innovation®

onto

2021

**Annual Report +
2022 Proxy**

ontoinnovation.com

Fellow Stockholders

Onto Innovation's strong performance in 2021 can be credited to the contributions of the worldwide team. Our dedicated employees continued to work through the challenges of COVID-19 while simultaneously meeting the rising customer demand for our products and services. The team's high-performance enabled us to overcome supply chain challenges and meet our commitments to customers, producing exceptional growth and record results in a company that just completed its second full year of operation following our merger.

2021 Financial Highlights
In 2021, Onto Innovation delivered strong growth, profitability, and free cash flow. We achieved record revenues across all of our major markets. We also met our customer commitments while continuing to introduce new products. Our software and hardware engineers worked to co-develop process control solutions to deliver greater actionable information for our customers.

Onto's systems revenue grew 49% to $634 million in 2021, while our operating margins increased for the seventh consecutive quarter to reach a new high in the fourth quarter. Our diluted earnings per share increased four times to $2.86 per share, and cash from operations totaled $175 million, or 22% of revenue, all setting new records for Onto Innovation.

Our balance sheet remains very strong, with $511 million in total cash and investments with no debt. We remain focused on executing our capital management strategy of investing in acquisitions or mergers that enhance our core competencies of software and optics solutions in the broader semiconductor market. We believe these activities will strengthen our competitive advantages in the marketplace, while delivering the margins in our operating model and increasing stockholder value. In addition to our M&A focus, the board of directors authorized a $100 million stock repurchase plan in 2020 that remains in place. Stock repurchases may be made from time to time and the actual amount repurchased will depend on a variety of factors including market conditions.

Secular Trends Driving Sustainable Growth
The semiconductor and electronics industries are continuing to grow year-over-year. Semiconductor technology is transforming the world around us, how we interact with the world and how we work. The data being generated from this virtuous cycle creates demand for high-performance computing (HPC), artificial intelligence (AI), machine learning (ML), and rapid growth in new electric vehicle electronics and 5G communications markets. These macro drivers all need advanced logic and memory devices, specialty devices, and advanced packaging to deliver the increased speed and reduced power requirements needed today and in the foreseeable future. We see growth coming from each of these markets as our customers install new technologies within their existing fabs and build new fabs to keep up with demand in 2023 and beyond.

In addition to the number of new chips and packages being forecast, we also see an increasing need to insert metrology solutions for the increased number of wafer layers required for advanced nodes and greater inspection of interconnects for advanced packaging. Increased complexity drives smaller feature sizes for these devices and new advanced packaging architectures are needed to meet the higher performance and smaller form factors required. To do this requires inclusive, factory-wide manufacturing controls consisting of inspection and metrology systems along with overarching AI software to achieve higher yields, faster time to market, and the long-term reliability that is needed today.

Our Environmental Focus

As we look ahead to the next 20 years, we recognize that we have an important environmental role in semiconductor manufacturing. We have a principal responsibility to continue making process control solutions that our customers depend on to reduce their defects, scrapped materials, and energy consumption, while increasing their manufacturing efficiency and yields. Our solutions enable our customers to reduce their power consumption per wafer as well as reduce other necessary utilities. By increasing yields and decreasing inspection times, Onto facilitates higher output while helping to reduce the customer's carbon footprint. Our focus every day is on improving yield and efficiency for our customers, and our goal is to help reduce the overall environmental impacts of the global semiconductor industry.

We recognize that we need a healthy environment to provide the foundation for a stable economy and society for both current and future generations. We are striving to fulfill our duty to protect the environment and maintain a world that will support our long-term sustainable growth. Our five-year goal is to reduce our environmental impact by reducing: our carbon footprint; peak energy use; hazardous materials landfill; packaging materials; and fresh water. Our overall goal is to reduce our environmental impact by 30% (or more) by 2025. Our vision is to transform our entire business to help drive a more efficient low-carbon future and to support our customers and communities to achieve more, with less impact.

Looking Ahead

We are proud of the results we delivered in 2021. Guided by our long-term operating model for organic growth, we see a strong future in 2022 and beyond that can be achieved through the continued strength and dedication of our global organization. We expect Onto Innovation to continue to benefit from the numerous secular factors driving long-term industry demand. At the same time, our strategy of providing a diversified portfolio of products across the semiconductor value chain will continue to fuel broad-based growth for the company. As we continue to grow above $1 billion in revenue, we remain confident in the leverage of our long-term operating model continuing to increase cash flow and earnings.

And finally, we express a sincere thank you and appreciation to our loyal stockholders, customers, employees, suppliers and all who contributed to Onto Innovation's success as we look forward to continued growth in 2022 and beyond.

Sincerely,

Michael P. Plisinski
Chief Executive Officer

Christopher A. Seams
Chairman of the Board

Safe Harbor

This Annual Report contains forward-looking statements, including those regarding anticipated growth and trends in our businesses and markets, industry outlooks and demand drivers, technology transitions, our business and financial performance and market share positions, our capital allocation and cash deployment strategies, our investment and growth strategies, our development of new products and technologies, and other statements that are not historical facts, and actual results could differ materially. Risk factors that could cause actual results to differ are set forth in the "Risk Factors" section of, and elsewhere, in our 2021 Annual Report on Form 10-K included in this report and other filings with the Securities and Exchange Commission. All forward-looking statements are based on management's estimates, projections and assumptions as of the date hereof, and Onto Innovation undertakes no obligation to update any such statements.

Stockholder Information

LOCATION

HEADQUARTERS

Onto Innovation
16 Jonspin Road
Wilmington, Massachusetts 01887
Phone 978.253.6200
ontoinnovation.com

OTHER LOCATIONS

View all locations on our website:
https://ontoinnovation.com/company/locations

TRANSFER AGENT

MAIL CORRESPONDENCE TO

Computershare Trust Company, N.A.
Stockholder Services
P.O. Box 505000
Louisville, KY 40233-5000

SEND OVERNIGHT CORRESPONDENCE TO

Computershare
462 South 4th Street, Suite 1600
Louisville, KY 40202

ONLINE INQUIRIES

www-us.computershare.com/investor/contact

PHONE

781.575.4223 or 800.368.5948

INVESTOR INFORMATION

GENERAL STOCKHOLDER AND INVESTOR QUESTIONS MAY BE DIRECTED TO

Mike Sheaffer
Investor Relations,
Corporate Communications
Onto Innovation
16 Jonspin Road
Wilmington, Massachusetts 01887
investors@ontoinnovation.com

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Ernst & Young, LLP
Iselin, New Jersey

STOCK SYMBOL

Common stock is traded on the New York Stock Exchange under the symbol: ONTO

ANNUAL MEETING

Stockholders are invited to attend the Annual Meeting at 10:00 a.m. (PT) on Tuesday, May 10, 2022 at our offices, located at:
1550 Buckeye Drive
Milpitas, California 95035

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Fiscal Year Ended January 1, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File No. 001-39110

ONTO INNOVATION INC.

(Exact name of registrant as specified in its charter)

Delaware	**94-2276314**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

16 Jonspin Road, Wilmington, MA 01887
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (978) 253-6200

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of Each Class	Trading Symbol	Name of Exchange on Which Registered
Common Stock, $0.001 par value per share	**ONTO**	**New York Stock Exchange (NYSE)**

SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the registrant's voting Common Stock held by non-affiliates of the registrant was approximately $3,504,224,185 based on the closing price of the Common Stock on the New York Stock Exchange on June 25, 2021.

The number of shares of the registrant's Common Stock outstanding as of February 8, 2022 was 49,359,739.

DOCUMENTS INCORPORATED BY REFERENCE

Items 10, 11, 12, 13 and 14 of Part III of this Annual Report on Form 10-K incorporate by reference information from the definitive proxy statement for the registrant's annual meeting of stockholders scheduled to be held on May 10, 2022.

TABLE OF CONTENTS

FORWARD-LOOKING STATEMENTS

Certain statements in this Annual Report on Form 10-K (this "Form 10-K"), or incorporated by reference in this Form 10-K, of Onto Innovation Inc. (referred to in this Form 10-K, together with its consolidated subsidiaries, unless otherwise specified or suggested by the context, as the "Company," "Onto Innovation," "we," "our" or "us") may be considered "forward-looking statements" or may be based on "forward-looking statements," including, but not limited to, those concerning:

- anticipated effects of, and future actions to be taken in response to, the COVID-19 pandemic;
- our business momentum and future growth;
- technology development, product introduction and acceptance of our products and services;
- our manufacturing practices and ability to deliver both products and services consistent with our customers' demands and expectations and to strengthen our market position, including our ability to source components, materials, and equipment due to supply chain delays or shortages;
- our expectations of the semiconductor market outlook;
- future revenue, gross profits, research and development and engineering expenses, selling, general and administrative expenses, and cash requirements;
- our dependence on certain significant customers and anticipated trends and developments in and management plans for our business and the markets in which we operate; and
- our ability to be successful in managing our cost structure and cash expenditures and results of litigation.

Statements contained or incorporated by reference in this Form 10-K that are not purely historical are forward-looking statements and are subject to safe harbors created under Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Private Securities Litigation Reform Act of 1995. Forward-looking statements may be identified by words such as, but not limited to, "anticipate," "believe," "continue," "estimate," "expect," "intend," "plan," "should," "may," "could," "will," "would," "forecast," "project" and words or phrases of similar meaning, as they relate to our management or us.

Forward-looking statements contained herein reflect our current expectations, assumptions and projections with respect to future events and are subject to certain risks, uncertainties and assumptions, such as those identified in Part I, Item 1A. "Risk Factors" and elsewhere in this Form 10-K. Actual results may differ materially and adversely from those included in such forward-looking statements. Forward-looking statements reflect our position as of the date of this report and we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

PART I

Item 1. Business.

General

Onto Innovation is a worldwide leader in the design, development, manufacture and support of process control tools that perform macro-defect inspection and 2D/3D optical metrology, lithography systems, and process control analytical software used by bare silicon wafer manufacturers, semiconductor wafer fabricators, and advanced packaging manufacturers. Our products are also used for process control in a number of other high technology markets, including manufacturing of light emitting diodes ("LED"), vertical-cavity surface-emitting lasers ("VCSEL"), micro-electromechanical systems ("MEMS"), CMOS image sensors ("CIS"), compound semiconductor (SiC and GaN) power devices, RF filters and modules, data storage, and certain industrial and scientific applications.

We provide process and yield management solutions used in bare silicon wafer production and wafer processing facilities, often referred to as "front-end" manufacturing, and advanced packaging of chips and test facilities, or "back-end" manufacturing, through a portfolio of standalone systems for optical metrology, macro-defect inspection, packaging lithography, probe card test and analysis, as well as transparent and opaque thin film measurements. Our automated and integrated metrology systems measure critical dimensions, device structures, topography, shape, and various thin film compositions, including three-dimensional features and film thickness, as well as optical, electrical and material properties. Our primary area of focus are products that provide critical yield-enhancing and actionable information, which is used by microelectronic device manufacturers to drive down scrap costs and to decrease the time to market of their next-generation devices. Our systems feature sophisticated software and production-worthy automation. In addition, our advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, factory-wide, and enterprise-wide suites to enhance productivity and achieve significant cost savings. Our systems are backed by worldwide customer service and applications support.

2019 Merger

On October 25, 2019, we became Onto Innovation Inc. upon the effectiveness of the merger (the "2019 Merger") between Nanometrics Incorporated ("Nanometrics") and Rudolph Technologies, Inc. ("Rudolph"). We accounted for the 2019 Merger as a reverse acquisition using the acquisition method of accounting in accordance with generally accepted accounting principles ("GAAP"). GAAP requires that either Nanometrics or Rudolph is designated as the acquirer for accounting and financial reporting purposes ("Accounting Acquirer"). Based on the evidence available, Rudolph was designated as the Accounting Acquirer while Nanometrics was the acquirer for legal purposes. Therefore, Rudolph's historical results of operations replaced Nanometrics' historical results of operations for all periods prior to the 2019 Merger. See Note 3 in Part II, Item 8 of this Form 10-K for more details regarding the 2019 Merger. However, ONTO stock price and volumes prior to October 25, 2019 are Nanometrics (NANO) stock data.

Key Events in Fiscal 2021

Business Combination. In the first quarter of 2021, the Company acquired Inspectrology, LLC, a supplier of overlay metrology for controlling lithography and etch processes in the compound semiconductor market. The purchase consideration consisted of $24.0 million in cash paid at closing and an earnout subject to achievement of certain revenue targets earned for fiscal year 2021 and fiscal year 2022. As of January 1, 2022, $2.3 million of the earnout has been achieved with potential for up to an additional payment of $5.0 million based on fiscal 2022 results.

Impact of the COVID-19 Pandemic on Our Business. To date, the COVID-19 pandemic has disrupted the way that we conduct business but has not had a material adverse impact on our operations. We have not experienced significant delays in customer deliveries, but we are impacted by the global shortage in electronic components and our supply chain is strained in some cases as the availability of materials, logistics and freight options are challenging in many jurisdictions. The ultimate extent to which COVID-19 will impact our business depends on future developments, which are highly uncertain and very difficult to predict, including the effectiveness and utilization of vaccines for COVID-19 and its variants, new information that may emerge concerning the severity of COVID-19 and its variants, and actions to contain or limit their spread.

Industry Background

We participate in the sale, design, manufacture, marketing and support of process control systems for optical critical dimension ("OCD") metrology, thin film metrology, silicon wafer inspection, 2D and 3D macro inspection and lithography tools for advanced packaging and advanced analytical software for semiconductor manufacturing as well as inspection systems for certain industrial applications and scientific research. Our principal market is semiconductor capital equipment. Semiconductors packaged as integrated circuits, or “chips”, are used in consumer electronics, server and enterprise systems, mobile computing (including smart phones and tablets), data storage devices, and embedded automotive and control systems. Our core focus is the measurement and control of the structure, composition, and geometry of semiconductor devices as they are fabricated on silicon wafers to improve device performance and manufacturing yields. Our end customers manufacture many types of integrated circuits for a multitude of applications, each having unique manufacturing challenges. This includes integrated circuits to enable information processing and management (logic integrated circuits), memory storage (NAND, 3D-NAND, and DRAM), analog devices (e.g., Wi-Fi and 5G radio integrated circuits, power devices), MEMS sensor devices (accelerometers, pressure sensors, microphones), CMOS image sensors, and other specialty end markets including components for hard disk drives, LEDs, and power management devices.

