NEOPHOTONICS CORP
Form 424B4
May 22, 2015
**Table of Contents**

**Filed Pursuant to Rule 424(b)(4)**
**Registration Nos. 333-201180, 333-204361**

**PROSPECTUS**

**5,971,034 Shares**

**NeoPhotonics Corporation**

**Common Stock**

We are offering 5,971,034 shares of our common stock. Our common stock is listed on the New York Stock Exchange under the symbol NPTN. On May 21, 2015, the last reported sale price for our common stock on the New York Stock Exchange was $7.25 per share.

**Investing in our common stock involves risks. See Risk Factors beginning on page 19 of this prospectus.**

| | Per Share | Total |
|---|---|---|
| Public Offering Price | $ 7.25 | $ 43,289,997 |
| Underwriting Discount(1) | $ 0.435 | $ 2,597,400 |
| Proceeds, Before Expenses, to us | $ 6.815 | $ 40,692,597 |

(1) See Underwriting for additional information regarding underwriting compensation.
We have granted the underwriters the right to purchase up to 895,655 shares of our common stock to cover over-allotments.

Entities affiliated with Oak Investment Partners ( Oak ) have agreed to purchase 275,862 shares of our common stock in this offering at the price offered to the public. As of April 30, 2015, Oak beneficially owned more than 5% of our common stock and is affiliated with a member of our board of directors.

The Securities and Exchange Commission and state securities regulators have not approved or disapproved of these securities or determined if this prospectus is truthful or complete. It is illegal for any person to tell you otherwise.

We anticipate that delivery of the shares of common stock will be made on or about May 27, 2015.

*Sole Book-Running Manager*

**Needham & Company**

*Co-Managers*

**Craig-Hallum Capital Group** **B. Riley & Co.**

**The date of this prospectus is May 21, 2015.**

Table of Contents

## TABLE OF CONTENTS



**We and the underwriters have not authorized anyone to provide any information or to make any representations other than those contained in or incorporated by reference in this prospectus or in any free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in or incorporated by reference in this prospectus is accurate only as of its date regardless of the time of delivery of this prospectus or of any sale of common stock.**

To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in any document incorporated by reference filed with the Securities and Exchange Commission (SEC) before the date of this prospectus, on the other hand, you should rely on the information in this prospectus. If any statement in a document incorporated by reference is inconsistent with a statement in another document incorporated by reference having a later date, the statement in the document having the later date modifies or supersedes the earlier statement.

Neither we nor the underwriters have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons who come into possession of this prospectus and any free writing prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus and any free writing prospectus applicable to that jurisdiction.

Table of Contents

## CONVENTIONS THAT APPLY IN THIS PROSPECTUS

Unless otherwise indicated, references in this prospectus to:

3G refers to third-generation wireless architecture;

4G refers to fourth-generation wireless architecture;

10G refers to 10 Gbps;

100G products collectively refers to all products sold by us designed for use at 100Gbps ( 100G ), and in coherent transmission systems designed for use at 100Gbps or higher data rates. Some customers may use components designed for use at 100G at lower speeds. Our 100G products include both coherent transmission products and 100G network products that are not coherent;

III-V compound semiconductors refers to compound semiconductor materials made from group III and group V elements of the periodic table, such as Indium Phosphide and Gallium Arsenide;

Access refers to the portion of the telecommunications network that connects subscribers to their carriers network;

Advanced Hybrid Photonic Integration refers to state-of-the-art integration of multi-platform materials and devices;

CDC refers to Colorless, Directionless, and Contentionless;

China refers to the People s Republic of China;

Coherent refers to optical transmission systems that encode information in the phase of an optical signal and decode such information through comparison with an independent laser at the receiver and digital signal processing;

Contentionless refers to the ability to switch two or more channels of the same wavelength or color from different directions through the same switch, such as a Multi-Cast Switch (MCS);

Design win refers to a confirmation by a customer that a product or group of products may be used as part of a customer s product and we have a purchase order for such products;

Drop Modules refers to wavelength multiplexer modules;

ECL refers to External Cavity Laser;
EML refers to Externally Modulated Laser;

Gbps refers to gigabits per second;

High Speed Products refers to transmitter and receiver products as well as switching and other component products for 100G optical transmission applications over distances of 2 to 2,000 kilometers. Our high speed 100G and beyond products are based on our Advanced Hybrid Photonic Integration technology. These technologies support encoding 100 gigabits or more per second of information for transmitting over a single channel and decoding the information at the receiver. Through 2014, our use of this term included our products designed for use at 40Gbps ( 40G ) and those products accounted for less than 1% of our total revenue and approximately 1% of our revenue from high speed products in the year ended December 31, 2014. From 2015 onward, we intend that High Speed Products will refer exclusively to products sold by us and designed for use at 100Gbps or higher data rates;

ICR refers to Integrated Coherent Receiver;

ICT refers to Integrated Coherent Transmitter;

ITLA refers to Integrable Tunable Laser Assembly;

Long Haul refers to fiber optic communications between central offices in different cities, where distances range from a few hundred to two thousand kilometers;

