of the asset using the following method and useful lives:

Machinery and equipment	Straight Line, 5 years
Leasehold improvements	Straight Line, 5 years or life of the lease, whichever is less
Office equipment	Straight Line, 5 years

#### *Patents and licenses*

Patents and licenses are recorded at cost and amortized on a straight-line basis over 12 years. Ongoing maintenance costs are expensed as incurred.

#### *Intangible assets*

Internally generated intangible assets are recorded at cost and will be amortized on a straight-line basis based on the best estimate of the useful life of the asset developed from the point at which the asset is ready for use. Internally generated intangible assets are tested for impairment whenever events or changes indicate that its carrying amount may not be recoverable. Externally acquired intangible assets are amortized on a straight-line basis over 5 years commencing when the asset is ready for use. Externally generated intangible assets are tested for impairment whenever events or changes indicate that its carrying amount may not be recoverable.

#### *Stock-based Compensation*

Stock options and warrants awarded to non-employees are accounted for using the fair value of the instrument awarded or service provided, whichever is considered more reliable. Stock options and warrants awarded to employees are accounted for using the fair value method. The fair value of such stock options and warrants granted is recognized as an expense on a proportionate basis consistent with the vesting features of each tranche of the grant. The fair value is calculated using the Black-Scholes option-pricing model with assumptions applicable at the date of grant.

#### *Other stock-based payments*

The Company accounts for other stock-based payments based on the fair value of the equity instruments issued or service provided, whichever is more reliable.

#### *Cumulative Translation Adjustment*

IFRS requires certain gains and losses such as certain exchange gains and losses arising from the translation of the financial statements of a self-sustaining foreign operation to be included in comprehensive income.

### ***Recent Accounting Pronouncements***

The Company has considered all recently issued accounting pronouncements and does not believe the adopting of such pronouncements will have a material impact on its consolidated financial statements. Please see note 3 of the financial statements for additional information.

### ***Financial Instruments and Risk Management***

The Company's financial instruments consist of cash, short-term investments, accounts receivable, non-current assets held for sale, accounts payable and accrued liabilities and contingent consideration payable. Unless otherwise noted, it is management's opinion that the Company is not exposed to significant interest risk arising from these financial instruments. The Company estimates that the fair value of these instruments approximates fair value due to their short-term nature.

### ***Exchange Rate Risk***

The Company is exposed to foreign currency risk with the Canadian dollar and Singapore dollar due to cash reserves and other current assets and liabilities that are maintained in those currencies, all of which are exposed to currency fluctuations. Most of the Company's operations are transacted in US dollars and Singapore Dollars.

A 10% change in the Canadian dollar and Singapore dollar would increase or decrease other comprehensive loss by \$260,175.

### ***Interest Rate Risk***

Cash equivalents bear interest at fixed rates, and as such, are subject to interest rate risk resulting from changes in fair value from market fluctuations in interest rates. The Company does not depend on interest from its investments to fund its operations.

### ***Credit Risk***

The Company is exposed to credit risk associated with its accounts receivable. The Company has accounts receivable from both governmental and non-governmental agencies. Credit risk is minimized substantially by ensuring the credit worthiness of the entities with which it carries on business. Credit terms are provided on a case-by-case basis. The Company has not experienced any significant instances of non-payment from its customers. No provision has been made for potentially uncollectable amounts.

The Company's accounts receivable ageing at December 31 was as follows:

	2017	2016
Current	\$ 330,731	\$ 125,610
31 - 60 days	56,094	16,346
61 - 90 days	-	75,816
> 90 days	107,100	75,077
	<b>\$ 493,925</b>	<b>\$ 292,849</b>

### ***World Economic Risk***

Like many other companies, the world economic climate could have an impact on the Company's business and the business of many of its current and prospective customers. A slump in demand for electronic-based devices, due to a world economic crisis, may impact any anticipated licensing revenue.

### ***Obsolescence Risk***

The Company designs, manufactures and sells various highly technological electronic products that could become obsolete should lower priced competitors or new technology enter the market. This would expose the company to obsolescence risk in inventory balances, but also a risk of obsolescence in the product offering. The redesign of the product offering could take significant time or could never occur.

### ***Liquidity Risk***

The Company predominately relies on equity funding for liquidity to meet current and foreseeable financial requirements.