Current Trends

Business Environment

Our metrology systems and software are primarily used for controlling certain manufacturing processes utilized in the production of advanced, or leading-edge, wafer designs. The shrinking of features such as the constituents that form a single transistor are known as node reductions. The numeric identification of a specific node usually refers to a dimension associated with one of the transistor’s constituents. Advanced nodes are associated with transistor dimensions less than 16nm. One of our largest customers produces advanced nodes as small as 5nm and began pre-production of 3nm in 2021. Our metrology systems used to measure and characterize these small features are generally purchased when a customer is beginning to manufacture at a new, smaller node, in order to set up and test new manufacturing equipment being installed for the new node. Our process control/metrology equipment is generally installed prior to the installation of the actual process equipment for that reason. Additional process control equipment is normally purchased when the initial process yields have been stabilized and more manufacturing capacity is required to meet production demands. Therefore, our sales to customers for advanced nodes is generally higher when manufacturing lines for new nodes are being established and may not represent continuous sales revenue until our initial systems reach high levels of utilization driven by the need for greater capacity.

Our inspection systems, lithography systems, and software are primarily used for processing and inspecting advanced packaging associated with the back-end manufacturing. The advanced packaging techniques represent a very wide variety of assembly methods in order to connect individual chips to a larger PC board, or connecting a group of chips together to form a “system in a package” (“SIP”), also known as heterogeneous integration (“HI”), or chiplets. Many of these advanced packages require lithographic imaging to produce copper interconnections between the chip and the PC Board or between chips in the case of SIP or HI advanced packages. Our inspection systems and software are used for process control and detection of potential reliability failures in nearly all of these packages. Unlike the cyclical nature of our metrology equipment associated with node shrinks, our sales revenue for advanced packaging is generally driven by assembly volumes. Inspection rates for advanced packages are high throughout the assembly process to avoid a single defective chip from being assembled into a relatively expensive package, making the inspection process control systems attach rates quite linear with production volumes of these devices. The introduction of 5G handsets and high-performance computing (“HPC”) continue to drive demand for advanced packaging; however, macroeconomic conditions, including COVID-19 and U.S-China trade disputes could curtail demand for higher volumes in the future.

In 2020, a significant portion of the global workforce began working from home as part of corporate efforts to isolate and protect workers from COVID-19. This transition resulted in extremely high usage of data centers and cloud processing that drove higher demand for increased memory and HPC devices. In addition, wireless 5G networks drove demand for new 5G phones in 2021. That demand is expected to continue in the first half of 2022 as new phones from Apple and Samsung were introduced to the market in 2021. The building of the 5G network over the next several years will also bring more machine-to-machine communications. These macro-drivers will increase the need for semiconductors and advanced packaging to deliver higher computing power in a single package and faster speeds for memory and logic devices, while reducing power consumption and cost. Such advances are generally achieved by node reductions/shrinks and by advanced packaging for high bandwidth memory and HI packaging. As discussed above, these trends in front-end and back-end manufacturing complexity are driving the demand for sophisticated metrology and inspection systems in order to achieve the semiconductor performance required while achieving a profitable manufacturing yield.

Since the first fiscal quarter of 2020, Onto Innovation has launched eight new products that include five new metrology systems, one new macro defect inspection system, a panel lithography tool and a new metrology software engine. These new products were introduced as logic IDMs and foundries were increasing their capacity while following aggressive plans to transition their manufacturing to smaller nodes. Other customer interactions at memory and specialty device manufacturers as well as providers of advanced packaging centered around satisfying the immediate demand for these devices with our existing product portfolio, while partnering with R&D groups to prepare for the process controls needed for the next generation of semiconductors and packaging that will require the latest systems from Onto Innovation. We believe our strong engineering teams have delivered, and will continue to deliver, new products to our customers, followed by our field engineers providing customer support, while simultaneously achieving our gross and operating margin targets that were established in our long-term operating models. Revenues in the four quarters of 2021 increased sequentially as customers transitioned to advanced nodes and increased advanced packaging volumes, and the Company was able to achieve operating margins and earnings at the high end of our quarterly guidance and analysts' estimates.

Markets

Advanced Nodes. refers to leading-edge integrated circuits where the feature sizes of transistors and other features continue to shrink in specified steps, or nodes measured in nanometers (nm). Demand for our products continues to be driven by our customers' desire for higher overall chip performance without increasing the chip size, while improving power efficiency, logic processing capability, data storage volume and manufacturing yield. To achieve these goals, our customers have increased their use of more complex materials and processing methods in their manufacturing flow. The primary paths for performance gains are geometric scaling, known as node shrinks, or scaling of transistor dimensions. In some cases, our customers are implementing new materials and methods in high volume manufacturing, including materials and device architectures to reduce power consumption, and stacked devices. To scale NAND memory, a 3D stacking architecture has been implemented at several customers with more than 150 storage cell layers for devices in production. Additional innovation continues in Data Storage, Power Devices, MEMS, and Image Sensors. We believe the use of these new materials and manufacturing methods has increased demand for our products such as the Atlas® product line that is capable of measuring these advanced nodes as certain features shrink to 7nm, 5nm and 3nm.

To shrink features, new methods, including multiple patterning lithography and extreme ultra-violet ("EUV") lithography, have been developed. The EUV process is driving significantly higher requirements for the silicon wafers that are entering the EUV chamber. Small, particles on the backside of the wafer measuring a few micrometers (microns) can distort the images being projected onto the top side. The NovusEdge® inspection tool has been installed at major silicon wafer manufacturers to detect backside contamination and edge cracking as a final quality control mechanism before wafers are shipped to the semiconductor fabrication processes. The top side of wafers used for the EUV process is covered with an epitaxial layer, which must also be scanned for any impurities. This compositional analysis is measured using our Element® system using Fourier Transform Infrared ("FTIR") algorithms.

Advanced Packaging. refers to a variety of technologies that enable the miniaturization of electronic products, such as portable consumer devices, including smartphones, watches, and tablets. Historically, integrated circuit packaging refers to the final stage of semiconductor device fabrication, in which a single circuit made from semiconducting material (a die or chip) is encased in a molded package using small wires to provide connections to a carrier that can be soldered to a printed circuit board and also prevents physical damage and corrosion to the chip. Advanced Packaging refers loosely to the multi-layer conductors and chip structures (other than wires) that often interconnect multiple die, feed them with electric power and create signal paths to and from the PC board, dissipate their heat, and protect them from damage. Today, the drive to pack more functions into a small space and reduce their power requirements demands that chip packages do much more than ever before to combine multiple chips and functions into a single molded package.

One example of the technology used in Advanced Packaging is the 3D integration of semiconductors. This technology involves stacking individual chips in one integrated package. Through-silicon vias ("TSVs") are vertical copper interconnects that are embedded from the bottom surface of a die to the top surface and uses small copper/solder "bumps" to connect one chip to another, which allows power and communication to be shared among the individually stacked components. This offers the advantages of shorter signal paths and, in turn, reduced power consumption, enhanced bandwidths, integration of heterogeneous components such as memory and logic chips, and smaller surface area. The processes required for 3D integration vary from one manufacturer to another and many continue to be optimized for yield and to ensure the functioning of individual stacked chips.

Heterogeneous packages are another advanced packaging technology using copper pillars/bumps to vertically connect a wide variety of stacked die for 2.5D, and 3D integration techniques as well as horizontally connected chips and are considered the next disruptive technology for several reasons. First, heterogeneous integrated packages using 3D stacking can significantly reduce the space needed inside an electronic device, such as a smartphone, by combining multiple chips/functions into a single package, often called a System-in-Package ("SIP"). Next, it improves the system's performance by reducing power and signal conductor lengths, which previously were routed from package to package through a printed circuit ("PC") board. Using thin redistribution layers ("RDLs") to connect chips that are side-by-side or "fan out" power and signal connections to the larger contacts on the PC board, which accounts for 35 percent of the packaging cost. Lastly, the technology is currently considered the preferred vehicle for next generation uses, such as SIP, and package on package formats. As a result of the small overall form factor, heterogeneous integrated packages provide the functionality needed in high-end mobile and wearable products.

The current and projected adoption of smart mobile devices with designed-in capability to enable multiple functions in a single device continues to grow. There are no longer single function devices, but instead, a combined single device provides multiple functions such as phone, GPS, camera, and internet browser. Aided by a myriad of available "apps," the potential uses seem endless. As a result, these added functions in mobile products are driving semiconductor advanced packaging and display manufacturers to implement next-generation technologies, such as 5G communications, to meet these requirements. These technology shifts encompass multiple high-value process steps that are creating opportunities for our solutions.

Panel Manufacturing. One current process to manufacture advanced packaging involves attaching known good die to a 300mm wafer, used as a temporary carrier when adding components such as RDLs and copper pillars. SIP packages can often contain side-by-side die, meaning the package can be large and limit the number of packages being placed on a reconstituted wafer. In order to meet the growing demand at reduced average selling prices, manufacturers are looking to scalable technology. Advanced packaging facilities looking to improve Cost of Ownership ("CoO") and increase productivity are transitioning from 300mm wafers to large rectangular panels, which can be as large as 600mm x 600mm. This larger size enables companies manufacturing large area packages to increase the number of devices being processed at each step as they are no longer limited to operating within the constraints of a round wafer. By responding to market opportunities and addressing the stringent demands of customers' technical roadmaps, we believe that Onto Innovation is optimally positioned to capitalize on the emerging market of high-volume panel manufacturing. For example, the JetStep® X500 lithography system, having emerged from the flat panel display market, is readily capable of processing RDLs on organic laminate panels in the semiconductor advanced packaging market. The Firefly® series, designed for high resolution inspection, can provide defect detection and location information to the JetStep X500 tool for each die, which greatly improves lithography throughput using our exclusive StepFAST™ process. It also delivers a combination of defect classification and process throughput in a single software platform. It reduces capital investment requirements and provides a reliable pathway to transition from wafer to panel-based processes.

Technology

We believe that our expertise in our core technologies of optics and software and our combined investment in research and development will enable us to rapidly develop new technologies and products as we have demonstrated over the past two years of operation in order to quickly respond to emerging industry trends and competitive challenges. The breadth of our technology enables us to offer a diverse combination of process and process control solutions. Unique features have been designed into our lithography systems to meet our customers' changing process requirements. Our metrology and inspection technologies provide process control for the majority of advanced node wafers processed today in a semiconductor wafer fab. In front-end processes, OCD metrology, thin film metrology, wafer stress metrology and macro defect detection and classification technologies allow yield enhancement for critical processes such as photolithography, diffusion, etch, chemical mechanical planarization ("CMP") and outgoing quality control. Within the back-end manufacturing processes, our 2D/3D advanced macro defect inspection provides our customers with critical quality assurance and process information. Defects may be created during probing, bumping, dicing, assembly processes (RDLs, TSVs, copper pillars, etc.) or general handling and can have a major impact on device and process quality. Lastly, we turn the gathered data into useful knowledge for our customers to make yield-enhancing decisions, which lower their scrap cost and environmental impact and improve their margins.

Onto Innovation's Products

Automated Metrology Systems. Our automated systems primarily consist of fully automated metrology systems that are employed in semiconductor production environments. The Atlas family of products represents our line of high-performance metrology systems providing OCD and thin film metrology and wafer stress metrology for transistor and interconnect metrology applications. The thin film and OCD technology is supported by our NanoCD™ suite of solutions including our latest introduction AI Diffract™ software, SpectraProbe™ software and NanoGen™ scalable computing engine that enables visualization, modeling, and analysis of complex structures.

AI Diffract is a modeling, visualization and analysis software that takes signals from the metrology systems, providing critical dimension, thickness, and optical properties from in-line measurements. The software has an intuitive three-dimensional modeling interface to provide visualization of today's advanced and complex semiconductor devices. There are proprietary fitting algorithms in AI Diffract that enable very accurate and very fast calculations for signal processing for high fidelity model-based measurements. SpectraProbe is a model-less fitting engine that enables fast time to solution for in-line excursion detection and control. SpectraProbe complements the high-fidelity modeling of AI Diffract with a simple machine learning interface for rapid recipe deployment. The software is supported by NanoGen, an enterprise scale computing hardware system that is deployed to run the computing intensive analysis software. NanoGen leverages commercial server chips and networking architecture and is optimized to support the workload of AI Diffract and SpectraProbe analysis.

Integrated Metrology Systems. Our integrated metrology ("IM") systems are installed directly onto wafer processing equipment to provide near real-time measurements for improved process control and maximum throughput. Our IM systems are sold directly to end user customers. The IMPULSE® family of products includes the latest technology for OCD, and thin film metrology, and have been successfully qualified on numerous independent Wafer Fabrication Equipment Suppliers' platforms.

Silicon Wafer All-surface Inspection/Characterization. "All-surface" refers to inspection of the wafer frontside, edge, and backside as well as wafer's locator notch. The edge inspection process focuses on the area near the wafer edge, an area that poses difficulty for traditional wafer frontside inspection technology due to its varied topography and process variation. Edge bevel inspection looks for defects on the side edge of a wafer. Edge bead removal and edge exclusion metrology involve a topside surface measurement required exclusively in the lithography process, primarily to determine if wafers have been properly aligned for the edge exclusion region. The primary reason for wafer backside inspection is to determine if contamination has been created that may spread throughout the wafer fab. For instance, it is critical that the wafer backside be free of defects prior to the EUV lithography process to prevent focus and exposure problems on the wafer frontside.

Our materials characterization products include systems that are used to monitor the physical, optical, electrical and material characteristics of discrete electronic industry, opto-electronic, HB-LED (high brightness LEDs), solar PV (solar photovoltaics), compound semiconductor, strained silicon and silicon-on-insulator ("SOI") devices, including composition, crystal structure, layer thickness, dopant concentration, contamination and electron mobility.

We have a broad portfolio of products for materials characterization including photoluminescence mapping and Fourier Transform Infrared ("FTIR") spectroscope in automated and manual systems for substrate quality and epitaxial thickness metrology. The NanoSpec® line supports thin film measurement across all applications in both low volume production and research applications.

Macro Defect Inspection. Chip manufacturers deploy advanced macro defect inspection throughout the production line to monitor key process steps, gather process-enhancing information and ultimately, lower manufacturing costs. Field-established tools such as the F30™, NSX®, and the latest Dragonfly® G3 inspection systems are found in the wafer fab (front-end) and packaging (back-end) facilities around the world. These high-speed tools incorporate features such as wafer-less recipe creation, tool-to-tool correlation and multiple inspection resolutions. Using Discover® yield management software, the vast amounts of data gathered through automated inspection can be analyzed and classified to determine trends and locate root causes that directly affect yield.