Table of Contents

LTE refers to Long-Term Evolution wireless architecture;

Metro refers to fiber optic communications between central offices within and around cities, with distances up to a few hundred kilometers;

MCS refers to Multi-Cast Switch;

MPEG-2 refers to the Moving Picture Experts Group standard for compressed coding of moving pictures and associated audio information;

Network Products and Solutions collectively refers to all products sold by us for use in optical communications networks and a variety of other applications that are designed for use at data rates that are less than 100Gbps, including 40G, 10G or lower data rates. These products include certain passive products that do not explicitly have a data rate specification, but that are most commonly used in networks at these data rates. From 2015 onward, Network Products and Solutions will include products sold by us and designed for use at 40G that, prior to 2015, were included with High Speed Products;

NLW refers to Narrow Line Width;

petabytes refers to one million billion bytes;

PIC refers to Photonic Integrated Circuit;

PLC refers to Planar Lightwave Circuit;

PON refers to a Passive Optical Network;

QSFP refers to 40G and 100G Quad Small Form-factor modules that are pluggable into standard industry interfaces for switches, routers and other telecommunications equipment;

ROADM refers to Reconfigurable Optical Add Drop Multiplexer;

SFP+ refers to 10G Small Form-factor modules that are pluggable into standard industry interfaces for switches, routers and other telecommunications equipment;

U.S. GAAP refers to generally accepted accounting principles in the United States;

WDM refers to Wavelength-Division Multiplexing and is a technology that combines multiple channels onto a single fiber using different wavelengths, or colors, of light;

well-characterized refers to the ability to predict the outcome of manufacturing processes based upon known statistics of various manufacturing inputs; and

WSS refers to Wavelength Selective Switch.

Unless the context indicates otherwise, we use the terms NeoPhotonics, we, us, our and the Company in this prospectus to refer to NeoPhotonics Corporation and, where appropriate, its subsidiaries.

Table of Contents

## PROSPECTUS SUMMARY

*This summary highlights certain information about us, this offering and selected information contained elsewhere in this prospectus and in the documents incorporated by reference. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider carefully the more detailed information contained in or incorporated by reference in this prospectus, including the information contained under the heading Risk Factors beginning on page 19 of this prospectus, and the information included in any free writing prospectus that we have authorized for use in connection with this offering.*

### Business Overview

We develop, manufacture and sell optoelectronic products that transmit, receive and switch high speed digital optical signals for communications networks. Revenue from our High Speed Products (100G and beyond) increased to 42% of our total revenue reaching $129.6 million in the year ended December 31, 2014, from 2% in the year ended December 31, 2011. Revenue from our High Speed Products increased to 57% of our total revenue reaching $46.6 million in the three months ended March 31, 2015, from 8% in the three months ended March 31, 2012.

Our 100G and beyond products require our Advanced Hybrid Photonic Integration technology. We produce photonic integrated circuits (PICs) that comprise both arrayed and individual photonic functional elements using optimized materials systems and processes from our in-house Silicon, Indium Phosphide and Gallium Arsenide wafer fabrication. These individual PICs from different materials are then combined using our hybrid integration technology to make complete products, such as our Integrated Coherent Receiver (ICR) for 100G coherent transport applications. According to Infonetics Research, Inc. (Infonetics), WDM system revenue attributable to 100G network applications has grown from 12% of the WDM network equipment market in 2012 to 41% in 2014 and is forecasted to grow to 52% of this market in 2016.

According to Infonetics, 100G networks are among the highest growth segments of the optical communications market, supporting the rapid expansion of backbone networks and accommodating increased mobile traffic. The high speed 100G and beyond market, which requires advanced photonic integration technology, is the core focus of our strategy.

Our Advanced Hybrid Photonic Integration technology progressively increases performance, reduces cost and reduces size of our products. These cost reductions and performance increases are required for the growth of network capacity.

As we penetrate the rapidly growing 100G market, we are reducing our product offerings for slower speeds and certain other products that do not meet our profitability standards. We continually seek to drive down our cost of goods, and are implementing initiatives designed to reduce our infrastructure and operating expenses and to strengthen our balance sheet. In January 2015, we acquired the tunable laser product lines of EMCORE Corporation (EMCORE), including the industry s narrowest line width tunable laser, favored for 100G coherent networks and for 200G and 400G applications currently in development.

We sell our products to the world s leading network equipment manufacturers, including Alcatel-Lucent SA, Ciena Corporation, Cisco Systems, Inc., and Huawei Technologies Co., Ltd. These four companies are among our largest customers and a focus of our strategy due to their leading market positions. According to Infonetics, these four companies supplied 70% of the 2013 world market for 100G coherent communications ports. These four companies accounted for 68% of our revenue in the year ended December 31, 2014, and 79% of our revenue in the three months ended March 31, 2015.

1

Table of Contents

We have research and development and wafer fabrication facilities in San Jose and Fremont, California and in Tokyo, Japan that coordinate with our research and development and manufacturing facilities in Dongguan, Shenzhen and Wuhan, China and Ottawa, Canada. We use proprietary design tools and design-for-manufacturing techniques to align our design process with our precision nanoscale, vertically integrated manufacturing and testing. We believe we are one of the highest volume PIC manufacturers in the world and that we can further expand our manufacturing capacity to meet market needs.