### ***Subsequent Events***

On March 21, 2018, the Company completed a brokered public offering of 25,090,700 units at a price of \$0.425 (CAD\$0.55) per unit for gross proceeds of \$10,663,548 (CAD\$13,799,885). Each unit consists of one common share and one-half common share purchase warrant. Each whole warrant entitles the holder to purchase one common share of the Company at a price of \$0.58 (CAD\$0.75) per share until March 21, 2020. The broker was paid a cash commission of \$639,813 (6%) of the gross proceeds and received 1,505,442 compensation options. Each compensation option is exercisable into one compensation unit of the company at a price of \$0.425 (CAD\$0.55) per compensation option until March 21, 2020 with each compensation unit comprising one common share and one-half compensation share purchase warrant. Each compensation share purchase warrant entitles the broker to purchase one common share of the Company at a price of \$0.425 (CAD\$0.55) per share until March 21, 2020.

Subsequent to December 31, 2017 the Company also raised \$1,131,921 from the exercise of warrants and stock options.

### ***Strategy and Outlook***

There are a number of projects that the Company expects will address the short-term and long-term growth plans of the Company including, but not limited to the following:

- *Introduce the Optical Interposer concept to suppliers of transceivers and data center operators and form commercial partnerships for product development;*
- *Promote the POET Optical Interposer as a true platform technology across several photonic applications and markets;*
- *Pursue multiple potential sources of non-product revenue and strategic partnerships;*
- *Continue to invest in our capabilities and infrastructure;*
- *Selectively pursue other opportunities that leverage our existing expertise; and*
- *Pursue complementary strategic alliance or acquisition opportunities.*

### ***Outstanding Share Data***

#### ***Common Shares***

Total common shares of the Company outstanding at December 31, 2017 and April 27, 2018 were 260,018,853 and 288,056,802 respectively.

#### ***Stock Options and Warrants***

Total warrants outstanding to purchase common shares of the Company at December 31, 2017 and April 27, 2018 were 34,800,000 and 43,109,000 respectively priced between CA\$0.52 and CA\$0.75 per common share.

Total stock options outstanding as at December 31, 2017 and April 27, 2018 were 33,090,291 and 40,506,521 respectively, priced between CA\$0.20 and CA\$1.99 per common share.

Total compensation units due to brokers as at December 31, 2017 and April 27, 2018 were nil and 1,309,080 respectively, priced at CA\$0.55. Each compensation unit is convertible into one common share and one half common share purchase warrant.

Additional detailed share data information is available in the Company's Notes to Consolidated Financial Statement.

### ***Off-Balance Sheet Arrangements***

The Company has not entered into any off-balance sheet arrangements.



## ***Key Business Risks and Uncertainties***

***The process of developing new, technologically advanced products in semiconductor manufacturing and photonics products is highly complex and uncertain, and we cannot guarantee a positive result.***

The development of new, technologically advanced products is a complex and uncertain process requiring frequent innovation, highly-skilled engineering and development personnel and significant capital, as well as the accurate anticipation of technological and market trends. We cannot assure you that we will be able to identify, develop, manufacture, market or support new or enhanced products successfully or on a timely basis. Further, we cannot assure you that our new products will gain market acceptance or that we will be able to respond effectively to product introductions by competitors, technological changes or emerging industry standards. We also may not be able to develop the underlying core technologies necessary to create new products and enhancements, license these technologies from third parties, or remain competitive in our markets.

***Customer demand is difficult to forecast accurately and, as a result, we may be unable to match production with customer demand.***

We make planning and spending decisions, including determining the levels of business that we will seek and accept, production schedules, component procurement commitments, personnel needs and other resource requirements, based on our estimates of product demand and customer requirements. Our products are typically sold pursuant to individual purchase orders. While our customers may provide us with their demand forecasts, they are typically not contractually committed to buy any quantity of products beyond firm purchase orders. Furthermore, many of our customers may increase, decrease, cancel or delay purchase orders already in place without significant penalty. The short-term nature of commitments by our customers and the possibility of unexpected changes in demand for their products reduce our ability to accurately estimate future customer requirements. If any of our customers decrease, stop or delay purchasing our products for any reason, we will likely have excess manufacturing capacity or inventory and our business and results of operations would be harmed.

***If our customers do not qualify our products for use on a timely basis, our results of operations may suffer.***

Prior to the sale of new products, our customers typically require us to “qualify” our products for use in their applications. At the successful completion of this qualification process, we refer to the resulting sales opportunity as a “design win.” Additionally, new customers often audit our manufacturing facilities and perform other evaluations during this qualification process. The qualification process involves product sampling and reliability testing and collaboration with our product management and engineering teams in the design and manufacturing stages. If we are unable to accurately predict the amount of time required to qualify our products with customers, or are unable to qualify our products with certain customers at all, then our ability to generate revenue could be delayed or our revenue would be lower than expected and we may not be able to recover the costs associated with the qualification process or with our product development efforts, which would have an adverse effect on our results of operations.