Automated Defect Classification and Pattern Analysis. Automating the defect detection and classification process is best done by a system that can mimic, or even extend, the response of the human eye, but at a much higher speed, with higher resolution and more consistency. To do this, our systems capture full-color whole wafer images using simultaneous dark and bright field illumination. The resulting bright and dark field images are compared to those from an "ideal" wafer having no defects. When a difference is detected, its image is broken down into mathematical vectors that allow rapid and accurate comparison with a library of known classified defects stored in the tool's database. Patented and proprietary enhancements of this approach enable very fast and highly repeatable image classification. The system is pre-programmed with an extensive library of local, global, and color defects and can also store a virtually unlimited amount of new defect classes. This allows customers to define defects based on their existing defect classification system, provides more reliable automated rework decisions and enables more accurate statistical process control data. Reviewing defects off-line enables automated inspection systems to maintain their utilization for high throughput inspection. Using defect image files captured by automated inspection systems, operators are able to view high-resolution defect images to determine defects that cause catastrophic failure of a device, known as killer defects. Combining the review process with classifying defects enables faster analysis by grouping defects found together as one larger defect, a scratch for example, and defects of similar types across a wafer lot to be grouped based on size, repeating defects, and other user-defined specifications.

Yield Analysis. Using wafer maps, charts and graphs, the massive amounts of data gathered through automated inspection can be analyzed to determine trends across bumps, die, wafers and lots. This analysis may determine where a process variation or deviation has occurred, allowing process engineers to make corrections or enhancements to increase yields. Defect data analysis is performed to identify, analyze and locate the source of defects and other manufacturing process excursions. Using either a single wafer map or a composite map created from multiple wafer maps, this analysis enables identification of defect patterns and distribution. When combined with inspection data from inspection points -placed strategically, this analysis may pinpoint the source of the defects so corrective action can be taken.

Opaque Film Metrology. The MetaPULSE® systems allow customers to simultaneously measure the thickness and other properties of up to six metal or non-metallic opaque film layers without physically contacting product wafers. PULSE® technology uses an ultra-fast laser to generate acoustic waves that pass down through a stack of opaque films such as those used in copper or aluminum interconnect processes, as well as the hard mask layer in 3D NAND chips, sending back to the surface a reflected signal (echo) that indicates film thickness, density, and other process critical parameters. We believe we are a leader in providing systems that can measure opaque thin-film stacks non-destructively with the speed and accuracy semiconductor device manufacturers demand in order to achieve high yields with the latest fabrication processes. The technology is ideal for characterizing copper interconnect structures. The MetaPULSE systems, used initially for fast and accurate measurements of metal interconnect in front-end wafer fabs, have now been chosen by back-end manufacturers to perform system measurements in new process applications such as RF filters and modules, driven by the need for on-product metrology as feature sizes decrease and pattern densities increase.

Probe Card Test and Analysis. The combination of fast 3D-OCM (optical comparative metrology) technology with improved testing accuracy and repeatability is designed to reduce total test time for even the most advanced large area probe cards. The 3D capabilities enable users to analyze probe marks and probe tips in a rapid and information-rich format.

Industrial, Scientific, and Research Markets — 4D Technology. The 4D business offers a line of interferometry systems for the measurement and inspection of high precision surfaces. End markets include high precision optics surfaces and components, aerospace and defense components, and unique research and scientific instrumentation that requires the unique high-speed results of the 4D systems.

Advanced Packaging Lithography. Our lithography steppers use projection optics to expose circuit patterns from a mask or reticle onto a substrate to expose images with optimal fidelity. These systems employ a bright light that is transmitted through a mask or reticle containing display circuit patterns. Substrates are aligned on the system and the mask is imaged through a projection lens onto photoresist material coated on the substrate. The substrate is then moved, or “stepped,” to a second position to expose an adjacent area. Images can be “stitched” together precisely to form larger circuit patterns without any noticeable change in circuit performance. The system repeats the step and exposure process until the entire substrate is patterned. Once the exposure process has been completed, the substrate is developed with an alkali solution to reveal the underlying material. The imaged photoresist serves as a stencil barrier that allows for the processing of the underlying metal or insulating layers. The substrates then continue through the etching, stripping and deposition processes until multi-layer circuits are completed.

In order to deal with increased input/output (“I/O”) resulting from devices with enhanced functionality, power distribution efficiency, and higher frequency, integrated device manufacturers (“IDMs”) and outsourced semiconductor assembly and test (“OSATs”) facilities must incorporate lithography capabilities to create RDLs for their advanced packaging technologies. However, the associated substrates and processes are significantly different than those used in front-end wafer processing. For advanced packaging, the lithography system must perform in a completely different application, with significantly different operating parameters. For example, most packaging is an additive process, while wafer processing is subtractive, and thick films, rather than thin films, are used to enable the creation of features. In order for equipment to effectively function in this environment, it must overcome these challenges. Our JetStep® systems have been specifically designed to meet these challenges head on. The new JetStep X500 System is designed for rectangular substrates (panels), which when combined with user-selectable wavelength options, maximizes throughput while not limiting resolution when needed. High-fidelity optics are able to image the fine features required while at the same time achieving superior depth of field to minimize non-flatness that is typical for advanced packaging applications. On-the-fly auto focus and an innovative reticle management system improve yield and utilization. These features result in a revolutionary lithography system specifically designed to meet advanced packaging challenges.

Process Control Software. We provide a wide range of advanced process control solutions, which are designed to improve factory profitability, including run-to-run control, fault detection, classification and tool automation. We are a leading provider of process control software in the semiconductor industry. Advanced process control (“APC”) employs software to automatically detect or predict tool failure (fault detection) as well as calculate recipe settings for a process that will drive the yielded output to meet and exceed the target, despite variations in the incoming material and minor instabilities within the process equipment. Process control software enables the factory to increase capacity and yield while decreasing rework and scrap. It enables reduced production costs by lowering consumables, process engineering time and manufacturing cycle time.

Yield Management Software. Semiconductor manufacturers use yield management software (“YMS”) to obtain valuable process yield and equipment productivity information. The data necessary to generate productivity information comes from many different sources throughout the wafer fab: inspection and metrology systems, tool sensors, tool recipes, electrical tests and the fab environment. As the complexity and cost of manufacturing processes increase, the value of faster, better analysis to support critical manufacturing decisions grows. As a result, customers are demanding robust yield management systems that can analyze large, complex data sets quickly and effectively. Our fully integrated YMS is designed to analyze data from disparate sources and multiple sites to maximize productivity across the entire value chain.

Customers

Over 200 microelectronic device manufacturers purchased Onto Innovation tools or software in 2021. We support a diverse customer base in terms of both geographic location and type of device manufactured. Our customers are located in over 20 countries. The following chart identifies our customers that represented 10% or more of total revenue for each of the last three years:

	2021	2020	2019
Taiwan Semiconductor Manufacturing Co. Ltd.	*	*	*
Samsung Semiconductor	*	*	^
SK Hynix Inc.	^	^	*

* The customer accounted for more than 10% of total revenue during the period.

^ The customer accounted for less than 10% of total revenue during the period.

Sales, Customer Service and Application Support

We believe that the capability for direct sales and support is beneficial for developing and maintaining close customer relationships and for rapidly responding to changing customer requirements. We provide local direct sales, service and application support through our worldwide offices located in the United States, South Korea, Japan, Taiwan, China, Singapore and Europe, and work with selected dealers and sales representatives on a more limited basis in various countries. Our applications team is composed of technically experienced sales engineers who are knowledgeable in the use of metrology systems generally and the unique features and advantages of our specific products. Supported by our technical applications team, our sales and support teams work closely with our customers to offer cost-effective solutions to complex measurement and process problems.

We believe that customer service and technical support for our systems are crucial factors that distinguish us from our competitors and are essential to building and maintaining close, long-term relationships with our customers. We generally provide a warranty for our products that ranges from twelve to fourteen months to cover defects in material and workmanship. We provide system support to our customers through factory technical support and globally deployed field service personnel. The factory technical support operations provide customers with telephonic technical support access, direct training programs, operating manuals and other technical support information to enable effective use of our metrology and measurement instruments and systems. We have field service operations based in various locations throughout the United States, South Korea, Taiwan, China, Japan, Singapore, Israel, and European locations.

Competition

We offer various products for various semiconductor manufacturing process steps, and several of our products extend across the same process flow. However, for process control of each of these process steps, we have multiple established and potential competitors, some of which may have greater financial, research, engineering, manufacturing and marketing resources than we have. We may also face future competition from new market entrants from other overseas and domestic sources. We expect our competitors to continue to improve the design and performance of their current products and processes, and to introduce new products and processes with improved price and performance characteristics. In order to remain competitive, we believe that we will require significant financial resources to offer a broad range of products, and to maintain customer service and support centers worldwide, and to invest in product research and development.

In every market in which we participate, the global semiconductor equipment industry is intensely competitive, and driven by rapid technological adoption cycles. Our ability to compete effectively depends upon our ability to continuously improve our products, applications and services, and our ability to develop new products, applications and services that meet constantly evolving customer requirements.

In automated systems for the semiconductor industry, our principal competitors are KLA Corporation (“KLA”) and Nova Ltd. (formerly Nova Measuring Instruments Ltd.) (“Nova”) for thin film and critical dimension OCD metrology. Our principal competitor for advanced packaging inspection is Camtek Ltd. (“Camtek”). While the advanced packaging lithography market is served by various competitors, our primary competitors are Ushio, Inc. (“Ushio”) and Canon, Inc. (“Canon”). The primary competitor for our software products is PDF Solutions, Inc. (“PDF Solutions”) and our primary competitor for integrated metrology systems for the semiconductor industry is Nova. The opto-electronics, discrete device and industrial and scientific markets are addressed primarily by our material characterization and 4D systems, served by numerous competitors, of which no single competitor or group of competitors has established a majority position.

We believe that our competitive position in each of our markets is based on the ability of our products and services to address customer requirements related to numerous competitive factors. Competitive selections are based on many factors involving technological innovation, productivity, total cost of ownership of the system, including impact on end of line yield, price, product performance and throughput capability, quality, reliability and customer support.

Manufacturing

Our manufacturing operations are in Milpitas California, Tucson Arizona, Wilmington Massachusetts, Bloomington Minnesota, and at various contract manufacturers around the world. It is our strategy to outsource the assemblies that do not contain elements that we believe lead to a direct competitive advantage. Most of our automated and integrated products are currently manufactured at our Milpitas and Bloomington facilities. We currently do not expect our manufacturing operations to require additional major investments in capital equipment.

We manufacture key modular assemblies and integrated tools and make reasonable efforts to ensure that externally purchased parts or raw materials are available from multiple suppliers, if possible. Certain components, subassemblies and services necessary for the manufacture of our systems are obtained either from a sole supplier or limited group of suppliers. We also have long-term supply agreements with strategic suppliers for the supply of key assemblies for use in our products.

We rely on limited source suppliers for certain parts and subassemblies. This reliance creates a potential inability to obtain an adequate supply of required components, and reduced control over pricing and time of delivery of components. An inability to obtain adequate supplies would require us to seek alternative sources of supply or might require us to redesign our systems to accommodate different components or subassemblies. To date, we have not experienced any significant delivery delays. However, if we were forced to seek alternative sources of supply, manufacture such components or subassemblies internally, or redesign our products, this could prevent us from shipping our products to our customers on a timely basis, which could have a material adverse effect on our operations.

Research and Development

We continue to invest in research and development to provide our customers with products that add value to their manufacturing processes and that provide a better and differentiated solution than our competitors so that our products stay in the forefront of current and future market demands. Whether it is for an advancement of current technology, yield and manufacturing improvement, enabling new end device technology, or the development of a new application in our core or emerging markets, we are committed to product excellence and longevity.

The markets for equipment and systems for manufacturing semiconductor devices and for performing OCD metrology, macro-defect inspection, advanced packaging lithography and thin film transparent and opaque process control metrology are characterized by continuous technological development and product innovations. We believe that the rapid and ongoing development of new products and enhancements to existing products is critical to our success. Accordingly, we devote a significant portion of our technical, management and financial resources to research and development programs.

Intellectual Property

We believe that our success will depend to a great degree upon innovation, technological expertise and our ability to adapt our products to new technology. As a result, we have a policy of seeking patents on inventions governing new products or technologies as part of our ongoing research, development, and manufacturing activities. As of January 1, 2022, we have been granted, or hold exclusive licenses to 436 U.S. and foreign patents. The patents we own, jointly own or exclusively license have expiration dates ranging from 2022 to 2040. We also have 80 pending patent applications in the United States and other countries. Our patents and patent applications principally cover various aspects of metrology, macro-defect detection and classification, altered material characterization, lithography techniques and automation.

Our pending patent applications may never be issued, and even if they are, these patents, our existing patents and the patents we license may not provide sufficiently broad protection to protect our intellectual property, or they may prove to be unenforceable. To protect our intellectual property, we also rely on a combination of patents, copyrights, trademarks, trade secret laws, contractual provisions and licenses and non-disclosure agreements. There can be no assurance (i) that any patents or trademarks issued to or licensed by us will not be challenged, invalidated or circumvented, (ii) that the rights granted thereunder will provide us with a competitive advantage or (iii) that we will be able to fully protect our intellectual property. Additionally, others may obtain patents or trademarks and assert them against us. From time to time, we receive communications from third parties asserting that our systems, software and/or methods may contain features that such third parties claim may infringe upon their intellectual property rights.

From time to time, we may find it necessary to initiate litigation against other persons or entities to protect and/or enforce our intellectual property rights or contractual rights. However, litigation is costly and time consuming and there is no assurance that any lawsuit we bring will yield the result that we seek, as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in the laws that limit our ability to pursue the lawsuit. There is a risk that our means of protecting our intellectual property may not be adequate. For example, our competitors may independently develop similar technology or duplicate our products. If we fail to adequately protect our intellectual property, it would be easier for our competitors to sell competing products.

Human Capital and Talent

As of January 1, 2022, we had approximately 1,411 staff globally, 367 in research and development, 270 in operations, 131 in administration and 643 in sales, applications and service support. A large percentage of our employees have technical backgrounds and undergraduate and/or advanced degrees. Many of our employees have specialized skills and experience that are of value to our business, products and services. Our future success will depend, in large part, upon our ability to attract, motivate and retain our highly skilled, technical, operational and managerial team members, who are in great demand in our industry and business communities.

Approximately 62% of our employees are located in the United States, 35% in Asia Pacific and 3% in Europe. None of our employees are represented by a union and we have never experienced a work stoppage because of union actions. We consider our employee relations to be favorable.

Purpose and Culture. All of our employees are expected to uphold the following core values which are foundational to our culture:

- Passion – ownership, pride and caring in our work
- Integrity – honesty, dependable, predictable and accountable
- Collaboration – working together toward a common goal
- Results – meeting and exceeding goals, focused toward innovation and growth

These core values define the way we do business in our everyday actions and choices. We strive to create a respectful work environment characterized by mutual trust and the absence of intimidation, oppression, discrimination and exploitation.

