

# PRESS RELEASE

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## **POET Announces Industry-First Flip-Chip DML Lasers**

### ***Enables the World's Lowest-Cost and Smallest 100G CWDM4 Optical Engine***

**TORONTO, Ontario, December 17, 2020** – POET Technologies Inc. (“POET” or the “Company”) (TSX Venture: PTK; OTCQX: POETF) the designer and developer of the POET Optical Interposer™ and Photonic Integrated Circuits (PICs) for the data center and tele-communication markets, announced today that it has completed and tested its high-speed Directly Modulated Laser (DML) designs using a distributed feedback (DFB) structure and successfully “flip-chipped” these lasers onto the Company’s Optical Interposer platform, which also incorporates several other industry-first accomplishments.

The flip-chip assembly technique enables a true single-chip, fully integrated Optical Engine to be produced at wafer-scale, resulting in the lowest-cost, smallest-size 100G CWDM4 Optical Engine with a form factor of 9mm x 6mm, while including banks of four lasers, four monitor photodiodes, four high speed photodiodes, a multiplexer, demultiplexer, taps for power monitoring and features supporting a self-aligned fiber attach unit.

“Without being able to flip-chip the lasers, we would be unable to assemble Optical Engines at wafer-scale, which is the single most important driver of cost. Wafer-scale processing enables the production of high unit volumes at low incremental costs, ultimately allowing us to reduce the cost of building photonics devices by 25% to 40% compared to conventional approaches,” stated Suresh Venkatesan, Chairman and CEO of POET. “Following our successful demonstration of this flip-chip assembly process, POET can now readily incorporate these lasers and other active devices into derivative optical engine configurations, supporting data communications applications such as 200G CWDM4, 100G CWDM6, and 100G LR4, telecom applications such as 5G, as well as other applications that could benefit from the small size and low cost of our platform technology.”

Four DML lasers are commonly used in 100G transceiver applications, a key initial target market for POET’s Optical Interposer, enabling high speed optical communication in the 2 to 10 km range. Operating at speeds of 25 gigabits per second (GPS), POET’s family of four DML lasers of different wavelengths are the first known commercial 25G DFB-type DML lasers to utilize a flip-chip process to passively align and bond to electronic and optical circuitry on the interposer platform, while maintaining optimal performance. Given the estimated total available market (TAM) for 100G transceivers of approximately \$2.5 billion, POET believes that its recently formed JV company, SuperPhotonics Xiamen, can achieve annual revenue of over \$100 million within this single market segment in the 2024-25 time frame.

Flip-chip assembly of electronic devices on circuit boards, MEMS (Microelectromechanical Systems) and other devices is an advanced manufacturing process for achieving electrical interconnect (often referred to as 2-D, 2.5-D and 3-D) in semiconductor architectures. To achieve the benefits of the planar architecture of POET's Optical Interposer that facilitates wafer-scale processing, flip-chipping of lasers was an important development milestone, requiring POET to demonstrate that it could simultaneously optimize the RF (radio frequency) performance of the flip-chipped DML laser on interposer while preserving a low RIN (relative intensity noise) measurement both before and after assembly. RF performance relates to the quality and power of the electrical signals, while RIN is a measure of stability of the lasers that are assembled on the Interposer.

### **"Beyond The Press Release"**

POET Technologies goes "Beyond The Press Release" to discuss today's news. Shareholders and other interested parties are encouraged to check back on this link before market open on the morning of Tuesday December 22, 2020.

<https://agoracom.com/ir/POETTechnologies/forums/discussion/topics/751215-poet-technologies-goes-beyond-the-press-release/messages/2293211#message>

### **About POET Technologies Inc.**

POET Technologies is a design and development company offering integration solutions based on the POET Optical Interposer™ a novel platform that allows the seamless integration of electronic and photonic devices into a single multi-chip module using advanced wafer-level semiconductor manufacturing techniques and packaging methods. POET's Optical Interposer eliminates costly components and labor-intensive assembly, alignment, burn-in and testing methods employed in conventional photonics. The cost-efficient integration scheme and scalability of the POET Optical Interposer brings value to any device or system that integrates electronics and photonics, including some of the highest growth areas of computing, such as Artificial Intelligence (AI), the Internet of Things (IoT), autonomous vehicles and high-speed networking for cloud service providers and data centers. POET is headquartered in Toronto, with operations in Allentown, PA and Singapore. More information may be obtained at [www.poet-technologies.com](http://www.poet-technologies.com).

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Company's product development efforts, the performance of its products, the expected results of its operations, meeting revenue targets, and the expectation of continued success in the financing efforts, the capability, functionality, performance and cost of the Company's technology as well as the market acceptance, inclusion and timing of the Company's technology in current and future products.

Such forward-looking information or statements are based on a number of risks, uncertainties and assumptions which may cause actual results or other expectations to differ materially from those anticipated and which may prove to be incorrect. Assumptions have been made regarding, among other things, management's expectations regarding the success and timing for completion of its development efforts, financing activities, future growth, recruitment of personnel, opening of offices, the form and potential of its planned joint venture, plans for and completion of projects by the Company's third-party consultants, contractors and partners, availability of capital, and the necessity to incur capital and other expenditures. Actual results could differ materially due to a number of factors, including, without limitation, the failure of its products to meet performance requirements, operational risks in the completion of the Company's anticipated projects, a delay or abandonment of its planned joint venture, delays in recruitment for its newly opened operations or changes in plans with respect to the development of the Company's anticipated projects by third-parties, risks affecting the Company's ability to execute projects, the ability of the Company to generate sales for its products, the ability to attract key personnel, and the ability to raise additional capital. Although the Company believes that the expectations reflected in the forward-looking information or statements are reasonable, prospective investors in the Company's securities should not place undue reliance on forward-looking statements because the Company can provide no assurance that such expectations will prove to be correct. Forward-looking information and statements contained in this news release are as of the date of this news release and the Company assumes no obligation to update or revise this forward-looking information and statements except as required by law.

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