***The markets in which we operate are highly competitive, which could result in lost sales and lower revenues.***

The market for optical components and modules is highly competitive and this competition could result in our existing customers moving their orders to our competitors. We are aware of a number of companies that have developed or are developing optical component products, including LEDs, lasers, pluggable components, modules and subsystems, photonic integrated circuits, among others, that compete directly with our current and proposed product offerings.

Some of our current competitors, as well as some of our potential competitors, have longer operating histories, greater name recognition, broader customer relationships and industry alliances and substantially greater financial, technical and marketing resources than we do. We may not be able to compete successfully with our competitors and aggressive competition in the market may result in lower prices for our products and/or decreased gross margins. Any such development could have a material adverse effect on our business, financial condition and results of operations.

***Our products, including those sold by predecessor company, OPEL Solar, could contain defects that may cause us to incur significant costs or result in a loss of customers or subject us to claims for which we may not be fully insured.***

Our predecessor company, Opel Solar, sold solar systems and products between 2007 and 2012, and some of those products may still be under warranty. We have not undertaken to quantify the size of that warranty obligation and it is not recorded on our balance sheet because it is not determinable. Although we carry product liability insurance, this insurance may not adequately cover our costs arising from defects or warranty claims related to those products.

Our current products sold by DenseLight are complex and undergo quality testing as well as formal qualification by our customers. Our customers' testing procedures are limited to evaluating our products under likely and foreseeable failure scenarios and over varying amounts of time. For various reasons, such as the occurrence of performance problems that are unforeseeable in testing or that are detected only when products age or are operated under peak stress conditions, our products may fail to perform as expected long after customer acceptance. Failures could result from faulty components or design, problems in manufacturing or other unforeseen reasons. As a result, we could incur significant costs to repair or replace defective products under warranty, particularly when such failures occur in installed systems. Our products are typically embedded in, or deployed in conjunction with, our customers' products, which incorporate a variety of components, modules and subsystems and may be expected to interoperate with modules produced by third parties. As a result, not all defects are immediately detectable and when problems occur, it may be difficult to identify the source of the problem. While we have not experienced material failures in the past, we will continue to face this risk going forward because our products are widely deployed in many demanding environments and applications worldwide. In addition, we may in certain circumstances honor warranty claims after the warranty has expired or for problems not covered by warranty to maintain customer relationships. Any significant product failure could result in litigation, damages, repair costs and lost future sales of the affected product and other products, divert the attention of our engineering personnel from our product development efforts and cause significant customer relations problems, all of which would harm our business. Although we carry product liability insurance, this insurance may not adequately cover our costs arising from defects in our products or otherwise.

***The business that we acquired did not have a history of profitable operations. Our ability to successfully manage our manufacturing operations is essential to our overall success, and if we fail to do so, our financial results will suffer.***

At the time of the acquisition of DenseLight Semiconductors, Pte. Ltd. in May of 2016, the company had been operating at a loss for several years and was at a minimum staffing level. Since the acquisition, we have committed substantial capital and management attention to improving the operation, increasing sales and driving to profitability. Even though substantial changes in the management and personnel have been made, the results to date have been less than anticipated and more improvement will be required in order to make the DenseLight operation profitable. We cannot guarantee that our efforts to improve the DenseLight operation will be successful, and if they are not, the operation will continue to need capital and attention from the senior management of the company and our financial results may suffer as a result.

***If we encounter manufacturing problems or if manufacturing at our Singapore operation is discontinued for any reason, including an industrial or workplace accident, we may lose sales and damage our customer relationships, or be subject to claims for which we may not be fully insured.***

We may experience delays, disruptions or quality control problems in our manufacturing operations. These and other factors may cause less than acceptable yields at our wafer fabrication facility. Manufacturing yields depend on a number of factors, including the quality of available raw materials, the degradation or change in equipment calibration and the rate and timing of the introduction of new products. Changes in manufacturing processes required as a result of changes in product specifications, changing customer needs and the introduction of new products may significantly reduce our manufacturing yields, resulting in low or negative margins on those products. In addition, because of our wafer size, we use equipment that is not readily available on the open market and for which spare parts and qualified service people may not be available. If any of our key equipment were to be damaged or destroyed for any reason, our manufacturing process would be severely disrupted. Any such manufacturing problems would likely delay product shipments to our customers, which would negatively affect our sales, competitive position and reputation.

Our operations in Singapore are subject to government regulations that protect the workplace safety of employees. We strive to maintain an accident-free workplace, but we cannot guarantee that industrial accidents will not take place, or that we will not be subject to liability for these and other workplace related claims. We have obtained insurance policies to protect the company against claims for workplace related claims, but we cannot guarantee that these and other insurance policies carried by the Company will be sufficient to cover the full costs of such claims, which could have a material adverse effect on the Company.