Talent Development and Acquisition. Successful execution of our strategy is dependent on attracting, developing and retaining key employees and members of our management and leadership teams. The skills, experience and industry knowledge of our employees significantly benefit our operations and performance. We continuously evaluate, modify, and enhance our internal processes, tools and technologies to increase employee engagement, productivity, quality and efficiency. We offer employees access to internal and external training and development courses to support individual development. We review succession plans and focus on promoting internal talent to help grow our employees, both professionally and personally.

We are committed to promoting and cultivating an inclusive and diverse culture that welcomes and celebrates everyone without bias. In addition, we look to actively engage within our communities to foster and attain social equity.

In order to ensure that we are meeting our human capital and talent objectives, we frequently utilize employee surveys to understand the effectiveness of our employee and Company programs and where we can improve across the Company. Our latest survey, completed during fiscal 2021, had a participation rate of over 77% of all our employees. Through the survey, our employees indicated that the Company’s greatest strengths include ensuring that employees know what is expected of them, providing a caring work environment, fostering an environment where employees have the opportunity to do their best and commitment to quality.

Compensation Philosophy. Our compensation philosophy creates the framework and building blocks for our rewards and recognition programs. We have a pay-for-performance culture that ties compensation to the performance of the individual and the Company. We provide balanced compensation programs that focus on the following five key elements:

- Pay-for-performance - Reward those who achieve or exceed set goals and objectives, while also recognizing those making significant, impactful contributions;
- External market based - Pay levels that are competitive with respect to the labor market in which we compete for talent;
- Internal equity - Providing fair compensation programs within the Company;
- Fiscal responsibility - Providing programs which can be responsibly supported by our operations; and
- Legal compliance - Ensure compliance with the applicable laws of the states and countries in which we operate in all material respects.

Safety, Health and Wellness. We are committed to providing an environment which is safe and where our employees can be productive. We have rigorous health and safety programs focused on awareness, recognition, risk assessment and management, as well as teamwork.

In response to the COVID-19 pandemic, we implemented a response plan that we believe was in the best interest and health of our employees and the communities in which we operate. We continue to follow local statutory safety requirements while also monitoring COVID case numbers, in the communities in which operate, to constantly update our safety protocols and requirements

Our benefit plans are competitive and comprehensive. We provide each of our employees educational programs and initiatives focused on holistic wellness supporting nutritional, physical, emotional, mental and financial wellbeing.

Corporate Social Responsibility

Our stakeholders are essential to our business – shareholders, customers, suppliers, employees, communities as well as the environment and society. We are working to make our workforce more inclusive, our business more sustainable, and our communities more engaged by maintaining strong environmental, social and governance ("ESG") practices. Actions we have taken in pursuit of these commitments include the following environmental and social programs:

- Demanded excellence in our quality and environmental performance, as demonstrated through our product and process qualification commitments, including ISO 9001 Quality Management;
- Set goals to reduce our environmental impact, including a reduction of our carbon footprint, an increase in our use of renewable energy, a decrease in hazardous waste landfill, and a reduction in our freshwater usage;
- Produced systems responsibly by offering tool trade-in, refurbishment and technology upgrade programs;
- Provided corporate matching for employee donations to qualified nonprofit organizations; and
- Engaged in community service projects in our communities globally.

We encourage you to review our 2020 Corporate Social Responsibility Annual Report (located on our website at https://ontoinnovation.com/company/corporate-social-responsibility) for more detailed information regarding our ESG initiatives. Nothing on our website, including our Corporate Social Responsibility Report or sections thereof, is deemed incorporated by reference into this Form 10-K.

Compliance with Governmental Regulations

We are subject to international, federal, state and local regulations that are customary to businesses in the semiconductor capital equipment manufacturing industry. Such regulations include, but are not limited to:

- The Restriction of Hazardous Substances Directive ("RoHS"), which restricts the use of certain hazardous substances in electrical and electronic equipment;
- General Data Protection Regulation ("GDPR"), which provides guidelines for the collection and processing of personal information from individuals who live in the European Union;
- The U.S. Foreign Corrupt Practices Act ("FCPA"), which prohibits companies and their individual officers from influencing foreign officials with any personal payments or rewards; and
- Conflict minerals reporting, which imposes disclosure requirements regarding the use of "conflict" minerals mined from the Democratic Republic of Congo and adjoining countries in products.

Our compliance with these laws and regulations has not had a material impact on our financial position, results of operations, capital expenditures, earnings or competitive position.

Available Information

Our Internet website address is http://www.ontoinnovation.com. The information on our website is not incorporated into this Form 10-K. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K (and any amendments to those reports) are made available free of charge, on or through our Internet website, as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. All filings we make with the SEC are also available free of charge via EDGAR through the SEC's website at http://www.sec.gov. In addition, the historic reports and materials that were filed by Nanometrics and Rudolph with the SEC are available at our investor relations website at https://investors.ontoinnovation.com. These filings may also be obtained through the SEC's website. Documents that are not available through the SEC's website may also be obtained by submitting an online request to the SEC at http://www.sec.gov.

We also make available, free of charge, through our investor relations website, our corporate governance summary, Code of Business Conduct and Ethics, charters of the committees of our Board of Directors, and other information and materials, including information about how to contact our Board of Directors.

Investors and others should also note that we announce material financial information to our investors using our investor relations website, SEC filings, press releases, public conference calls and webcasts. We use these channels as well as social media to communicate with the public about the Company, our products and services and other matters. It is possible that the information we post on social media could be deemed to be material information. Therefore, we encourage investors, the media, and others interested in the Company to review the information we post on the social media channels listed on our investor relations website.

Item 1A. Risk Factors.

The risks and uncertainties described below are not the only ones we face. If any of the following risks actually occurs, our business, financial condition or results of operations could be materially adversely affected.

Summary Risk Factors

Below is a summary the principal factors and uncertainties that make investing in our company risky. You should read this summary together with the more detailed description of each risk factor contained further below.

Risks Related to the Covid-19 Pandemic

- The effects of the COVID-19 pandemic have affected our business and could in the future adversely affect our business, results of operations, and financial condition.

Risks Related to Our Operations

- If we do not manage our supply chain effectively, our operating results may be adversely affected, and any increases in material, labor, supplier, logistics and other operating costs, or supply chain delays and shortages, could lower our margins or result in lost sales.
- Variations in the amount of time it takes for us to sell our systems may cause fluctuations in our operating results, which could cause our stock price to decline.
- We are subject to order and shipment uncertainties. Our profitability will decline if we fail to accurately forecast customer demand when managing inventory.
- If we deliver systems with defects, our credibility will be harmed, and the sales and market acceptance of our systems will decrease.
- Our integrated metrology systems are integrated with systems sold independently by wafer fabrication equipment suppliers, and a decrease in sales by these suppliers, or the development of competing systems by these suppliers, could harm our business.
- We must attract and retain experienced senior executives and other key personnel with knowledge of semiconductor device manufacturing and inspection, metrology or lithography equipment and related software to help support our future growth, and competition for such personnel in our industry is high.
- Any prolonged disruption in the operations of our manufacturing facilities could have a material adverse effect on our revenue.
- We may outsource select manufacturing activities to third-party service providers, which decreases our control over the performance of these functions and may result in lower quality and functionality of our products.
- Our ability to fulfill our backlog may have an effect on our long-term ability to procure contracts and fulfill current contracts.

Risks Related to Our Customers

- Our largest customers account for a substantial portion of our revenue, and our revenue and cash flows could decline considerably if one or more of these customers were to purchase significantly fewer of our systems or delay or cancel a large order.

Risks Related to Product Development

- If we are not successful in developing new and enhanced products for the semiconductor device manufacturing industry, we will lose sales and market share to our competitors.
- If new products developed by us do not gain general market acceptance, we will be unable to generate revenue and recover our research and development costs.
- Even if we are able to develop new products that gain market acceptance, sales of these new products could impair our ability to sell existing products.
- If our relationships with our large customers deteriorate, our product development activities could be adversely

affected.

Risks Related to Intellectual Property and Data Security

- We may fail to adequately protect our intellectual property and, therefore, lose our competitive advantage.
- Protection of our intellectual property rights, or the efforts of third parties to enforce their own intellectual property rights against us, may result in costly and time-consuming litigation, substantial damages, lost product sales and/or the loss of important intellectual property rights.
- If our network security measures are breached and unauthorized access is obtained to a customer's data, to our data, or to our information technology systems, we may incur significant legal and financial exposure and liabilities and may experience disruptions in our operations.

Risks Related to Competition

- Some of our current and potential competitors have significantly greater resources than we do, and increased competition could impair sales of our products or cause us to reduce our prices.
- Because of the high cost of switching equipment vendors in our markets, it is sometimes difficult for us to win new customers from our competitors even if our systems are superior to theirs.

Risks Related to Our International Operations

- We are subject to compliance with foreign laws and regulations, and the burden of complying with such laws and regulations, or any failure to comply, may adversely affect our business, financial condition and results of operations.
- Tariffs and other market barriers have impacted and may continue to impact our competitiveness with non-U.S. customers, which may adversely affect our results of operations.
- Political and economic instability may result in reduced demand for our products.
- Natural disasters, changes in climate and geo-political events could materially adversely affect our worldwide operations (or those of our business partners).
- We may face difficulties in staffing and managing foreign branch operations due to political tensions or cultural differences.
- Currency fluctuations may impact our international sales or expose us to exchange rate risk.
- Our internal controls with respect to anti-corruption laws may not be effective, and any failure to comply with such laws may result in severe sanctions and liabilities, which may negatively affect our business, operating results and financial condition.

Risks Related to Tax Laws, Financial Markets and the Environment

- Changes in tax rates or tax liabilities could affect results.
- Turmoil or fluctuations in the credit markets and the financial services industry may negatively impact our business, results of operations, financial condition or liquidity, and our factoring arrangements may expose us to additional risks.
- We are subject to various environmental laws and regulations that could impose substantial costs upon us, and failure to comply with such laws and regulations may harm our business, operating results and financial condition.
- Customer and investor focus on our environmental, social and governance responsibility practices and policies, and related regulatory requirements, may make our supply chain more complex, and any failure to comply with customer or investor guidelines or applicable laws and regulations may adversely affect our relationship with customers and investors or our reputation and results of operations.

Risks Related to Growth and Acquisitions

- We may choose to acquire new and complementary businesses, products or technologies instead of developing them ourselves, and we may be unable to complete these acquisitions or may not be able to successfully integrate an acquired business in a cost-effective and non-disruptive manner.
- If we cannot effectively manage growth, our business may suffer.

Risks Related to the Global Economy and the Semiconductor Industry

- Cyclicality in the semiconductor device industry has led to substantial decreases in demand for our systems in the past and may, from time to time, continue to do so.
- Our future rate of growth is highly dependent on the development and growth of the market for microelectronic device inspection, lithography and metrology equipment.

General Risk Factors

- Provisions of our charter documents and of Delaware law could discourage potential acquisition proposals and/or

delay, deter or prevent a change in control of our company.
- Our stock price is volatile.

Risks Related to the COVID-19 Pandemic

The effects of the COVID-19 pandemic have affected our business and could in the future adversely affect our business, results of operations, and financial condition.

The effects of the public health crisis caused by the COVID-19 pandemic and the measures being taken to limit the spread of COVID-19 are uncertain and difficult to predict, but pose the following risks to our business, results of operations and financial condition:

- Disruptions to our supply chain in connection with the sourcing of materials, equipment and engineering support, and services from geographic areas that have been impacted by COVID-19 and by efforts to contain the spread of COVID-19, which have resulted and may continue to result in increased costs, material shortages, the inability to fully satisfy customer demand in a timely manner and increased risk of inventory obsolescence due to the resulting need to commit to increased purchases and provide longer lead times to secure critical components;
- Disruption of operations if employees are unavailable due to illness, risk of illness, travel restrictions, remote work or other factors that may limit our access to key personnel or critical skills, or reduce productivity, and a shortage of available skilled personnel;
- A potential decrease in short-term and/or long-term demand for our products and disruptions to our operations resulting from the immediate consequences of and responses to the pandemic, including precautionary measures instituted by governments and businesses to mitigate its spread, which have raised the prospect of an extended global recession, which would adversely impact the businesses of our customers, suppliers and partners;
- Changes in our operations in response to COVID-19 and employee illnesses resulting from the pandemic have resulted in, and may continue to result in, a reduction in qualification activities with customers and a reduction in production levels, and may further result in a reduction in sales to our customers and product development efforts.

  In addition, there may be incremental costs related to business continuity initiatives, which cannot be avoided or alleviated through succession planning, employees working remotely or teleconferencing technologies as well as inefficiencies, delays, and increased costs resulting from our efforts to mitigate the impact and spread of COVID-19 through the changes in our operations which we have enacted at certain of our locations around the world in an effort to protect our employees' health and well-being (including the implementation of work-from-home policies, social-distancing measures, modified work schedules and shifts, the suspension of employee travel, and limits on the number of employees attending in-person meetings and the number of people permitted to be present at our facilities at any one time);
- Management focus on mitigating the impact of the COVID-19 pandemic, which has required and will continue to require a substantial investment of time and resources across our enterprise, which has resulted and can be expected to continue to result in a diversion of management attention and resources;
- Delays in our ability to install or service our products due to travel bans or the requirement to quarantine for a lengthy period after entering a jurisdiction;
- An increase in potential opportunities for the Company to be subject to an adverse cybersecurity event as a result of the implementation of our work-from-home policy, which could give rise to business disruptions, loss of information, intellectual property and critical data as well as other negative impacts;
- A potential decrease in availability under our credit agreement, which permits us to borrow up to 70% of the value of eligible securities held at the time the line of credit is accessed, if there is a decrease in the value of eligible securities resulting from the impact of COVID-19 on global markets; and
- Potential difficulty accessing capital, if needed in the future, through a sale of securities, or in obtaining favorable terms of such securities, due to market conditions generally or a decline or volatility in the market for our securities.

The resumption of normal business operations after such interruptions may be delayed or constrained by lingering effects of COVID-19 on our suppliers, third-party service providers, and/or customers. These effects, alone or taken together, could have a material adverse effect on our business, results of operations, legal exposure, or financial condition. The duration of the COVID-19 pandemic, resurgences, the severity of newly identified strains of the virus and the efficacy of vaccines and treatments with respect to new strains cannot be determined. Additional sustained or prolonged outbreaks of virus variants, delays in rollout of any needed boosters or modifications to vaccines to address variants, or continued widespread hesitancy to utilize vaccines could exacerbate the adverse impact of such measures.

Risks Related to Our Operations

If we do not manage our supply chain effectively, our operating results may be adversely affected, and any increases in material, labor, supplier, logistics and other operating costs, or supply chain delays and shortages, could lower our margins or result in lost sales.