In October 2011, we acquired Santur Corporation (Santur), a leading producer of tunable lasers and of 100G transceiver modules. Santur s capabilities included array DFB (distributed feedback) lasers, silicon photonics and photonic integration of such active elements as lasers, modulators and photodiodes.

In March 2013, we acquired the optical component business unit of LAPIS Semiconductor Co., Ltd., located in Japan, now known as NeoPhotonics Semiconductor, which is a leading producer of high performance communications lasers, photodiodes and optical control electronic devices. NeoPhotonics Semiconductor was built over 30 years as part of OKI Electric, and earned a reputation as a leading developer and supplier of the highest speed optoelectronic devices. This business produces high speed EML lasers and photodiodes from Indium Phosphide, and semiconductor drivers and high sensitivity amplifiers from Gallium Arsenide.

In January 2015, we acquired the tunable laser product lines of EMCORE. We anticipate strong complementarity between EMCORE s leading ultra NLW tunable lasers for the industry s highest speed applications and our highest speed and most sensitive receiver products at speeds of 400G and beyond.

We believe our technology is well positioned to serve the highest speed and most demanding applications. These three acquisitions, together with other internal developments, and acquisitions conducted prior to 2011, continue our path spanning more than ten years to develop complete Advanced Hybrid Photonic Integration capabilities.

**Industry Background**

The realm of communications, having become almost entirely digital, has moved from electronic signals over copper wire to optical signals over thin glass fibers, which achieves the speed and capacity necessary for the current and future communications market.

Increasingly, the most ubiquitous data link to users is via mobile devices through broadband wireless access. Smartphones now incorporate the most sophisticated and powerful applications which were developed at great cost over the last four decades for consumer electronics. Originally priced in the $100s, or $1,000s or $10,000s for earlier computing platforms, these applications, when migrated onto smartphones, are usually priced at cents to a few dollars per application. As cost performance has improved for applications by many orders of magnitude over the four decades since the introduction of the personal computer, so too has end user hardware advanced many orders of magnitude in cost performance, while network data rates have also increased a comparable magnitude.

The new era of connectedness is increasingly universal and demands that the capacity of the digital communications networks must increase exponentially. Smartphones have emerged as the vehicle connecting the entire digital world, with more than one billion current smartphone users. Not only are more people connected to the mobile web, they are connecting at increasingly higher data rates requiring higher bandwidths. Wireless network deployments have progressed from second generation (2G) to third generation (3G) to fourth generation (4G/LTE) and can now provide end-user download speeds approaching 50 megabits per second. Fiber to the Home (FTTH) connections have also continued apace, with more than 100 million homes receiving such service, according to the FTTH Council, and with download speeds reaching as high as 1 Gbps.

Table of Contents

**Industry Growth Dynamics**

The revolution in the power of low cost computing devices is associated with Moore s Law, referring to an observation made by Intel co-founder Gordon Moore in 1965 that the number of transistors per square inch on integrated circuits had doubled every two years since their invention and a prediction that this trend would continue. In the domain of optical communications, a similar revolution, progressing at a similar rate, is driven by the increased speed, smaller size and lower cost achieved by photonic integration.

Bandwidth capacity of communications networks continues to expand at a rapid rate. According to Infonetics, total deployed telecom bandwidth capacity will grow at a compound annual growth rate of 33% from 2014 to 2019, reaching more than 70 petabytes per second in 2019. According to Infonetics, total deployed datacenter bandwidth capacity is expected to grow even faster, at a compound annual growth rate of 38% from 2014 to 2019 and reaching more than 1000 petabytes per second in 2019.

According to Infonetics, datacom 100G transceiver revenue is projected to grow at a 31% compound annual growth rate from 2014 to 2019, reaching $1.3 billion in 2019. In contrast, revenue from slower speed products such as 10G datacom transceivers is forecast to decline at a 9% compound annual rate from 2014 to 2019.

**Digital Optical Communications Market Structure**

The digital optical communications market has two main sectors, telecom and datacom. The telecom sector includes the global backbone of Long Haul and Metro communications. It also includes local access links to end users. Telecom, with its historical background as a public utility, is driven by reliability, telecom communications protocols and standards, and the long life of its infrastructure capital investment. The service life objective for products used in telecom infrastructure historically has been 20 years.

The Long Haul telecom sector is the first adopter of the highest speed and most advanced communication links, which migrate over time into the Metro sector as costs are reduced such that they are economical in the shorter Metro network links, with its commensurate lower traffic densities prior to aggregation for Long Haul transport.

The datacom market can be described primarily as an enterprise market, in contrast to the historical public utility nature of the telecom market. In addition to the broad enterprise market, datacom also includes data center interconnect and data center infrastructure for cloud based services. Companies, including Amazon, Apple, Facebook, Google and Microsoft, are increasing investments in very large datacenters as they implement cloud-based big data services that can be crowd-sourced and crowd-distributed, and that utilize machine-to-machine and inter-datacenter transactions to power the mobile web. Such very large datacenters are an emerging high growth market for big pipes using dedicated 100G and beyond digital optical connections from datacenter to datacenter, datacenter to telecommunications carrier and within datacenters.