***We have limited operating history in the datacom market, and our business could be harmed if this market does not develop as we expect.***

The initial target market for our Optical Interposer-based optical engine is the datacom market and we have no experience in selling products in this market. We may not be successful in developing a product for this market and even if we do, it may never gain widespread acceptance by large data center operators. If our expectations for the growth of the datacom market are not realized, our financial condition or results of operations may be adversely affected.

***We depend on a limited number of suppliers and key contract manufacturers who could disrupt our business and technology development activities if they stopped, decreased, delayed or were unable to meet our demand for shipments of their products or manufacturing of our products.***

We depend on a limited number of suppliers of epitaxial wafers and contract manufacturers for both our GaAs and InP development and production activities. Some of these suppliers are sole source suppliers. We typically have not entered into long-term agreements with our suppliers. As a result, these suppliers generally may stop supplying us materials and other components at any time. Our reliance on a sole supplier or limited number of suppliers could result in delivery problems, reduced control over technology development, product development, pricing and quality, and an inability to identify and qualify another supplier in a timely manner. Some of our suppliers that may be small or under-capitalized may experience financial difficulties that could prevent them from supplying us materials and other components. In addition, our suppliers, including our sole source suppliers, may experience manufacturing delays or shut downs due to circumstances beyond their control such as earthquakes, floods, fires, labor unrest, political unrest or other natural disasters. A Change in supplier could require technology transfer that could require multiple iterations of test wafers. This could result in significant delays in resumption of production.

Any supply deficiencies relating to the quality or quantities of materials or equipment we use to manufacture our products could materially and adversely affect our ability to fulfill customer orders and our results of operations. Lead times for the purchase of certain materials and equipment from suppliers have increased and, in some cases, have limited our ability to rapidly respond to increased demand, and may continue to do so in the future. To the extent we introduce additional contract manufacturing partners, introduce new products with new partners and/or move existing internal or external production lines to new partners, we could experience supply disruptions during the transition process. In addition, due to our customers' requirements relating to the qualification of our suppliers and contract manufacturing facilities and operations, we cannot quickly enter into alternative supplier relationships, which prevent us from being able to respond immediately to adverse events affecting our suppliers.

***Our international business and operations expose us to additional risks.***

Products shipped to customers located outside Canada and the United States account for a majority of our revenues. In addition, we have significant tangible assets located outside the United States. Our manufacturing facilities are located in Singapore. Conducting business outside Canada and the United States subjects us to a number of additional risks and challenges, including:

- periodic changes in a specific country's or region's economic conditions, such as recession;
- licenses and other trade barriers;
- the provision of services may require export licenses;
- environmental regulations;
- certification requirements;
- fluctuations in foreign currency exchange rates;
- inadequate protection of intellectual property rights in some countries;
- preferences of certain customers for locally produced products;
- potential political, legal and economic instability, foreign conflicts, and the impact of regional and global infectious illnesses in the countries in which we and our customers, suppliers and contract manufacturers are located;
- Canadian and U. S. and foreign anticorruption laws;
- seasonal reductions in business activities in certain countries or regions; and
- fluctuations in freight rates and transportation disruptions.

These factors, individually or in combination, could impair our ability to effectively operate one or more of our foreign facilities or deliver our products, result in unexpected and material expenses, or cause an unexpected decline in the demand for our products in certain countries or regions. Our failure to manage the risks and challenges associated with our international business and operations could have a material adverse effect on our business.

***If we fail to attract and retain key personnel, our business could suffer.***

Our future success depends, in part, on our ability to attract and retain key personnel, including executive management. Competition for highly skilled technical personnel is extremely intense and we may face difficulty

identifying and hiring qualified engineers in many areas of our business. We may not be able to hire and retain such personnel at compensation levels consistent with our existing compensation and salary structure. Our future success also depends on the continued contributions of our executive management team and other key management and technical personnel, each of whom would be difficult to replace. The loss of services of these or other executive officers or key personnel or the inability to continue to attract qualified personnel could have a material adverse effect on our business.