We need to continually evaluate our global supply chains and assess opportunities to reduce costs. We must also enhance quality, speed and flexibility to meet changing demand for our products and product mix and uncertain market conditions. Our success also depends in part on refining our cost structure and supply chains so that we have flexibility and can maintain and improve profitability. Deteriorations in the tariff environment, or changes in suppliers, may cause our costs to increase, which if we are not able to offset by charging higher sales prices, will cause a decline in our margins. To improve our margins on a product, we will need to establish high volume supply agreements with our vendors. We cannot be certain that we will be able to timely negotiate vendor supply agreements on improved terms and conditions, or at all. Failure to achieve the desired level of cost reductions could adversely affect our financial results. Despite our efforts to control costs and increase efficiency in our facilities, changes in demand could still cause us to realize lower operating margins and profitability.

Further, our gross margins and financial performance may be adversely affected by increases in our operating costs, such as material, labor, supplier costs, logistics and energy costs, all of which have been and may continue to be subject to inflationary pressures. Operating costs have increased and may continue to increase further as a result of supply chain disruptions in connection with the sourcing of components, materials, equipment, engineering support, and services, labor shortages and other cost increases due to the COVID-19 pandemic and related government restrictions on travel and business operations. We may also experience production delays, disruptions and cost increases due to the worldwide shortage of semiconductor components as a result of sharp increases in demand for semiconductor products in general.

These risks may be heightened because we obtain some of the components and subassemblies included in our systems from a limited group of suppliers and do not have long-term contracts with many of our suppliers. Our dependence on limited source suppliers of components and our lack of long-term contracts with many of our suppliers expose us to several risks, including a potential inability to obtain an adequate supply of components, price increases, late deliveries and poor component quality. A significant number of our suppliers are the sole source or single source for certain components or subassemblies. If such a supplier is unable or unwilling to manufacture and deliver components to us on the time schedule and of the quality or quantity that we require, we may be forced to seek to engage an additional or replacement supplier or redesign our product to use alternative components, which could result in additional expenses and delays in product development or shipment of product to our customers. Disruption or termination of the supply of components has delayed and could continue to delay shipments of some of our systems. Such delays may damage our customer relationships and reduce our sales. From time to time in the past, we have experienced temporary difficulties, and supply chain disruptions and logistics and shipping challenges caused by the COVID-19 pandemic and related restrictions on movement and business operations are currently causing difficulties and delays, in receiving shipments from our suppliers. The lead-time required for shipments of some of our components can be greater than six months. In addition, the lead time required to qualify new suppliers for lasers and certain optics could be as long as a year, and the lead time required to qualify new suppliers of other components could be as long as nine months. In some cases, we may need to purchase components in advance of receiving customer orders for product. If we are unable to accurately predict our component needs, or if our component supply is disrupted, as it has been due to supply chain disruptions, logistics difficulties and shipping delays due to the COVID-19 pandemic, we may miss market opportunities by not being able to meet the demand for our systems. Further, a significant increase in the price of one or more of these components or subassemblies could seriously harm our results of operations and cash flows.

Our efforts to mitigate any cost increases, labor impacts and supply chain delays and shortages may not be successful, and we cannot predict the duration of these current trends or other future increases in operating costs. We may not be able to pass cost increases through to our customers fully (or at all), and if supply chain delays and shortages delay delivery of our products, our customers may seek to purchase from our competitors. Any such occurrence may have a material adverse impact on our gross margins and business, financial position, results of operations and cash flows.

Variations in the amount of time it takes for us to sell our systems may cause fluctuations in our operating results, which could cause our stock price to decline.

Variations in the length of our sales cycles could cause our revenue and cash flows, and consequently, our business, financial condition, operating results and cash flows to fluctuate widely from period to period. This variation could cause our stock price to decline. Our customers generally take a long time to evaluate our inspection and/or film metrology systems and many people are involved in the evaluation process. We expend significant resources educating and providing information to our prospective customers regarding the uses and benefits of our systems in the semiconductor fabrication process. The length of time it takes for us to make a sale depends upon many factors, including, but not limited to:

- the efforts of our sales force;

- the complexity of the customer's fabrication processes;
- the internal technical capabilities and sophistication of the customer;
- the customer's budgetary constraints; and
- the quality and sophistication of the customer's current metrology, inspection or lithography equipment.

Because of the number of factors influencing the sales process, the period between our initial contact with a customer and the time when we recognize revenue from that customer and receive payment, if ever, varies widely in length. Our sales cycles, including the time it takes for us to build a product to customer specifications after receiving an order to the time we recognize revenue, typically range from three to twenty-four months. Sometimes our sales cycles can be much longer, particularly with customers in Asia. During these cycles, we commit substantial resources to our sales efforts in advance of receiving any revenue, and we may never receive any revenue from a customer despite our sales efforts. If we do make a sale, our customers often purchase only one of our systems, the performance of which they then evaluate for a lengthy period before purchasing any more of our systems. The number of additional products a customer purchases, if any, depends on many factors, including the customer's capacity requirements. The period between a customer's initial purchase and any subsequent purchases can vary from three months to a year or longer, and variations in the length of this period could cause further fluctuations in our operating results and, possibly, in our stock price.

We are subject to order and shipment uncertainties. Our profitability will decline if we fail to accurately forecast customer demand when managing inventory.

We typically plan production and inventory levels based on internal forecasts of customer demand, which can be highly unpredictable and can fluctuate substantially, which could lead to excess inventory write-downs and resulting negative impacts on gross margin and net income. We have limited visibility into our customers' inventories, future customer demand and the product mix that our customers will require, which could adversely affect our production forecasts and operating margins. In addition, innovation in our industry could render significant portions of our inventory obsolete. If we overestimate our customers' requirements, we may have excess inventory, which could lead to obsolete inventory and unexpected costs. Conversely, if we underestimate our customers' requirements, or if we experience sustained disruptions to our supply chain or shipping delays, including those we are currently experiencing due to the COVID-19 pandemic, we may have inadequate inventory, which could lead to foregone revenue opportunities, loss of potential market share and damage to customer relationships as product deliveries may not be made on a timely basis, disrupting our customers' production schedules. In response to anticipated long lead times to obtain inventory and materials from outside suppliers and foundries, we periodically order materials in advance of customer demand. This advance ordering has in the past and may in the future result in excess inventory levels or unanticipated inventory write-downs if expected orders fail to materialize, or other factors make our products less saleable. In addition, any significant future cancellation or deferral of product orders could adversely affect our revenue and margins, increase inventory write-downs due to obsolete inventory, and adversely affect our operating results and stock price.

Our earnings could be negatively affected, and our inventory levels could materially increase, if we are unable to predict our inventory needs in an accurate and timely manner and adjust our orders for parts and subcomponents in the event that our needs increase or decrease materially due to unexpected increases or decreases in demand for our products. Any material increase in our inventories could result in an adverse effect on our financial position, while any material decrease in our ability to procure needed inventories could result in an inability to supply customer demand for our products, thus adversely affecting our revenue.

If we deliver systems with defects, our credibility will be harmed, and the sales and market acceptance of our systems will decrease.

Our systems are complex and have occasionally contained errors, defects and bugs when introduced. Defects may be created during probing, bumping, dicing or general handling, and can have a major impact on device and process quality. When this occurs, our credibility and the market acceptance and sales of our systems could be harmed. Further, if our systems contain errors, defects or bugs, computer viruses or malicious code as a result of cyber-attacks to our computer networks, we may be required to expend significant capital and resources to alleviate these problems. Defects could also lead to product liability as a result of product liability lawsuits against us or against our customers. We have agreed to indemnify our customers under certain circumstances against liability arising from defects in our systems provided that we also include a cap on our liability in the related sales agreements. Our product liability insurance policy currently provides both aggregate coverage as well as an overall umbrella coverage. In the event of a successful product liability claim, we could be obligated to pay damages significantly in excess of our product liability insurance limits.

Our integrated metrology systems are integrated with systems sold independently by wafer fabrication equipment suppliers, and a decrease in sales by these suppliers, or the development of competing systems by these suppliers, could harm our business.

We believe that sales of integrated metrology systems will continue to be an important source of our net revenues. Sales of our integrated metrology systems depend upon the ability of a small number of wafer fabrication equipment suppliers to sell semiconductor manufacturing equipment products that are compatible with our metrology systems as components. If these suppliers, such as Applied Materials, Inc., Ebara Corporation, Lam Research Corporation and Tokyo Electron, are unable to sell such products, if they choose to focus their attention on products that do not integrate with our systems, or if they choose to develop competing systems, our business could suffer.

We must attract and retain experienced senior executives and other key personnel with knowledge of semiconductor device manufacturing and inspection, metrology or lithography equipment and related software to help support our future growth, and competition for such personnel in our industry is high.

Our success depends, to a significant degree, upon the continued contributions of our key executive management, engineering, sales and marketing, customer support, finance and manufacturing personnel. The loss of any of these key personnel through resignations, retirement or other circumstances, each of whom would be extremely difficult to replace, could harm our business and operating results. Despite our employment and noncompetition agreements with key members of our senior management team, these individuals or other key employees may still leave us, which could have a material adverse effect on our business. We do not have key person life insurance on any of our executives. In addition, to support our future growth, we will need to attract and retain additional qualified employees. Competition for such personnel in our industry is intense, and we may not be successful in attracting and retaining qualified employees.

The expansion of high technology companies worldwide and growth in the demand for semiconductors following the onset of the COVID-19 pandemic have increased demand and competition for qualified personnel. Competition for engineering and other technical personnel in some of the markets in which we operate is especially intense due to continued increases in the number of technology companies worldwide. In order to attract and retain executives and other key employees, we must provide a competitive compensation package, including cash and stock-based compensation. If the anticipated value of our stock-based incentive awards does not materialize so that they cease to be viewed as valuable, if our profits decrease, or if our total compensation package is not viewed as competitive, our ability to attract, retain and motivate executives and key employees could be weakened.

Any prolonged disruption in the operations of our manufacturing facilities could have a material adverse effect on our revenue.

We produce the majority of our systems in our manufacturing facilities located in Milpitas, California and Bloomington, Minnesota. We use contract manufacturers in China, Japan and the United States. Our manufacturing processes are highly complex and require sophisticated and costly equipment and a specially designed facility. As a result, any prolonged disruption in the operations of our manufacturing facilities could seriously harm our ability to satisfy our customer order deadlines. Shelter-in-place orders and other measures, including work-from-home and social distancing policies implemented during the COVID-19 pandemic to protect employees, have resulted in reduced workforce availability at product manufacturing sites and reduced output at some of our vendors and suppliers. Restrictions on our access to or operation of manufacturing facilities or on our support operations or workforce, or similar limitations for our vendors and suppliers, may impact our ability to meet customer demand and could have a material adverse effect on our financial condition and results of operations. If we cannot timely deliver our systems, our results from operations and cash flows could be materially and adversely affected.

We may outsource select manufacturing activities to third-party service providers, which decreases our control over the performance of these functions and may result in lower quality and functionality of our products.

We may outsource product manufacturing to third-party service providers. Outsourcing reduces our control over the performance of the outsourced functions. Dependence on outsourcing may also adversely affect our ability to bring new products to market. If we do not effectively manage our outsourcing strategy or if third party service providers do not perform as anticipated, we may experience operational difficulties, increased costs, manufacturing interruptions or inefficiencies in the operation of our supply chain, any or all of which could delay our delivery of products to our customers, and materially and adversely affect our business, financial condition, and results of operations.

Our ability to fulfill our backlog may have an effect on our long-term ability to procure contracts and fulfill current contracts.

Our ability to fulfill our backlog may be limited by our ability to devote sufficient financial and human capital resources and may be limited by available material supplies. If we do not fulfill our backlog in a timely manner, we may experience delays in product delivery, which would postpone receipt of revenue from those delayed deliveries. Additionally, if we are consistently unable to fulfill our backlog, this may be a disincentive to customers to award large contracts to us in the future until they are comfortable that we can effectively manage our backlog.

Risks Related to Our Customers

Our largest customers account for a substantial portion of our revenue, and our revenue and cash flows could decline considerably if one or more of these customers were to purchase significantly fewer of our systems or delay or cancel a large order.

Sales to end user customers that individually represent at least ten percent of our revenue typically account for, in the aggregate, a considerable amount of our revenue. We operate in the highly concentrated, capital-intensive semiconductor device manufacturing industry. Historically, a substantial portion of our revenue in each quarter and year has been derived from sales to relatively few customers, and this trend is expected to continue. If any of our key customers were to purchase significantly fewer of our systems in the future, or if they delay or cancel a large order, our revenue and cash flows could meaningfully decline. We expect that we will continue to depend on a small number of large customers for a sizable portion of our revenue. In addition, as large semiconductor device manufacturers seek to establish closer relationships with their suppliers, we expect that our customer base will become even more concentrated.

Risks Related to Product Development

If we are not successful in developing new and enhanced products for the semiconductor device manufacturing industry, we will lose sales and market share to our competitors.

We operate in an industry that is highly competitive and subject to evolving industry standards, rapid technological changes, rapid changes in consumer demands and the rapid introduction of new, higher performance systems with shorter product life cycles. To be competitive in our demanding market, we must continually design, develop and introduce in a timely manner new lithography, inspection and metrology process control systems that meet the performance and price demands of semiconductor device manufacturers. We must also continue to refine our current systems so that they remain competitive. We expect to continue to make significant investments in our research and development activities and at times may make inventory investments prior to commercialization. We may experience difficulties or delays in our development efforts with respect to new systems, and we may not ultimately be successful in our product enhancement efforts to improve and advance products or in responding effectively to technological change, as not all research and development activities result in viable commercial products. In addition, we cannot provide assurance that we will be able to develop new products for the most opportunistic new markets and applications. Any significant delay in releasing new systems could cause our products to become obsolete, adversely affect our reputation, give a competitor a first-to-market advantage or cause a competitor to achieve greater market share.

In addition, our competitors may provide innovative technology that may have performance advantages over systems we currently offer or may offer in the future. They may be able to develop products comparable or superior to those that we offer or may adapt more quickly to new technologies or evolving customer requirements. In particular, we currently are developing additional product enhancements that we believe will address future customer requirements, but we may fail in a timely manner to complete the development or introduction of these additional product enhancements successfully, or these product enhancements may not achieve market acceptance or be competitive.

Further, customers that may otherwise desire to purchase our products from us and purchase other products from our competitors may nevertheless purchase competing products from our competitors rather than purchase our products due to a variety of reasons, including to gain favor or volume pricing from our competitors.

If new products developed by us do not gain general market acceptance, we will be unable to generate revenue and recover our investments.

Inspection, lithography and metrology product development is inherently risky because it is difficult to foresee developments in semiconductor device manufacturing technology, coordinate technical personnel, and identify and eliminate system design flaws. Further, our products are leading edge and complex, and often the applications to our customers' businesses are unique. Any new systems we introduce may not achieve or sustain a significant degree of market acceptance and sales.