Generations of hardware installations for datacom, such as server farms and big data network storage facilities, have relatively short lives, typically about five years, as computing and storage technology advances rapidly. Therefore, the datacom market for optoelectronic devices generates more rapid changes in form factors, energy efficiency and compactness than the telecom market.

The datacom market is often the most cost sensitive sector of digital optical communications, and therefore it begins to adopt leading edge speeds after those speeds penetrate the Metro sector of the telecom market segment.

From this market structure, it can be concluded that a technology leader must achieve a leadership position in the Long Haul telecom sector as the basis for commercializing the most advanced technology.

Table of Contents

**Digital Optical Communications Network Equipment**

The structure of the industry that supplies the network equipment for the telecom digital optical communications network has largely concentrated down to leading vendors that include Alcatel-Lucent, Ciena, Cisco, Coriant (including Tellabs, which was acquired by Coriant in 2013), Fujitsu Limited, Huawei, Infinera, NEC and ZTE. These companies together in 2014 accounted for approximately 84.3% of the digital optical communications equipment market, according to Infonetics.

Major suppliers of network equipment to the datacom market include Alcatel-Lucent, Brocade, Cisco, Huawei and Juniper. At the optical module and component level, Avago, Finisar and Sumitomo Device Innovations are leading suppliers. Some of the largest investors in datacenters, for example, Google, are beginning to design and source their own optical network systems equipment from Asia-based OEMs. While the speeds for most of the datacom market today are at 10G, a fast growing 100G module market is emerging that provides big pipes for datacenters.

A single optical fiber can carry nearly 100 individual wavelengths (colors), each of which can now support 100 gigabits per second of capacity. Each of these wavelengths requires a 100G transmitter and receiver, which can be tuned to any of the 100 separate channels. Thus, using 100G coherent technology and industry standard compression (MPEG-2), a single fiber can carry approximately 500,000 individual high definition full motion movies simultaneously over one fiber.

The main photonic modules required for digital optical communications are transmitters, receivers and, where the network is branched, optical switches. Transmitters and receivers are often combined into single modules which are called transceivers. At the high end, such as Long Haul, a transmitter and receiver can be paired and combined with signal processing electronics to error correct and restore degradation which affects the signal after traveling long distances, in which case the unit is referred to as a transponder. According to Infonetics, the market in 2014 for 100G coherent transponders, and for shorter distance client 100G transceivers, was approximately $600 million. For high speeds each of these product types requires photonic integration at the most advanced and complete level.

Switching products, which switch different colors, or signal channels, down different branches of the network, have thus far been Reconfigurable Optical Add/Drop Multiplexers (ROADMs) consisting of Wavelength Selective Switches (WSSs). For 100G coherent networks, a new type of optical switch, the Multi-Cast Switch (MCS), has been developed and introduced to eliminate contention in 100G coherent switching. This type of switch is Colorless, Directionless, Contentionless (CDC), and its function is optimized for 100G coherent networks.

**Digital Optical Communications Technology Background**

Advances in cost performance in photonic integration have followed a path that has been similar to electronic integrated circuits.

The main objectives for technology advances in electronic digital integrated circuits and in integrated optical digital devices are similar, and are based on the drive towards lower cost and higher performance. In integrated optics these main objectives also include higher speed, lower power, smaller or denser form factor, and lower cost.

In both electronics and optics these objectives require ever increasing integration and miniaturization. In optics, however, advanced hybrid integration is required for the highest performance products. Hybrid integration for digital optical devices incorporates multiple types of materials substrates, rather than just one, as in silicon, for an electronic integrated circuit.

4

Table of Contents

Complete advanced photonics integration capability requires at least three materials substrate systems: Indium Phosphide for active devices such as lasers, photodiode detectors, modulators, and amplifiers; Silicon or planar doped silicon dioxide (silica) for wave guides, filters, interferometers and other passive devices; and Gallium Arsenide or Silicon Germanium for drivers and control functions at the speeds necessary for 100G. The integration of more than one material substrate is called hybrid integration, and Advanced Hybrid Photonic Integration enables products in the 100G and beyond domain.

**Advent of Coherent Transmission**

The recent advent of coherent digital optical transmission has increased the native capacity of a fiber optic link tenfold, versus a transmission modulation of simple on/off such as in 10G WDM networks. Coherent transmission modulation encodes information via phase and polarization, and the permutations of these variables are many times greater than on/off.

To create a detectable error-free signal in the coherent modality requires that each color (wavelength) transmitted be much purer than for lower speed protocols. The primary enabler of ultra NLW, that is, ultra pure color, is a new generation of the most advanced lasers. These NLW lasers must be paired with a new generation of receivers that decode phase and polarization through comparison with another NLW laser in a PIC-interferometer. Ultra NLW lasers are built on Indium Phosphide substrates while the receivers utilize a Silicon or Indium Phosphide interferometer and Indium Phosphide photo detectors.