***Our prior acquisitions created a large amount of goodwill, which may have to be impaired in the future and as a result may adversely affect our financial results. In addition, past and any future acquisitions may adversely affect our financial condition and results of operations.***

As part of our business strategy, we have in the past and may in the future pursue acquisitions of companies that we believe could enhance or complement our current product portfolio, augment our technology roadmap or diversify our revenue base. Acquisitions involve numerous risks, any of which could harm our business, including:

- difficulties integrating the acquired business;
- unanticipated costs, capital expenditures, liabilities or changes to product development efforts;
- difficulties integrating the business relationships with suppliers and customers of the acquired business with our existing operations;
- acts or omissions by the acquired company prior to the acquisition that may subject us to unknown risks or liabilities;
- risks associated with entering markets in which we have little or no prior experience;
- potential loss of key employees, particularly those of the acquired organizations; and
- diversion of financial and management resources from our existing business;

Our prior acquisitions have resulted, and future acquisitions may result in the recording of goodwill and other intangible assets subject to potential impairment in the future, adversely affecting our operating results. We may not achieve the anticipated benefits of an acquisition if we fail to evaluate it properly, and we may incur costs in excess of what we anticipate. A failure to evaluate and execute an acquisition appropriately or otherwise adequately address these risks may adversely affect our financial condition and results of operations.

***Our subsidiaries receive and expect to receive in the future subsidies and other types of funding from government agencies in the locations in which we operate. The funding agreements stipulate that if we do not comply with various covenants, including eligibility requirements, and/or do not achieve certain pre-defined objectives, those government agencies may reclaim all or a portion of the funding provided. If this were to occur, we would either not be in a position to repay the claimed amounts or would have to borrow large sums in order to do so or refinance with dilutive financing, which would adversely affect our financial condition.***

Our subsidiary ODIS received research and development grants from the United States Air Force and from NASA; our recently acquired subsidiary, DenseLight Semiconductor, Pte, Ltd. receives funding for new product development activities conducted in Singapore from the Economic Development Board; and we expect that our recently acquired subsidiary BB Photonics U.K., may also apply for certain grants to defer the cost of development in the U.K. The rules for eligibility vary widely across government agencies, are complex and may be subject to different interpretations. Furthermore, some of the grants set pre-defined development or spending objectives, which we may not achieve. We cannot guarantee that one or more agencies will not seek repayment of all or a

portion of the funds provided, and if this were to occur, we would have to borrow large sums or refinance with dilutive financing in order to make the repayments, which would adversely affect our financial condition.

***We may be subject to disruptions or failures in information technology systems and network infrastructures that could have a material adverse effect on our business and financial condition.***

We rely on the efficient and uninterrupted operation of complex information technology systems and network infrastructures to operate our business. A disruption, infiltration or failure of our information technology systems as a result of software or hardware malfunctions, system implementations or upgrades, computer viruses, third-party security breaches, employee error, theft or misuse, malfeasance, power disruptions, natural disasters or accidents could cause a breach of data security, loss of intellectual property and critical data and the release and misappropriation of sensitive competitive information and partner, customer, and employee personal data. Any of these events could harm our competitive position, result in a loss of customer confidence, cause us to incur significant costs to remedy any damages and ultimately materially adversely affect our business and financial condition.

***We have a history of large operating losses. We may not be able to sustain profitability in the future and as a result we may not be able to maintain sufficient levels of liquidity.***

We have historically incurred losses and negative cash flows from operations since our inception. As of December 31, 2017, we had an accumulated deficit of \$116,873,153. For the years ended December 31, 2017 and December 31, 2016, we incurred net losses before income taxes of \$13,095,737 and \$13,431,941 respectively.

As of December 31, 2017, we held \$4,974,478 in cash, and we had working capital of \$7,140,119.

The Company is currently in a position to cover its liabilities as they come due. However, we have sustained considerable operating losses in the past. Should such losses continue, the Company may need to seek debt or equity financing to fund its operations. Although the Company has been successful in obtaining such financings in the past, there is no assurance that it will be able to do so in the future. If the Company is unable to obtain such financing, it may have an adverse effect on the Company's ability to continue operations. Consistent with its needs for additional financing, on March 21, 2018, the Company completed a "bought deal" public offering of 25,090,700 units at a price of \$0.425 (CAD\$0.55) per unit for gross proceeds of \$10,663,548 (CAD\$13,799,885). Additionally, subsequent to December 31, 2017 the Company raised \$1,131,921 from the exercise of warrants and stock options.

The optical data communications industry is subject to significant operational fluctuations. In order to remain competitive, we incur substantial costs associated with research and development, qualification, production capacity and sales and marketing activities in connection with products that may be purchased, if at all, long after we have incurred such costs. In addition, the rapidly changing industry in which we operate, the length of time between developing and introducing a product to market, frequent changing customer specifications for products, customer cancellations of products and general down cycles in the industry, among other things, make our prospects difficult to evaluate. As a result of these factors, it is possible that we may not (i) generate sufficient positive cash flow from operations; (ii) raise funds through the issuance of equity, equity-linked or convertible debt securities; or (iii) otherwise have sufficient capital resources to meet our future capital or liquidity needs. There are no guarantees we will be able to generate additional financial resources beyond our existing balances.