We expect to spend a significant amount of time and resources developing new systems and refining our existing systems. In light of the long product development cycles inherent in our industry, these expenditures will be made well in advance of the prospect of deriving revenue from the sale of those systems. The long lead times for some components may also require us to place orders for components and accumulate inventory in advance of market acceptance of our products. Our ability to commercially introduce and successfully market new systems is subject to a wide variety of challenges during the development cycle, including start-up bugs, design defects, and other matters that could delay introduction of these systems. Since our customers are not obligated by long-term contracts to purchase our systems, our anticipated product orders may not materialize, or orders that are placed may be canceled. If we do not achieve market acceptance of new products, we may be unable to generate sufficient revenue and cash flow to recover our research and development costs and may result in a write down of our investments in inventory. As a result, our market share, revenue, operating results or stock price would be negatively impacted.

Even if we are able to develop new products that gain market acceptance, sales of these new products could impair our ability to sell existing products.

Competition from our new systems could have a negative effect on sales of our existing systems and the prices that we could charge for these systems. We may also divert sales and marketing resources from our current systems in order to successfully launch and promote our new or next generation systems. This diversion of resources could have a further negative effect on sales of our current systems and the value of inventory.

If our relationships with our large customers deteriorate, our product development activities could be adversely affected.

The success of our product development efforts depends on our ability to anticipate market trends and the price, performance and functionality requirements of semiconductor device manufacturers. In order to anticipate these trends and ensure that critical development projects proceed in a coordinated manner, we must continue to collaborate closely with our largest customers. Our relationships with these and other customers provide us with access to valuable information regarding trends in the semiconductor device industry, which enables us to better plan our product development activities. If our current relationships with our large customers are impaired, or if we are unable to develop similar collaborative relationships with important customers in the future, our product development activities could be adversely affected.

Risks Related to Intellectual Property and Data Security

We may fail to adequately protect our intellectual property and, therefore, lose our competitive advantage.

Our future success and competitive position depend in part upon our ability to obtain and maintain proprietary technology for our principal product families, and we rely, in part, on patent, copyright and trade secret law and confidentiality agreements to protect that technology. If we fail to adequately protect our intellectual property, it will give our competitors a significant advantage. We own or have licensed a number of patents relating to our metrology, lithography, wafer and macro-defect inspection systems, including both embedded and application software, and have filed applications for additional patents. Any of our pending patent applications may be rejected, and we may be unable to develop additional proprietary technology that is patentable in the future.

In addition, the patents that we do own or that have been issued or licensed to us may not provide us with competitive advantages and may be challenged by third parties. Further, third parties may also design around these patents. In addition to patent protection, we rely upon copyrights for protection of our proprietary software and documentation, trademarks for protection of our brand and source of goods, and trade secrets for protection of our confidential and proprietary information and technology. However, we can give no assurance that our copyrights will be upheld or will successfully deter infringement by third parties. We routinely enter into confidentiality agreements with our employees and other third parties. Even though these agreements are in place, there can be no assurances that trade secrets and proprietary information will not be disclosed, that others will not independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets, or that we can fully protect our trade secrets and proprietary information. Violations by others of our confidentiality agreements and the loss of employees who have specialized knowledge and expertise could harm our competitive position and cause our sales and operating results to decline as a result of increased competition. It also possible that third parties will misappropriate our trade secrets or other confidential information. We may be subject to cybersecurity breaches in which a third party obtains our confidential information. Third parties may also reverse engineer our products to copy our technology. Any of these circumstances could result in harm to our competitive position in the market. Failure to protect our trademarks can lead to other companies selling products using confusing similar names, thereby damaging our brand. In some countries, it can be difficult to register trademarks because of the strict examination process or blocking trademarks for other goods. Costly and time-consuming litigation might be necessary to enforce and determine the scope of our intellectual property rights, and failure to obtain or maintain trade secret protection might adversely affect our ability to continue our research or bring products to market.

From time to time, we may find it necessary to initiate litigation against other persons or entities to protect and/or enforce our intellectual property or contractual rights. However, litigation is costly and time consuming and there is no assurance that any lawsuit we bring will yield the result that we seek, as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in law that limits our ability to pursue the lawsuit. For example, litigation discovery practice in China, Japan, South Korea, continental Europe and Taiwan is not as robust as the United States, so it can be more difficult to determine if a company is infringing on our patents and more challenging to bring a lawsuit. Monitoring and preventing unauthorized use are also difficult and the measures we take to protect our intellectual property rights may not be adequate. Accordingly, infringement of our intellectual property rights poses a serious risk of doing business. There is a risk that we may be unable to adequately protect our intellectual property rights in certain foreign countries. For example, our competitors may independently develop similar technology or duplicate our products. If this occurs, it would be easier for our competitors to develop and sell competing products in these countries.

Protection of our intellectual property rights, or the efforts of third parties to enforce their own intellectual property rights against us, may result in costly and time-consuming litigation, substantial damages, lost product sales and/or the loss of important intellectual property rights.

We may be required to initiate litigation in order to enforce our intellectual property rights or to determine the noninfringement, scope or validity of a third party's intellectual property rights. Any litigation, regardless of outcome, could be expensive and time consuming and could subject us to significant liabilities or require us to re-engineer our products or obtain expensive licenses from third parties. There can be no assurance that any patents, copyrights or other intellectual property rights issued to or licensed by us will not be challenged, invalidated or circumvented, or that the rights granted thereunder will provide us with a competitive advantage. Furthermore, there is no assurance that any litigation we are involved in will yield the result that we seek as (i) the lawsuit may be dismissed or there could be an adverse finding, (ii) we may not be able to pursue the lawsuit due to the laws of the applicable country or (iii) there may be a subsequent unfavorable change in law that limits our ability to pursue the lawsuit.

In addition, our commercial success depends in part on our ability to avoid infringing or misappropriating patents or other intellectual property rights owned by third parties. From time to time, we receive communications from third parties asserting that our products or systems infringe, or may infringe, on the intellectual property rights of these third parties. These claims of infringement may lead to protracted and costly litigation, which could require us to pay substantial damages or have the sale of our products or systems stopped by an injunction. Infringement claims could also cause product or system delays or require us to redesign our products or systems, and these delays could result in the loss of substantial revenue. We may also be required to obtain a license from the third party or cease activities utilizing the third party's intellectual property rights. We may not be able to enter into such a license or such a license may not be available on commercially reasonable terms. Accordingly, the loss of an intellectual property dispute could hinder our ability to sell our products or systems or make the sale of our products or systems more expensive, which could lead to reduced revenue or lower margins, respectively.

If our network security measures are breached and unauthorized access is obtained to a customer's data, to our data, or to our information technology systems, we may incur significant legal and financial exposure and liabilities and may experience disruptions in our operations.

As part of our business, we store our data and certain data about our customers, vendors and employees in our information technology system. If there is a breach as a result of third-party action, employee error, malfeasance, break-ins or otherwise, of our security measures designed to protect this information and prevent data loss and other security breaches, and someone obtains unauthorized access to our customers', vendors' or employees' data, we could face loss of business, regulatory investigations or court orders, our reputation could be severely damaged, we could be required to expend significant capital and other resources to alleviate the problem, as well as incur significant costs and liabilities, including due to litigation, indemnity obligations, damages for contract breach, penalties for violation of applicable laws or regulations, and costs for remediation and other incentives offered to customers. In December 2021, a vulnerability was reported for the widely used Java logging library, Apache Log4j 2. We have reviewed the use of this library within our software product portfolio and in our IT environment, determined that it has not had a material adverse impact on our business or operations, and have taken steps to mitigate the vulnerability.

Cyber-attacks and other malicious internet-based activities continue to increase. In response to the COVID-19 pandemic, our expanded reliance on remote access to our information systems has further increased our exposure to potential cybersecurity breaches. As the techniques used to obtain unauthorized access or sabotage systems change frequently and generally are not identified until they are launched against a target, our ability to anticipate these techniques or to implement adequate preventative measures is reduced. In addition, third parties have made attempts to fraudulently induce employees or users to disclose information to gain access to our data or our customers' data. As a result of any of these events, our or our customers' and vendors' information could be accessed or disclosed improperly. In addition, cybersecurity incidents affecting our customers could result in substantial delays in our ability to ship to those customers or install our products, which could result in delays in revenue recognition or the cancellation of orders, and cybersecurity incidents affecting our suppliers could result in substantial delays in our ability to obtain necessary components for our products from those suppliers, which could hamper our ability to ship our products to our customers, harming our results of operations and our customer relationships. Any or all of these issues could negatively affect our ability to attract new customers, cause existing customers to choose to purchase from our competitors, result in reputational damage or subject us to third-party lawsuits, regulatory fines or other action or liability, which could adversely affect our operating results.

The General Data Protection Regulation ("GDPR") is a regulation in European Union ("EU") law on data protection and privacy for the individuals within the EU and the European Economic Area ("EEA"). It also addresses the export of personal data outside the EU and EEA areas. We are also subject to the California Consumer Privacy Act ("CCPA"). Moreover, a new privacy law, the California Privacy Rights Act ("CPRA"), was approved by California voters in November 2020. The CPRA will significantly modify the CCPA when it becomes effective in most material respects on January 1, 2023. We may also be subject to other data privacy laws in the United States and the other countries in which we operate. In many cases, these laws apply not only to third-party transactions, but also to transfers of information between us and our subsidiaries, and among the subsidiaries and other parties with which we have commercial relations. The introduction of new products or expansion of our activities in certain jurisdictions may subject us to additional laws and regulations. These U.S. federal and state and foreign laws and regulations, including GDPR which can be enforced by private parties or government entities, are constantly evolving and can be subject to significant change. In addition, the application and interpretation of these laws and regulations, including GDPR, are often uncertain, particularly in our evolving industry, and may be interpreted and applied differently from country to country. Appropriate technical and organizational measures are necessary to implement these data protection principles. These laws and regulations can be costly to comply with and may delay or impede the development of new products, result in negative publicity, increase our operating costs, require significant management time and attention, or subject us to inquiries or investigations, claims or other remedies, including fines, which may be significant, or demands that we modify or cease existing business practices. A failure by us, our suppliers, or other parties with whom we do business to comply with posted privacy policies or with other federal, state, or international privacy-related or data protection laws and regulations, including GDPR, CCPA, CPRA and other new or changing privacy laws and regulations, could result in proceedings against us by governmental entities or others, which could have a material adverse effect on our business, results of operations, and financial condition.

Risks Related to Competition

Some of our current and potential competitors have significantly greater resources than we do, and increased competition could impair sales of our products or cause us to reduce our prices.

The market for semiconductor capital equipment is highly competitive. We face substantial competition from established companies in each of the markets we serve. We principally compete with KLA Corporation, Nova Measuring Instruments, Camtek, Ushio, Canon, and PDF Solutions. We compete to a lesser extent with Nikon. Each of our products also competes with products that use different metrology, inspection or lithography techniques. Some of our competitors have greater financial, engineering, manufacturing and marketing resources, broader product offerings and service capabilities and larger installed customer bases than we do. As a result, these competitors may be able to respond more quickly to new or emerging technologies or market developments by devoting greater resources to the development, promotion and sale of products, which, in turn, could impair sales of our products. Further, there may be significant merger and acquisition activity among our competitors and potential competitors, which, in turn, may provide them with a competitive advantage over us by enabling them to rapidly expand their product offerings and service capabilities to meet a broader range of customer needs.

Many of our customers and potential customers in the semiconductor device manufacturing industry are large companies that require global support and service for their semiconductor capital equipment. We believe that our global support and service infrastructure is sufficient to meet the needs of our customers and potential customers. However, some of our competitors have more extensive infrastructures than we do, which could place us at a disadvantage when competing for the business of global semiconductor device manufacturers. Many of our competitors are investing heavily in the development of new systems that will compete directly with our systems. We have, from time to time, selectively reduced prices on our systems in order to protect our market share, and competitive pressures may necessitate further price reductions. We expect our competitors in each product area to continue to improve the design and performance of their products and to introduce new products with competitive prices and performance characteristics. These product introductions would likely require us to decrease the prices of our systems and increase the level of discounts that we grant our customers. Price reductions or lost sales as a result of these competitive pressures would reduce our total revenue and could adversely impact our financial results.

Because of the high cost of switching equipment vendors in our markets, it is sometimes difficult for us to win new customers from our competitors even if our systems are superior to theirs.

We believe that once a semiconductor device manufacturer has selected one vendor's capital equipment for a production-line application, the manufacturer generally relies upon that capital equipment and, to the extent possible, subsequent generations of the same vendor's equipment for the life of the application. Once a vendor's equipment has been installed in a production line application, a semiconductor device manufacturer must often make substantial technical modifications and may experience production-line downtime in order to switch to another vendor's equipment. Accordingly, unless our systems offer performance or cost advantages that outweigh a customer's expense of switching to our systems, it will be difficult for us to achieve significant sales to that manufacturer once it has selected another vendor's capital equipment for an application.

Risks Related to Our International Operations

We are subject to compliance with foreign laws and regulations, and the burden of complying with such laws and regulations, or any failure to comply, may adversely affect our business, financial condition and results of operations.

Our business is subject to risks inherent in doing business internationally, including compliance with, inconsistencies among, and unexpected changes in, a wide variety of foreign laws and regulatory environments with which we are not familiar, including, among other issues, with respect to employees, protection of our intellectual property, and a wide variety of operational regulations and trade and export controls under domestic, foreign, and international law.

We are faced with various risks that may be associated with our compliance with existing, new, different, inconsistent or conflicting laws, regulations and rules enacted by governments and/or their regulatory agencies in the countries in which we operate as well as rules and policies implemented at our customer sites. These laws, regulations, rules and policies could relate to any of an array of issues including, but not limited to, environmental, tax, intellectual property, trade secrets, product liability, contracts, antitrust, employment, securities, import/export and unfair competition. The cost of maintaining compliance under multiple and changing regulatory regimes may adversely affect our business, financial condition and results of operations. In the event that we fail to comply with or violate U.S. or foreign laws or regulations or customer policies, we could be subject to civil or criminal claims or proceedings that may result in monetary fines, penalties or other costs against us or our employees, which may adversely affect our operating results, financial condition, customer relations and ability to conduct our business.

Tariffs and other market barriers have impacted and may continue to impact our competitiveness with non-U.S. customers, which may adversely affect our results of operations.

The semiconductor device industry is a high-visibility industry in many of the European and Asian countries in which we sell our products. Because the governments of these countries have provided extensive financial support to our semiconductor device manufacturing customers in these countries, we believe that our customers could be disproportionately affected by any trade embargoes, excise taxes, tariffs or other restrictions imposed by their governments on trade with U.S. companies such as ourselves, particularly with respect to the ongoing tensions between the United States and China.