These 100G coherent optical transmission devices require tighter tolerances of material thickness and other critical dimensions than do components operating at 10G. For 100G, a new generation of technologies, including faster Gallium Arsenide drivers, is required to suitably process transmission signals in both the laser transmitter or the detector and receiver. We believe we have well established and characterized the full range of laser and detector technologies required for implementing 100G coherent, a capability that we believe is held by only a few companies.

**Our Advanced Hybrid Photonic Integration Platform**

Through internal development or acquisition we believe we have all significant capabilities necessary to produce high performance Advanced Hybrid Photonic Integrated optoelectronic devices for the most stringent performance requirements and operating conditions. Our multi-material platform leverages:

*Indium Phosphide (InP):* Indium Phosphide is used to produce efficient lasers, sensitive photo detectors and modulators in the wavelength window typically used for telecommunications, i.e. 1.55 micron wavelengths, as it is a direct bandgap III-V compound semiconductor material. InP is the most important material for the generation of laser signals and the detection and conversion of those signals back to electronic form.

*Silicon (Silicon Photonics or Planar Lightwave Circuits):* Silicon is very inefficient in generating or detecting light in the telecom wavelength window as it is an indirect bandgap semiconductor material. Consequently, waveguides of Silicon or doped silicon dioxide (silica) exhibit very low optical loss and are ideal for switching, filtering or interferometric applications. Modulators using Silicon waveguides are now being developed.

*Gallium Arsenide (GaAs):* Gallium Arsenide can operate at very high speeds and is well suited to make analog integrated circuit drivers for high speed lasers and modulators due to its high electron mobility. GaAs is a direct bandgap III-V compound semiconductor material, but unlike InP, GaAs does not lase in the telecom wavelength window.

*Silicon Germanium (SiGe):* Silicon Germanium is an alloy of Silicon and Germanium that is used to manufacture mixed signal and analog integrated circuits and is well suited for high speed amplifiers used in 100G systems. SiGe devices are made using standard silicon processing techniques in commercial foundries.

Table of Contents

We have developed design, integration and manufacturing approaches and techniques to produce advanced, high speed integrated solutions leveraging each of these in-house materials technology platforms.

**Hybrid Photonic Integration**

| Products | Indium Phosphide | Silicon/Silica | Gallium Arsenide/Silicon Germanium |
|---|---|---|---|
| Integrated Coherent Receiver | ü | ü | ü |
| Integrated Coherent Transmitter | ü | ü | ü |
| 100G Transceiver | ü | ü | ü |
| Multi-Cast Switch | ü | ü | ü |
| Narrow Line Width Tunable Laser | ü | | |
| 100G EML Lasers/Photodiodes | ü | | |

**Our Strategy**

*Continue innovating to develop industry-leading comprehensive technology for Advanced Hybrid Photonic Integration.* Over the past three years, we have strengthened our technology platforms for comprehensive advanced photonic integration, in part from acquisitions and in part from internally funded development. We expect to continue to combine our mixed platform approach to design and produce the highest performance optical signal processing solutions.

*Capture major customer share for the most advanced modules and components at the top suppliers of state of the art network equipment.* We intend to deepen our relationships with our strategic customers by increasing design wins in their systems, including Alcatel-Lucent, Ciena and Huawei Technologies and certain others, which are market leaders in 100G coherent systems.

*Offer a complete optoelectronic product line for 100G and beyond for leading edge telecom and datacom market segments.* We expect to continue to introduce Coherent Transmitter products that are optimized for the highest speeds and introduce Multi-Cast Switches so that our product line will include each of the major types of the most advanced products.

*Attain sustained profitability as a leading supplier of advanced optoelectronic products.* We intend to provide state of the art products to industry leading customers to advance our goal of achieving continuous improvement in operating performance, profitability and growth.

*Focus on high growth segments that leverage our leadership in Advanced Hybrid Photonic Integration and*

*that contribute to our profitable growth.* We plan to continue to develop our products and solutions to capture new opportunities, such as emerging 100G connections in both carrier networks and within and between large datacenters.

*Extend our product line into additional segments of the network that will benefit from ultra-high speed performance.* We intend to penetrate the emerging market for 100G connections both within and between mega-datacenters. In this segment we are targeting major users and builders of datacenters and datacenter equipment, such as Amazon, Apple, Facebook, Google and Microsoft, as they develop some of their own network equipment. We believe our technology and product line is well positioned to penetrate this market.

*Pursue acquisitions that extend our leadership position in advanced optoelectronic integration.* We may opportunistically pursue acquisitions that we believe provide complementary technology and that can accelerate our growth and strengthen our market position.