***We may not be able to obtain additional capital when desired, on favorable terms or at all.***

We operate in a market that makes our prospects difficult to evaluate and, to remain competitive, we will be required to make continued investments in capital equipment, facilities and technology. We expect that substantial capital will be required to continue technology and product development, to expand our manufacturing capacity if we need to do so and to fund working capital for anticipated growth. If we do not generate sufficient cash flow

from operations or otherwise have the capital resources to meet our future capital needs, we may need additional financing to implement our business strategy.

If we raise additional funds through the issuance of our common stock or convertible securities, the ownership interests of our stockholders could be significantly diluted. These newly issued securities may have rights, preferences or privileges senior to those of existing stockholders. Additional financing may not, however, be available on terms favorable to us, or at all, if and when needed, and our ability to fund our operations, take advantage of unanticipated opportunities, develop or enhance our infrastructure or respond to competitive pressures could be significantly limited. If we cannot raise required capital when needed, including under our Short Form Prospectus filed with the Canadian Securities Exchange and the U.S. SEC in October 2016, we may be unable to continue technology and product development, meet the demands of existing and prospective customers, adversely affecting our sales and market opportunities and consequently our business, financial condition and results of operations.

***Our business could be negatively impacted as a result of shareholder activism.***

In recent years, shareholder activists have become involved in numerous public companies. Shareholder activists frequently propose to involve themselves in the governance, strategic direction, and operations of the company. We may in the future become subject to such shareholder activity and demands. Such demands may disrupt our business and divert the attention of our management and employees, and any perceived uncertainties as to our future direction resulting from such a situation could result in the loss of potential business opportunities, be exploited by our competitors, cause concern to our current or potential customers, and make it more difficult to attract and retain qualified personnel and business partners, all of which could adversely affect our business. In addition, actions of activist shareholders may cause significant fluctuations in our stock price based on temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business.

***If we fail to protect, or incur significant costs in defending, our intellectual property and other proprietary rights, our business and results of operations could be materially harmed.***

Our success depends on our ability to protect our intellectual property and other proprietary rights. We rely on a combination of patent, trademark, copyright, trade secret and unfair competition laws, as well as license agreements and other contractual provisions, to establish and protect our intellectual property and other proprietary rights. We have applied for patent registrations in the U.S. and in other foreign countries, some of which have been issued. We cannot guarantee that our pending applications will be approved by the applicable governmental authorities. Moreover, our existing and future patents and trademarks may not be sufficiently broad to protect our proprietary rights or may be held invalid or unenforceable in court. A failure to obtain patents or trademark registrations or a successful challenge to our registrations in the U.S. or other foreign countries may limit our ability to protect the intellectual property rights that these applications and registrations intended to cover.

Policing unauthorized use of our technology is difficult and we cannot be certain that the steps we have taken will prevent the misappropriation, unauthorized use or other infringement of our intellectual property rights. Further, we may not be able to effectively protect our intellectual property rights from misappropriation or other infringement in foreign countries where we have not applied for patent protections, and where effective patent, trademark, trade secret and other intellectual property laws may be unavailable or may not protect our proprietary rights as fully as Canadian or U.S. law. We may seek to secure comparable intellectual property protections in other countries. However, the level of protection afforded by patent and other laws in other countries may not be comparable to that afforded in Canada and the U.S.

We also attempt to protect our intellectual property, including our trade secrets and know-how, through the use of trade secret and other intellectual property laws, and contractual provisions. We enter into confidentiality and

invention assignment agreements with our employees and independent consultants. We also use non-disclosure agreements with other third parties who may have access to our proprietary technologies and information. Such measures, however, provide only limited protection, and there can be no assurance that our confidentiality and non-disclosure agreements will not be breached, especially after our employees end their employment, and that our trade secrets will not otherwise become known by competitors or that we will have adequate remedies in the event of unauthorized use or disclosure of proprietary information. Unauthorized third parties may try to copy or reverse engineer our products or portions of our products, otherwise obtain and use our intellectual property, or may independently develop similar or equivalent trade secrets or know-how. If we fail to protect our intellectual property and other proprietary rights, or if such intellectual property and proprietary rights are infringed or misappropriated, our business, results of operations or financial condition could be materially harmed.

In the future, we may need to take legal actions to prevent third parties from infringing upon or misappropriating our intellectual property or from otherwise gaining access to our technology. Protecting and enforcing our intellectual property rights and determining their validity and scope could result in significant litigation costs and require significant time and attention from our technical and management personnel, which could significantly harm our business. We may not prevail in such proceedings, and an adverse outcome may adversely impact our competitive advantage or otherwise harm our financial condition and our business.