Over the last several years, the U.S. government has significantly expanded export controls on certain technologies and commodities to certain markets, particularly with respect to semiconductor and other high technology exports to China. For example, effective June 29, 2020, the U.S. Department of Commerce imposed new export controls on the transfer of many U.S. products and technologies, including many commercial-grade electronics, to "military end users" or for "military end use" in China, which may include many Chinese commercial companies that sell products to or do business with the Chinese military. Likewise, since May 2019, the U.S. Department of Commerce has imposed significant restrictions on the transfer of any products from the United States, as well as many products produced overseas that incorporate U.S. content or rely on U.S. software or technology, to Huawei Technologies Co., Ltd., and a large number of its overseas affiliates, including HiSilicon, followed by a comparable action in December of 2020, related to Semiconductor Manufacturing International Corporation (SMIC). and a large number of its overseas affiliates, including Ningbo Semiconductor International Corporation (NSIC) and SJ Semiconductor (Jiangyin) Corporation. It is possible that the U.S. government will impose additional export controls on our products or systems, which could lead to further revenue losses.

The effect of these changes, among others, is that U.S. companies are now required to obtain export licenses before providing commodities, software, and technology that are subject to the regulations to customers for whom licensing requirements did not previously apply. The administrative processing, attendant delays and risk of ultimately not obtaining required export approvals put us at a disadvantage relative to our non-U.S. competitors who are not required to comply with U.S. export controls. This difficulty and uncertainty has adversely affected our ability to compete for and win business from domestic customers in China. Foreign customers affected by these and any future U.S. government sanctions or threats of sanctions may respond by developing their own solutions to replace our products or by utilizing our foreign competitors' products.

Further, we hold inventory of products that may be affected by the recent U.S. government actions, including potential order cancellations. If the sale of these products is delayed or we are unable to return or dispose of our inventory on favorable economic terms, we may incur additional carrying costs for the inventory or otherwise record charges associated with this inventory.

The U.S. government is also engaged in an ongoing process of assessing which "emerging and foundational technologies" warrant new or additional controls, which could subject additional U.S.-origin products and services to more stringent export restrictions. It is possible that these modified regulations, and any future regulations, could reduce demand for our products. In particular, these restrictive measures may reduce overall global demand for our customers' products or for other products produced or manufactured in the United States or based on U.S. technology, in turn reducing demand for our products, which could have a material adverse effect on our business, financial condition and results of operations. Additionally, given the continued tensions between the United States and Russia there is potential for new stricter export controls for Russia, which could affect our sales both into Russia and into secondary markets selling to Russia. International trade disputes could result in increases in tariffs and other trade restrictions and protectionist measures that could adversely impact our operations and reduce the competitiveness of our products relative to local and global competitors.

Political and economic instability may result in reduced demand for our products.

We are subject to various global risks related to political and economic instabilities in countries in which we derive sales. If terrorist activities, armed conflict, civil or military unrest or political instability occurs outside of the United States, these events may result in reduced demand for our products. Based on the complex relationships among China, Hong Kong, Taiwan, and the United States, there is risk that political, diplomatic, and national security influences might lead to trade, technology, or capital disputes, or disruptions, in particular those affecting the semiconductor industry. This may adversely affect our business in Asia or have a negative impact on the regional or global economy.

In addition, an outbreak of hostilities or other political upheaval in China, Taiwan, Japan, or South Korea, or an economic downturn in Asia or globally, would likely harm the operations of our customers in these countries. The effect of these types of events on our revenue and cash flows could be material because we derive substantial revenue from sales to semiconductor device foundries in Taiwan such as Taiwan Semiconductor Manufacturing Company Ltd., from memory chip manufacturers in South Korea such as Samsung Electronics Co., Ltd., and from semiconductor device manufacturers in Japan such as Toshiba Corporation.

Natural disasters, changes in climate and geo-political events could materially adversely affect our worldwide operations (or those of our business partners).

The occurrence of one or more natural disasters such as hurricanes, tropical storms, fires, cyclones, earthquakes, tsunamis, flooding, typhoons, volcanic eruptions and weather conditions such as major or extended winter storms, droughts and tornadoes, whether as a result of climate change or otherwise, may disrupt manufacturing or other operations. For example, our Milpitas operations are located near major earthquake fault lines in California. There may also be conflict or uncertainty in the countries in which we operate, including public health issues (for example, an outbreak of a contagious disease such as COVID-19, avian influenza, measles or Ebola), safety issues, natural disasters, fire, disruptions of service from utilities, nuclear power plant accidents or general economic or political unrest, including war, civil unrest or terrorist attacks. We cannot provide any assurance that alternate means of conducting our operations (whether through alternate production capacity or service providers or otherwise) would be available if a major disruption were to occur or that, if such alternate means were available, they could be obtained on favorable terms.

We may face difficulties in staffing and managing foreign branch operations due to political tensions or cultural differences.

During periods of tension between the governments of the United States and certain other countries, it is often difficult for U.S. companies such as ours to staff and manage operations in such countries. Language and other cultural differences may also inhibit our sales and marketing efforts and create internal communication problems among our U.S. and foreign research and development teams, increasing the difficulty of managing multiple remote locations performing various development, quality assurance, and yield ramp analysis projects.

Currency fluctuations may impact our international sales or expose us to exchange rate risk.

A substantial portion of our international sales are denominated in U.S. dollars. As a result, if the dollar rises in value in relation to foreign currencies, our systems will become more expensive to customers outside the United States and less competitive with systems produced by competitors outside the United States. These conditions could negatively impact our international sales. Foreign sales also expose us to collection risk in the event it becomes more expensive for our foreign customers to convert their local currencies into U.S. dollars. Additionally, in the event a larger portion of our revenue becomes denominated in foreign currencies, we would be subject to a potentially significant exchange rate risk, and any failure to sufficiently hedge or otherwise manage these risks could materially and adversely affect our financial condition, results of operations, and liquidity.

Our internal controls with respect to anti-corruption laws may not be effective, and any failure to comply with such laws may result in severe sanctions and liabilities, which may negatively affect our business, operating results and financial condition.

We are subject to the Foreign Corrupt Practices Act of 1977, as amended (the “FCPA”), and other laws that prohibit improper payments or offers of payments to foreign governments and their officials and political parties by U.S. persons and issuers as defined by the statute, for the purpose of obtaining or retaining business. Also, similar worldwide anti-bribery laws, such as the U.K. Bribery Act and Chinese anti-corruption laws, generally prohibit companies and their intermediaries from making improper payments to non-U.S. officials for the purpose of obtaining or retaining business. Some of our distribution partners are located in parts of the world that have experienced governmental corruption to some degree and, in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. The policies and procedures we have implemented to discourage these practices by our employees, our existing safeguards and any future improvements may prove to be ineffective, and our employees, consultants, sales agents or distributors may engage in conduct for which we might be held responsible. Violations of the FCPA or international anti-corruption laws may result in severe criminal or civil sanctions, and we may be subject to other liabilities, which could negatively affect our business, operating results and financial condition. In addition, the U.S. government may seek to hold us liable for successor liability FCPA violations committed by companies in which we invest or that we acquire. We cannot assure you that our internal control policies and procedures will protect us from reckless or negligent acts committed by our employees, distributors, partners, consultants or agents.

Risks Related to Tax Laws, Financial Markets and the Environment

Changes in tax rates or tax liabilities could affect results.

As a global company, we are subject to taxation in the United States and various other countries. Significant judgment is required to determine and estimate worldwide tax liabilities. Our future annual and quarterly tax rates could be affected by numerous factors, including changes in the (1) applicable tax laws; (2) composition of earnings in countries with differing tax rates; or (3) recoverability of our deferred tax assets and liabilities. Beginning in 2022, the U.S. Tax Cuts and Jobs Act of 2017 (“TCJA”) eliminates the option to deduct research and development expenditures currently and requires taxpayers to amortize them over five years pursuant to IRC Section 174. Although Congress is considering legislation that would defer the amortization requirement to later years, we have no assurance that the provision will be repealed or otherwise modified. If the requirement is not modified, it will reduce our cash flows beginning in 2022. In addition, recent proposals to increase the U.S. corporate income tax rate, increase U.S. taxation of international business operations and impose a global minimum tax could have a negative impact on our tax position depending upon the terms of the final enacted legislation. Based on the nature of the uncertainties around specific legislation to be enacted, we have not quantified the impact of this risk. Many countries and organizations such as the Organization for Economic Cooperation and Development are also actively considering changes to existing tax laws or have proposed or enacted new laws that could increase our tax obligations in countries where we do business or cause us to change the way we operate our business. Any of these developments or changes in federal, state, or international tax laws or tax rulings could adversely affect our effective tax rate and our results of operations.

In addition, we are subject to regular examination of our income tax returns by the Internal Revenue Service and other tax authorities. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. Although we believe our tax estimates are reasonable, there can be no assurance that any final determination will not be materially different from the treatment reflected in our historical income tax provisions and accruals, which could materially and adversely affect our results of operations.

The Organization for Economic Co-operation and Development ("OECD"), released guidance covering various topics, including country-by-country reporting, definitional changes to permanent establishment and Base Erosion and Profit Shifting ("BEPS"), an initiative that aims to standardize and modernize global tax policy. Depending on the final form of guidance adopted by OECD members and legislation ultimately enacted, if any, there may be significant consequences for us due to our international business activities, including, but not limited to, an increase in our tax uncertainty and adverse effects on our provision for income taxes.

Turmoil or fluctuations in the credit markets and the financial services industry may negatively impact our business, results of operations, financial condition or liquidity, and our factoring arrangements may expose us to additional risks.

In the past, global credit markets and the financial services industry have experienced periods of turmoil and upheaval characterized by the tightening of the credit markets, the weakening of the global economy and an unprecedented level of intervention from the United States and other governments. Adverse economic conditions, such as sustained periods of economic uncertainty or a crisis in the financial markets may have a material adverse effect on our liquidity and financial condition if our ability to obtain credit from the capital financial markets, or from trade creditors was impaired. In addition, a worsening economy or an economic crisis could also adversely impact our customers' ability to finance the purchase of systems from us or our suppliers' ability to provide us with product, either of which may negatively impact our business and results of operations.

We are subject to various environmental laws and regulations that could impose substantial costs upon us, and failure to comply with such laws and regulations may harm our business, operating results and financial condition.

Some of our operations use substances regulated under various federal, state, local, and international laws governing the environment, including those relating to the storage, use, discharge, disposal, labeling, and human exposure to hazardous and toxic materials. We could incur costs, fines and civil or criminal sanctions, third-party property damage or personal injury claims, or could be required to incur substantial investigation or remediation costs, if we were to violate or become liable under environmental laws. Liability under environmental laws can be joint and several and without regard to comparative fault. Compliance with current or future environmental laws and regulations could restrict our ability to expand our facilities or require us to acquire additional expensive equipment, modify our manufacturing processes, or incur other significant expenses. We may unintentionally violate environmental laws or regulations in the future as a result of human error, equipment failure or other causes. In addition to the potential adverse effects on our business operations of such an event, we are committed to maintaining safe working conditions for our employees and sourcing, manufacturing, and distributing our products in a responsible and environmentally friendly manner, and any failure on our part to do so may cause reputational harm for the Company.

Customer and investor focus on our environmental, social and governance responsibility practices and policies, and related regulatory requirements, may make our supply chain more complex, and any failure to comply with customer or investor guidelines or applicable laws and regulations may adversely affect our relationship with customers and investors or our reputation and results of operations.

There is an increasing focus on corporate environmental, social and governance ("ESG") responsibility in the semiconductor industry, particularly with OEMs that manufacture consumer electronics. A number of our customers have adopted, or may adopt, procurement policies that include ESG provisions or requirements that their suppliers should comply with, or they may seek to include such provisions or requirements in their procurement terms and conditions. An increasing number of investors are also requiring companies to disclose corporate ESG policies, practices and metrics. Legal and regulatory requirements, as well as investor expectations, on corporate ESG practices and disclosure, are subject to change, can be unpredictable, and may be difficult and expensive for us to comply with, given the complexity of our supply chain and manufacturing. If we are unable to comply, or are unable to cause our suppliers or contract manufacturers to comply, with such policies or provisions or meet the requirements of our customers and our investors, a customer may stop purchasing products from us or an investor may sell their shares, and may take legal action against us, which could harm our reputation, revenue and results of operations.

Risks Related to Growth and Acquisitions

We may choose to acquire new and complementary businesses, products or technologies instead of developing them ourselves, and we may be unable to complete these acquisitions or may not be able to successfully integrate an acquired business in a cost-effective and non-disruptive manner.

Our success depends on our ability to continually enhance and broaden our product offerings in response to changing technologies, customer demands and competitive pressures. To this end, we have, from time to time, engaged in the process of identifying, analyzing and negotiating possible acquisition transactions, and, from time to time, acquiring one or more businesses, and we expect to continue to do so in the future. We may choose to acquire new and complementary businesses, products, technologies and/or services instead of developing them ourselves. We may, however, face competition for acquisition targets from larger and more established companies with greater financial resources, making it more difficult for us to complete acquisitions. We cannot provide any assurance that we will be successful in consummating future acquisitions on favorable terms or that we will realize the benefits that we anticipate from one or more acquisitions that we consummate. Integrating any business, product, technology or service into our current operations could be expensive and time-consuming and/or disrupt our ongoing business. Further, there are numerous risks associated with acquisitions and potential acquisitions, including, but not limited to:

- diversion of management’s attention from day-to-day operational matters and current products and customers;
- lack of synergy or the inability to successfully integrate the new business or to realize expected synergies;
- integration of acquired businesses and their operations, including enterprise resource planning systems, may be costly and time-consuming and divert resources away from other projects;
- failure to commercialize the new technology or business;
- failure to meet the expected performance of the new technology or business;
- failure to retain key employees and customer or supplier relationships;
- lower-than-expected market opportunities or market acceptance of any new products; and
- unexpected reduction of sales of existing products as a result of the introduction of new products.

Our inability to consummate one or more acquisitions on favorable terms, or our failure to realize the intended benefits from one or more acquisitions, could have a material adverse effect on our business, liquidity, financial position and/or results of operations, including as a result of our incurrence of indebtedness and related interest expense and our assumption of unforeseen contingent liabilities. We might need to raise additional funds through public or private equity or debt financings to finance any acquisition. In that event, we could be forced to obtain financing on terms that are not favorable to us and, in the case of equity financing, that result in dilution to our stockholders. In addition, any impairment of goodwill or other intangible assets, amortization of intangible assets, write-down of other assets or charges resulting from the costs of acquisitions and purchase accounting could harm our business and operating results.

If we cannot effectively manage growth, our business may suffer.

Over the long-term, we intend to grow our business by increasing our sales efforts and completing strategic acquisitions. To effectively manage growth, we must, among other things:

- engage, train and manage a larger sales force and additional service personnel;
- expand the geographic coverage of our sales force;
- expand our information systems;
- identify and successfully integrate acquired businesses into our operations; and
- administer appropriate financial and administrative control procedures.