Table of Contents

## Our Technology

We have developed expertise in the design, large-scale fabrication, high-volume module manufacturing and commercial deployment of our Advanced Hybrid Photonic Integration products and technologies. The process of designing and manufacturing advanced optoelectronic integrated devices in high volume with predictable, well-characterized performance and low manufacturing costs is complex and multi-faceted. We have developed the technologies, using multiple materials platforms for photonic integration, that are required to design and manufacture complex, high-performance optoelectronic components, modules and subsystems for fiber optic networks. The basic elements of our technology are as follows:

*Mixed-material platform and optoelectronic integration technology.* We utilize a set of proprietary integration platforms that provide optoelectronic functionality on silicon and other integrated compound semiconductor substrates including Indium Phosphide, Gallium Arsenide and Silicon Germanium and integrated combinations of these platforms. We utilize micron and sub-micron scale structures of multiple silicon dioxide and Indium Phosphide waveguides to fabricate optoelectronic functional elements such as lasers, detectors, modulators, interferometers, integrated optical filters, switches and variable attenuators. We integrate these functional design elements into optoelectronic devices to achieve a desired functionality and specification that is incorporated into our products. Similarly, we use Gallium Arsenide and Silicon Germanium integration platforms for drivers, amplifiers and related high-speed electronic control functions for our integrated optoelectronic devices.

*Advanced Hybrid Photonic Integration.* Through precise fabrication and positioning of physical features, we can integrate numerous different optoelectronic devices, which are fabricated on separate wafers from different semiconductor and related materials, matching the material to the function to create improved performance by using the highest performance elements of each type. For example, our hybrid integration allows us to integrate active devices, such as photodiodes or lasers fabricated using Indium Phosphide, with high-performance passive devices, such as interferometers, switches, routers and filters, fabricated on silicon, and to mate electronic amplifiers made with Silicon Germanium or drivers made with Gallium Arsenide directly to optical elements made with Silicon or Indium Phosphide.

This ability to combine specific functional elements out of optimized materials not only allows for very compact and low power components, but also through the intimate coupling of different elements, makes possible completely new functions. An example of this multi-platform architecture is found in the coherent optical communications domain where we intimately couple a passive interferometer with separate quadrature components carrying information and with photo detectors to turn a high speed optical signal into data-rich electrical signals for processing.

*Hardware and firmware integration.* We also sell our products as modules and subsystems which contain electronic hardware and firmware controls that interface directly with our customers systems. We design the electronic hardware and develop the firmware for our optical products to meet customer specifications.

*Fabrication and manufacturing processes.* We have developed expertise in the technology domains relevant to high-volume fabrication and manufacturing of our optoelectronic integrated circuit products using wafer-scale processes and including the complex interaction of electro-optic, thermal-optic and mechanical micro-thermal features. Our complex manufacturing steps are analogous to many processes used in the semiconductor industry. Each integrated element is tested and characterized using our proprietary test equipment before incorporation into our products.

*Circuit design and design-for-manufacturing tools.* We use a comprehensive set of proprietary as well as industry standard software design tools, to model relevant geometries, dimensions and thermal management for a broad range

of photonic devices. With these tools, we develop products with minimal design iterations and manage precision manufacturing to a narrow range of high performance specifications.

Table of Contents

## Our Products

We develop and manufacture Transmitter Products, Receiver Products and Switch Products that are used in ultra-high speed digital optical communications, high speed switching and provisioning, and access connections for wireless and fiber-to-the-home communications networks. We combine our transmitter and receiver products into Transceiver modules. Our Switching Products, such as Multi-Cast Switches, are used primarily in ROADM nodes that dynamically and efficiently allocate bandwidth to adjust for fast changing traffic patterns and for provisioning software defined networks. Our products can be categorized into groups, including High Speed Products for ultra high speed 100G and beyond applications, including in coherent networks, and Network Products and Solutions, for lower speed networks including Access, 10G networks and other telecom products.

*High Speed Products*: We produce transmitter and receiver products as well as switching products for 100G optical transmission applications over distances of 2 to 2,000 kilometers. All of our high speed 100G and beyond products are based on our Advanced Hybrid Photonic Integration technology. This technology supports encoding 100 gigabits or more per second of information for transmitting over a single channel and decoding the information at the receiver. Through 2014, our use of the term High Speed Products included products designed for use at 40G rates. From 2015 onward, High Speed Products will refer exclusively to products sold by us and designed for use at 100Gbps or higher data rates.

For long distance transport of 100 to 2,000 kilometers, we design and manufacture optical components for coherent systems, which manipulate light to encode ten times or more the amount of information in the same wavelength channel than is possible with traditional methods. This manipulation can only be accomplished using advanced photonic integration to intimately couple functional elements together. Our Coherent Products include NLW tunable transmitter and local oscillator lasers (also referred to as Integrable Tunable Laser Assembly, or ITLA), which generate the ultra-pure wavelength, or color, necessary for coherent transmission, and Integrated Coherent Receivers (ICRs), which decode the phase and polarization encoded coherent signal. We support platforms for NLW tunable transmission based on array DFB lasers and on ECL lasers. We are developing new generations of Coherent Transmitters which combine the NLW-ITLA with an Indium Phosphide-based coherent modulator, with Gallium Arsenide drivers for the modulator.

For distances under 100 kilometers, we produce Externally Modulated Lasers (EMLs), Gallium Arsenide drivers for the EMLs, and Indium Phosphide receivers. In addition, we integrate these individual PICs to offer complete 100G optoelectronic transceiver modules.