***We may be involved in intellectual property disputes in the future, which could divert management's attention, cause us to incur significant costs and prevent us from selling or using the challenged technology.***

Participants in the markets in which we sell our products have experienced frequent litigation regarding patent and other intellectual property rights. While we have a policy in place that is designed to reduce the risk of infringement of intellectual property rights of others, there can be no assurance that third parties will not assert infringement claims against us. We cannot be certain that our products would not be found infringing on the intellectual property rights of others. Regardless of their merit, responding to such claims can be time consuming, divert management's attention and resources and may cause us to incur significant expenses. Intellectual property claims against us could result in a requirement to license technology from others, discontinue manufacturing or selling the infringing products, or pay substantial monetary damages, each of which could result in a substantial reduction in our revenue and could result in losses over an extended period of time.

***If we fail to obtain the right to use the intellectual property rights of others that are necessary to operate our business, and to protect their intellectual property, our business and results of operations will be adversely affected.***

From time to time, we may choose to or be required to license technology or intellectual property from third parties in connection with the development of our products. We cannot assure you that third party licenses will be available to us on commercially reasonable terms, if at all. Generally, a license, if granted, would include payments of up-front fees, ongoing royalties or both. These payments or other terms could have a significant adverse impact on our results of operations. Our inability to obtain a necessary third-party license required for our product offerings or to develop new products and product enhancements could require us to substitute technology of lower quality or performance standards, or of greater cost, either of which could adversely affect our business. If we are not able to obtain licenses from third parties, if necessary, then we may also be subject to litigation to defend against infringement claims from these third parties. Our competitors may be able to obtain licenses or cross-license their technology on better terms than we can, which could put us at a competitive disadvantage.

***If we fail to maintain effective internal control over financial reporting in the future, the accuracy and timing of our financial reporting may be adversely affected.***

Preparing our consolidated financial statements involves a number of complex manual and automated processes, which are dependent upon individual data input or review and require significant management judgment. One or



more of these elements may result in errors that may not be detected and could result in a material misstatement of our consolidated financial statements. The Sarbanes-Oxley Act in the U.S. requires, among other things, that as a publicly traded company we disclose whether our internal control over financial reporting and disclosure controls and procedures are effective. As long as we qualify as an “emerging growth company” under the JOBS Act, which may be up to five years following the filing of our Form 20F Registration Statement, we will not have to provide an auditor’s attestation report on our internal controls. During the course of any evaluation, documentation or attestation, we or our independent registered public accounting firm may identify weaknesses and deficiencies that we may not otherwise identify in a timely manner or at all as a result of the deferred implementation of this additional level of review.

We have implemented internal controls that we believe provide reasonable assurance that we will be able to avoid accounting errors or material weaknesses in future periods. However, our internal controls cannot guarantee that no accounting errors exist or that all accounting errors, no matter how immaterial, will be detected because a control system, no matter how well designed and operated, can provide only reasonable, but not absolute assurance that the control system’s objectives will be met. If we are unable to implement and maintain effective internal control over financial reporting, our ability to accurately and timely report our financial results could be adversely impacted. This could result in late filings of our annual and quarterly reports under the Canadian Securities Act and the Securities Exchange Act of 1934, or the Exchange Act, restatements of our consolidated financial statements, a decline in our stock price, suspension or delisting of our common stock by the TSX Venture Exchange, or other material adverse effects on our business, reputation, results of operations or financial condition.

***Our ability to use our net operating losses and certain other tax attributes may be limited.***

As of December 31, 2017, we had accumulated net operating losses (NOLs), of approximately \$124 million. Varying jurisdictional tax codes have restrictions on the use of NOLs, if a corporation undergoes an “ownership change,” the corporation’s ability to use its pre-change NOLs, R&D credits and other pre-change tax attributes to offset its post-change income may be limited. An ownership change is generally defined as a greater than 50% change in equity ownership. Based upon an analysis of our equity ownership, we do not believe that we have experienced such ownership changes and therefore our annual utilization of our NOLs is not limited. However, should we experience additional ownership changes, our NOL carry forwards may be limited.

***We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.***

We are subject to export and import control laws, trade regulations and other trade requirements that limit which raw materials and technology we can import or export and which products we sell and where and to whom we sell our products. Specifically, the Bureau of Industry and Security of the U.S. Department of Commerce is responsible for regulating the export of most commercial items that are so called dual-use goods that may have both commercial and military applications. A limited number of our products are exported by license under certain classifications. Export Control Classification requirements are dependent upon an item’s technical characteristics, the destination, the end-use, and the end-user, and other activities of the end-user. Should the regulations applicable to our products change, or the restrictions applicable to countries to which we ship our products change, then the export of our products to such countries could be restricted. As a result, our ability to export or sell our products to certain countries could be restricted, which could adversely affect our business, financial condition and results of operations. Changes in our products or any change in export or import regulations or related legislation, shift in approach to the enforcement or scope of existing regulations, or change in the countries, persons or technologies targeted by such regulations, could result in delayed or decreased sales of our products to existing or potential customers. In such event, our business and results of operations could be adversely affected.