We provide a proprietary switching solution for 100G coherent systems such as our Multi-Cast Switch (MCS) product line. Our 4x4 and cascadable 4x16 Multi-Cast Switch modules for CDC ROADMs efficiently allocate bandwidth and signal routing in 100G and higher data rate networks. The Multi-Cast Switch provides scalable contentionless operation to achieve the highest traffic management efficiency, optimizing traffic flows in 100G coherent systems. Our MCS uses our PLC photonic integration platform and consists of a complex array of switches, waveguides, taps, crossings and other functional elements manufactured on Silicon wafers using standard semiconductor processing equipment.

*Network Products and Solutions:* We design and manufacture a broad range of products for optical communications networks and a variety of other applications, where the networks operate at speeds less than 100G. Many of these products provide high-bandwidth connections to base station antennas for mobile devices and to people and machines over fixed and wireless networks. As consumer connectivity speeds have increased through the transitions from 2G to 3G to 4G/LTE, the bandwidths necessary to aggregate and connect wireless traffic into the backbone network, including Mobile Backhaul, have also increased. We offer 10G EML lasers, laser drivers, modulator drivers,

photodiode receivers, as well as complete transceiver modules, SFP+ modules and bidirectional transceiver modules designed with the necessary bandwidth for connecting 4G/LTE wireless base station antennas. Similarly, for wired connections, we design and manufacture Optical Line Terminal (OLT)

Table of Contents

transceivers for Fiber to the Home and Business in PON networks up to 10G data rates. In addition, we offer a wide range of application-specific passive optical functionalities in modules or sub-system configurations. From 2015 onward, our use of the term Network Products and Solutions will include products sold by us and designed for use at 40G that, prior to 2015, were included with High Speed products.

For applications under 100G, we also design and produce Switch Products which are manufactured using our Silicon wafer based waveguide integration platform. These products include Drop Modules used in current ROADM nodes.

In addition to products for fiber optic communications, we also sell products for test and measurement, instrumentation, industrial and research applications.

**Our Infrastructure, Intellectual Property and Our Employees**

We have product development and product sustaining engineering teams in Silicon Valley (San Jose and Fremont, California), Tokyo, Japan, and Shenzhen and Wuhan, China. In our Silicon Valley and Tokyo facilities we conduct research, product development and product roadmap definitions, including for our PIC products. In our Shenzhen facilities, we conduct new product development, manufacturing and process engineering, quality control, continuous improvement and cost reduction relating to product manufacturing, assembly and test. In our Wuhan, China and Ottawa, Canada facilities we conduct new product development.

We seek to establish and maintain proprietary rights in our technology and products through the use of patents, copyrights and trade secret laws. We have filed applications for patents to protect certain of our intellectual property in the U.S. and in other countries, including Australia, Canada, Japan, Korea, Hong Kong, China, Russia, India, Taiwan and several European Union countries. As of March 31, 2015, we had approximately 600 issued patents, expiring between 2015 and 2033, covering various aspects of our technologies.

We have manufacturing operations in the U.S., Japan and China. Our wafer fabrication operations are located in our San Jose and Fremont, California facilities, as well as in our Japan facilities, and include chip design, clean room fabrication, integration and related facilities for PICs. Our manufacturing, assembly and test operations are located in our Shenzhen and Dongguan, China facilities, and in Silicon Valley, California. In addition we are in the process of establishing manufacturing capability in Russia.

As of March 31, 2015, we had 2,431 employees and non-employee contractors, of which 283 were based in California, 2,004 in China, 122 in Japan, 9 in Russia, 8 in Canada and 5 in Europe, the Middle East and Africa (EMEA).

**Risk Factors**

*Our business is subject to numerous risks and uncertainties, such as those highlighted in the section titled Risk Factors immediately following this prospectus summary, including:*

We have a history of losses which may continue in the future.

We are under continuous pressure to reduce the prices of our products, which has affected, and may continue to adversely affect, our gross margins.

We are dependent on Huawei Technologies, Ciena, Alcatel-Lucent SA and our other key customers for a significant portion of our revenue and the loss of, or a significant reduction in orders from any of our key customers may reduce our revenue and adversely impact our results of operations.

If spending for communications networks does not continue to grow as expected, our business and financial results may suffer.

We are dependent on the continued growth in spending for communications networks.

Table of Contents

We must continually achieve new design wins and enhance existing products or our business and future revenue may be harmed.

Failure to realize the anticipated benefits from our planned expansion in the Russian Federation may affect our future results of operations and financial condition.

We have recently remediated previously-identified material weaknesses in our internal control over financial reporting.

Adverse changes in economic and political policies in China, or Chinese laws or regulations could have a material adverse effect on business conditions and the overall economic growth of China, which could adversely affect our business.

Our cost advantage from having our manufacturing and part of our research and development in China may diminish over time due to increasing labor costs, which could materially and adversely affect our operating results.

The concentration of our capital stock ownership with our principal stockholders, executive officers and directors and their affiliates will limit other stockholders ability to influence corporate matters.

**Corporate Information**

We were incorporated in October 1996 in the State of Delaware. Our principal executive offices are located at 2911 Zanker Road, San Jose, California 95134, USA, and our telephone number is +1 (408) 232-9200. Our website address is www.neophotonics.com. Information contained on our website is not incorporated by reference into this prospectus, and you should not consider information contained on our website to be part of this prospectus or in deciding whether to purchase shares of our common stock. We changed our name to NeoPhotonics Corporation in 2002 after having been incorporated as NanoGram Corporation.

Our name is a registered trademark of NeoPhotonics Corporation. This prospectus and the documents incorporated by reference in this prospectus contain additional trade names and trademarks of NeoPhotonics and of other companies.

Table of Contents

## THE OFFERING

| | |
|---|---|
| Common stock offered by us | 5,971,034 shares |
| Over-allotment option | 895,655 shares |
| Common stock to be outstanding after this offering | 38,868,391 shares (or 39,764,046 shares if the underwriters exercise their option to purchase additional shares in full) |
| Potential Insider Participation | Entities affiliated with Oak Investment Partners ( Oak ) have agreed to purchase 275,862 shares of our common stock in this offering at the price offered to the public. As of April 30, 2015, Oak beneficially owned more than 5% of our common stock and is affiliated with a member of our board of directors. The underwriters will receive the same discounts and commissions from any shares of our common stock purchased by these stockholders as they will from any other shares of our common stock sold to the public in this offering. The shares purchased by these stockholders will be subject to the lock-up restrictions described in Underwriting. |
| Use of proceeds | We intend to use our net proceeds from this offering for working capital, to continue to expand our existing business and for general corporate purposes. Accordingly, our management will have broad discretion in the application of our net proceeds from this offering, and investors will be relying on management s judgment regarding the application of these net proceeds. See Use of Proceeds on page 22. |
| NYSE symbol | NPTN |

The number of shares of our common stock to be outstanding after this offering is based on 32,897,357 shares of our common stock outstanding as of March 31, 2015. The number of shares of our common stock to be outstanding after the closing of this offering excludes as of March 31, 2015:

- stock options to purchase 4,945,810 shares of common stock with a weighted average exercise price of $4.03 per share before any impact of the pending completion of our tender offer;
- 614,043 shares of common stock issuable upon the vesting of restricted stock units;

2,585,567 shares of common stock reserved for future issuance under our 2010 equity incentive plan and 2010 employee stock purchase plan, and shares that become available under the plans pursuant to provisions thereof that automatically increase the share reserves under the plans each year; and

257,267 shares of common stock reserved for future issuance under our 2011 equity inducement plan.

Unless otherwise indicated, all information in this prospectus assumes no exercise by the underwriters of their right to purchase up to an additional 895,655 shares of common stock from us.

Table of Contents

## SUMMARY CONSOLIDATED FINANCIAL DATA

The following summary consolidated financial data should be read together with our consolidated financial statements and related notes and Management s Discussion and Analysis of Financial Condition and Results of Operations incorporated by reference in this prospectus. The summary consolidated financial data in this section is not intended to replace our consolidated financial statements and the related notes.

We derived the consolidated statements of operations data for the years ended December 31, 2012, 2013 and 2014, from our audited consolidated financial statements incorporated by reference in this prospectus. The consolidated statements of operations data for the three months ended March 31, 2014 and 2015, the consolidated statements of operations data for each of the quarters in the two years ended December 31, 2014, and the consolidated balance sheet data as of March 31, 2015, are derived from our unaudited consolidated financial statements incorporated by reference in this prospectus. In the opinion of our management, the unaudited consolidated financial statements reflect all adjustments, consisting of only normal recurring adjustments, necessary for a fair statement of such data. Our historical results are not necessarily indicative of our future results.

**Consolidated Statements of Operations Data:**

| (in thousands, except percentages and per share data) | Years ended December 31, | | | Three months ended March 31, | |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2014 | 2015 |
| Revenue | $ 245,423 | $ 282,242 | $ 306,177 | $ 68,168 | $ 81,384 |
| Gross profit | 61,260 | 65,173 | 71,118 | 13,800 | 24,053 |
| Total operating expenses | 78,167 | 98,846 | 90,250 | 24,833 | 23,017 |
| Income (loss) from operations | (16,907) | (33,673) | (19,132) | (11,033) | 1,036 |
| Net income (loss) attributable to NeoPhotonics Corporation common stockholders | (17,530) | (34,339) | (19,719) | (12,588) | 100 |
| Basic and diluted net income (loss) per share attributable to NeoPhotonics Corporation common stockholders | $ (0.62) | $ (1.11) | $ (0.61) | $ (0.40) | $ 0.00 |
| Weighted average shares used to compute basic net income (loss) per share attributable to NeoPhotonics Corporation common stockholders | 28,530 | 31,000 | 32,109 | 31,610 | 32,780 |
| Weighted average shares used to compute diluted net income (loss) per share attributable to NeoPhotonics Corporation common stockholders | 28,530 | 31,000 | 32,109 | 31,610 | 33,031 |
| **Percentage of revenue:** | | | | | |
| Gross margin | 25% | 23% | 23% | 20% | &nbs |