***Our manufacturing operations are subject to environmental regulation that could limit our growth or impose substantial costs, adversely affecting our financial condition and results of operations.***

Our properties, operations and products are subject to the environmental laws and regulations of the jurisdictions in which we operate and sell products. These laws and regulations govern, among other things, air emissions, wastewater discharges, the management and disposal of hazardous materials, the contamination of soil and groundwater, employee health and safety and the content, performance, packaging and disposal of products. Our failure to comply with current and future environmental laws and regulations, or the identification of contamination for which we are liable, could subject us to substantial costs, including fines, cleanup costs, third-party property damages or personal injury claims, and make significant investments to upgrade our facilities or curtail our operations. Identification of presently unidentified environmental conditions, more vigorous enforcement by a governmental authority, enactment of more stringent legal requirements or other unanticipated events could give rise to adverse publicity, restrict our operations, affect the design or marketability of our products or otherwise cause us to incur material environmental costs, adversely affecting our financial condition and results of operations.

***We are exposed to risks and increased expenses and business risk as a result of Restriction on Hazardous Substances, or RoHS directives.***

Following the lead of the European Union, or EU, various governmental agencies have either already put into place or are planning to introduce regulations that regulate the permissible levels of hazardous substances in products sold in various regions of the world. For example, the RoHS directive for EU took effect on July 1, 2006. The labeling provisions of similar legislation in China went into effect on March 1, 2007. Consequently, many suppliers of products sold into the EU have required their suppliers to be compliant with the new directive. We anticipate that our customers may adopt this approach and will require our full compliance, which will require a significant amount of resources and effort in planning and executing our RoHS program, it is possible that some of our products might be incompatible with such regulations. In such events, we could experience the following consequences: loss of revenue, damages reputation, diversion of resources, monetary penalties, and legal action.

***Failure to comply with the U.S. Foreign Corrupt Practices Act could subject us to penalties and other adverse consequences.***

We are subject to the U.S. Foreign Corrupt Practices Act, which generally prohibits companies operating in the U.S. from engaging in bribery or other prohibited payments to foreign officials for the purpose of obtaining or retaining business. In addition, we are required to maintain records that accurately and fairly represent our transactions and have an adequate system of internal accounting controls. Foreign companies, including some that may compete with us, may not be subject to these prohibitions, and therefore may have a competitive advantage over us. If we are not successful in implementing and maintaining adequate preventative measures, we may be responsible for acts of our employees or other agents engaging in such conduct. We could suffer severe penalties and other consequences that may have a material adverse effect on our financial condition and results of operations.

***Natural disasters or other catastrophic events could harm our operations.***

Our operations in the U.S., Canada and Singapore could be subject to significant risk of natural disasters, including earthquakes, hurricanes, typhoons, flooding and tornadoes, as well as other catastrophic events, such as epidemics, terrorist attacks or wars. For example, our wafer fabrication facility in Singapore is in an area that is susceptible to hurricanes. Any disruption in our manufacturing facilities arising from these and other natural disasters or other catastrophic events could cause significant delays in the production or shipment of our products until we are able to arrange for third parties to manufacture our products. We may not be able to obtain alternate capacity on favorable terms or at all. Our property insurance coverage with respect to natural disaster is limited and is subject

to deductible and coverage limits. Such coverage may not be adequate or continue to be available at commercially reasonable rates and terms. The occurrence of any of these circumstances may adversely affect our financial condition and results of operation.

The Company may experience these factors in the future and these factors may have a material adverse effect on the Company's business, operating results and financial condition.

Please refer to the Company's Annual Information Forms filed on SEDAR for a detailed discussion of Risks and Uncertainties most recently filed on April 17, 2017.

***Additional Information***

Additional information relating to the Company is available on SEDAR at [www.sedar.com](http://www.sedar.com) including the information contained in the Company's Annual Information Form filed on SEDAR on April 17, 2017.

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**POET TECHNOLOGIES INC.**

**Suite 1107, 120 Eglinton Ave. E 780 Montague Expy #107**

**Toronto, Ontario M4P 1E2 San Jose, CA 95131 USA**

**Tel: 416-368-9411 - Fax: 416-322-5075**

**<http://www.poet-technologies.com>**