Growth of our business will likely place a significant strain on our management, financial, operational, technical, sales and administrative resources. Any failure to effectively manage our growth may cause our business to suffer and our stock price to decline.

Risks Related to the Global Economy and the Semiconductor Industry

Cyclicality in the semiconductor device industry has led to substantial decreases in demand for our systems in the past and may, from time to time, continue to do so.

Our operating results are subject to significant variation due to global economic conditions and the cyclical nature of the semiconductor device industry. Our business depends upon the capital expenditures of semiconductor device manufacturers, which, in turn, depend upon the current and anticipated market demand for semiconductors and products using semiconductors. The timing, length and severity of the up-and-down cycles in the semiconductor equipment industry are difficult to predict. In recent history, the industry has experienced significant downturns, generally in connection with declines in economic conditions.. This cyclical nature of the industry in which we operate affects our ability to accurately predict future revenue and, thus, future expense levels. When cyclical fluctuations result in lower than expected revenue levels, operating results may be adversely affected, and cost reduction measures may be necessary in order for us to remain competitive and financially sound. During a down cycle, we must be in a position to adjust our cost and expense structure to prevailing market conditions and to continue to motivate and retain our key employees. In addition, during periods of rapid growth, we must be able to increase manufacturing capacity and personnel to meet customer demand. We can provide no assurance that these objectives can be met in a timely manner in response to industry cycles, and we cannot predict when and to what extent sales may normalize, or when and to what extent gross margins may improve, following any such occurrence. If we fail to respond to industry cycles, our business could be seriously harmed.

We may also experience supplier or customer issues as a result of adverse macroeconomic conditions. If our customers have difficulties in obtaining capital or financing, this could result in lower sales. Customers with liquidity issues could also result in an increase in bad debt expense. These conditions could also affect our key suppliers, which could affect their ability to supply parts and result in delays of our customer shipments.

Our future rate of growth is highly dependent on the development and growth of the market for microelectronic device inspection, lithography and metrology equipment.

We target our products to address the needs of microelectronic device manufacturers for defect inspection, metrology and lithography. If for any reason the market for microelectronic device inspection, lithography or metrology equipment fails to grow in the long term, we may be unable to maintain current revenue levels in the short term and maintain our historical growth in the long term. Growth in the inspection market is dependent to a large extent upon microelectronic manufacturers replacing manual inspection with automated inspection technology. Growth in the metrology market is dependent to a large extent upon new chip designs and capacity expansion of microelectronic manufacturers. Growth in the lithography market is dependent on the development of cost-effective packaging with high fine pitch RDLs, ultimately migrating to multi-die, large, form-factor packages. There can be no assurance that manufacturers will undertake these actions at the rate we expect.

General Risk Factors

Provisions of our charter documents and of Delaware law could discourage potential acquisition proposals and/or delay, deter or prevent a change in control of our company.

Provisions of our certificate of incorporation and by-laws may inhibit changes in control of our company not approved by our Board of Directors. These provisions also limit the circumstances in which a premium can be paid for our common stock and in which a proxy contest for control of our board may be initiated. These provisions provide for:

- a prohibition on stockholder actions through written consent;
- a requirement that special meetings of stockholders be called only by the chairperson of our Board of Directors or majority of our directors;
- advance notice requirements for stockholder proposals and director nominations by stockholders;
- the authority of our Board of Directors to issue, without stockholder approval, preferred stock with such terms as the Board may determine; and
- the authority of our board, without stockholder approval, to adopt a stockholder rights plan.

We are also entitled to avail ourselves of the protections of Section 203 of the Delaware General Corporation Law, which could inhibit changes in control of the Company.

Our stock price is volatile.

The market price of our common stock has fluctuated widely. Consequently, the current market price of our common stock may not be indicative of future market prices, and we may be unable to sustain or increase the value of an investment in our common stock. Factors affecting our stock price may include:

- variations in operating results from quarter to quarter;
- changes in earnings estimates by analysts or our failure to meet analysts' expectations;
- changes in the market price per share of our public company customers;
- market conditions in the semiconductor and other industries into which we sell products;
- general economic conditions;
- political changes, hostilities or natural disasters such as hurricanes and floods;
- the impact of the COVID-19 pandemic, or other future infectious disease pandemics, on the global economy and on our customers, suppliers, employees, and business;
- low trading volume of our common stock; and
- the number of firms making a market in our common stock.

In addition, the stock market has experienced periods of significant price and volume fluctuations. These fluctuations have particularly affected the market prices of the securities of high technology companies like ours. Any such market fluctuations in the future could adversely affect the market price of our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive office building is located at 16 Jonspin Road in Wilmington, Massachusetts. We own our Milpitas and Richardson facilities and lease facilities for corporate, engineering, manufacturing, sales and service-related purposes in the United States and seven other countries - China, Japan, South Korea, Singapore, Taiwan, Germany and France. The following table indicates the location, the general purpose and the square footage of our material facilities. Our leases expire at various times through July 1, 2029.

Location	Facility Purpose	Approximate Square Footage
Wilmington, Massachusetts	Corporate Headquarters, Engineering, Manufacturing and Service	50,200
Milpitas, California	Engineering, Manufacturing, Service and Administration	134,000
Budd Lake, New Jersey	Engineering, Service and Administration	49,000
Bloomington, Minnesota	Engineering, Manufacturing, Service and Administration	98,600
Bend, Oregon	Engineering and Service	12,700
Hillsboro, Oregon	Engineering and Service	10,000
Richardson, Texas	Engineering	21,000
Snoqualmie, Washington	Engineering and Service	20,300
Tucson, Arizona	Engineering, Manufacturing and Service	18,900
Sudbury, Massachusetts	Engineering, Manufacturing and Service	10,000
Taiwan	Sales and Service	30,200
China	Sales, Service and Engineering	22,800
South Korea	Sales and Service	18,900
Japan	Sales and Service	7,200
Singapore	Sales and Service	9,800

We also lease office space for other smaller sales and service offices in several locations throughout the world.

We believe that our existing facilities and capital equipment are adequate to meet our current requirements and that suitable additional or substitute space is available on commercially reasonable terms if needed.

Item 3. Legal Proceedings.

The information set forth under Note 9, “Commitments and Contingencies” to the Consolidated Financial Statements is incorporated herein by reference.

Item 4. Mine Safety Disclosures.

None.

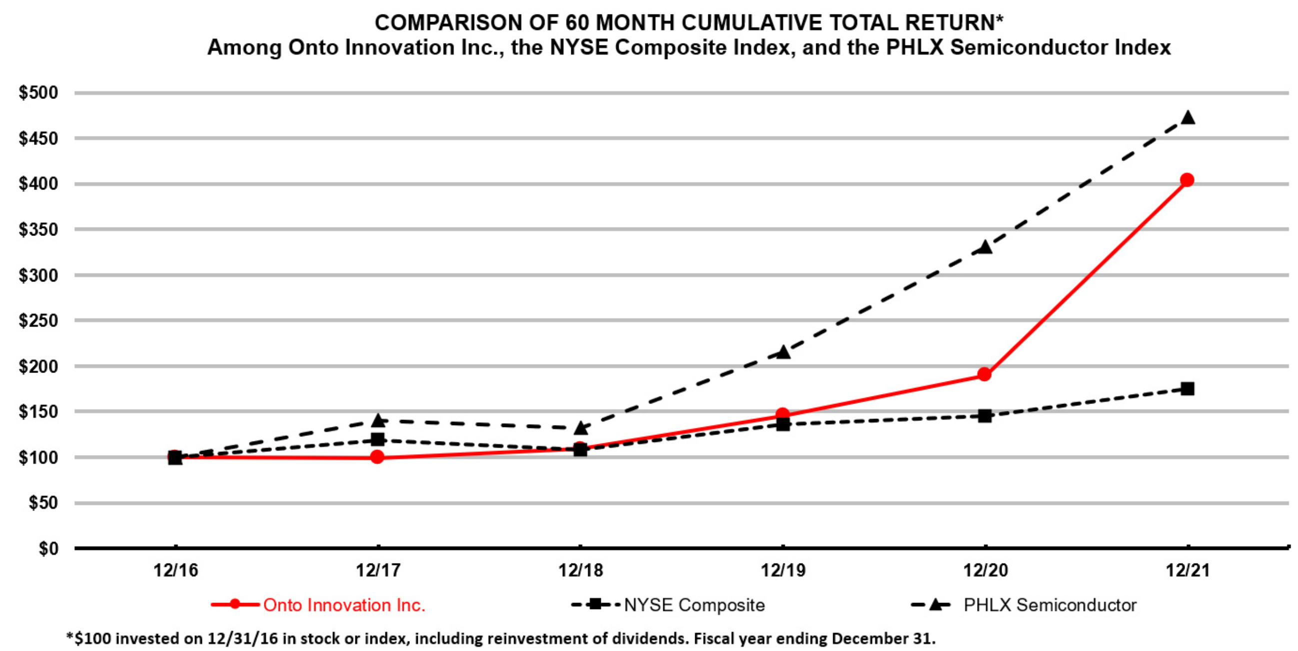
PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our common stock, $0.01 par value per share, is quoted on the New York Stock Exchange ("NYSE") under the symbol "ONTO." As of February 8, 2022, there were approximately 117 stockholders of record. Prior to the 2019 Merger, Nanometrics' common stock was quoted on the Nasdaq Global Select Market under the symbol "NANO" and Rudolph's common stock was quoted on the NYSE under the symbol "RTEC." Set forth below is a line graph comparing the annual percentage change in the cumulative return to the stockholders of the Company's common stock with the cumulative return of the NYSE Composite Index and the industry specific index, PHLX Semiconductor Index, for the period commencing on December 31, 2016 and ending on December 31, 2021. Historical data for Onto Innovation in the line graph for the period commencing on December 31, 2016 and ending on October 25, 2019 reflects the cumulative return to the stockholders of Nanometrics.

The information contained in the performance graph shall not be deemed to be "soliciting material" or to be "filed" with the SEC, nor shall such information be incorporated by reference into any future filing under the Securities Act or the Exchange Act, except to the extent that the Company specifically incorporates it by reference into such filing.

The graph assumes that $100 was invested on December 31, 2016 in the Company's common stock and in each index. No cash dividends have been declared or paid on the Company's common stock. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.



Prepared by Zacks Investment Research, Inc. Used with permission.

	12/16	12/17	12/18	12/19	12/20	12/21
Onto Innovation Inc.	100.0	99.4	109.1	145.8	189.7	404.0
NYSE Composite..	100.0	118.7	108.1	135.7	145.2	175.2
PHLX Semiconductor..	100.0	140.5	132.1	215.6	331.3	473.2

We have never declared or paid a cash dividend on our common stock and we currently do not intend to. The declaration of any future dividends by us is within the discretion of our Board of Directors and will be dependent on our earnings, financial condition and capital requirements as well as any other factors deemed relevant by our Board of Directors.

In November 2020, the Onto Innovation Board of Directors approved a new share repurchase authorization, which allows us to repurchase up to $100 million worth of shares of our common stock. Repurchases may be made through both public market and private transactions from time to time. At January 1, 2022, there was $100 million available for future share repurchases.

For further information, see Note 17 in the accompanying Notes to the Consolidated Financial Statements included in this Form 10-K.

In addition to our share repurchase program, we withhold common stock shares associated with net share settlements to cover tax withholding obligations upon the vesting of restricted stock unit awards and stock option exercises under the Company's equity incentive program. During the three and twelve months ended January 1, 2022, we withheld 7 thousand and 108 thousand shares through net share settlements, respectively. For the three and twelve month periods ended January 1, 2022, net share settlements cost $0.6 million and $7.4 million, respectively. Please refer to Note 11 of the Notes to the Consolidated Financial Statements included in this Form 10-K for further discussion regarding our equity incentive plan.

The following table provides details of common stock purchased during the three month period ended January 1, 2022 (in thousands, except per share data):

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Maximum Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program
September 26, 2021 - November 1, 2021 ..	1	$ 75.08	—	$ 100,000
November 2, 2021 - December 1, 2021...	6	$ 93.54	—	$ 100,000
December 2, 2021 - January 1, 2022	—	$ —	—	$ 100,000
Three Months Ended January 1, 2022	7	$ 91.86	—	

[1] Includes shares withheld through net share settlements.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Executive Summary

We are a worldwide leader in the design, development, manufacture and support of process control tools that perform macro-defect inspection and metrology, lithography systems, and process control analytical software used by semiconductor and advanced packaging device manufacturers. We deliver comprehensive solutions throughout the semiconductor fabrication process with our families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down costs and time to market of their devices. We provide process and yield management solutions used in both wafer processing facilities, often referred to as "front-end" manufacturing, and in device packaging and test facilities, commonly referred to as "back-end" manufacturing. Our advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, or factory-wide suites to enhance productivity and achieve significant cost savings.

Our principal market is semiconductor capital equipment. Semiconductors packaged as integrated circuits, or "chips", are used in consumer electronics, server and enterprise systems, mobile computing (including smart phones and tablets), data storage devices, and embedded automotive and control systems. Our core focus is the measurement and control of the structure, composition, and geometry of semiconductor devices as they are fabricated on silicon wafers to improve device performance and manufacturing yields.

Our products and services are used by our customers who manufacture many types of integrated circuits for a multitude of applications, each having unique manufacturing challenges. This includes integrated circuits to enable information processing and management (logic integrated circuits), memory storage (NAND, 3D-NAND, NOR, and DRAM), analog devices (e.g., Wi-Fi and 5G radio integrated circuits, power devices), MEMS sensor devices (accelerometers, pressure sensors, microphones), image sensors, and other end markets including components for hard disk drives, LEDs, and power management.

The semiconductor and electronics industries have also been characterized by constant technological innovation. We believe that, over the long term, our customers will continue to invest in advanced technologies and new materials to enable smaller design rules and higher density applications that fuel demand for process control equipment.

During fiscal 2021, there was an increase in wafer fabrication equipment spending by semiconductor manufacturers, driven by the growing importance of semiconductor technology across a broadening range of industries, from mobile devices to cloud computing and high-performance computers. We are also seeing increasing global emphasis on more advanced power devices for electric vehicles and smart power grids to help combat climate change. Customer demand was strong throughout the year and we continued to increase our production output levels. Revenues in the four quarters of 2021 increased sequentially as customers transitioned to advanced nodes and increased advanced packaging volumes. While we have seen improvements in our own operations, we experienced higher costs of goods sold related to freight and logistics costs during the year. Risks and uncertainties related to the COVID-19 pandemic and the supply chain remain and we expect this uncertainty especially in the supply chain to continue to be a factor through at least the first half of 2022, and possibly the entire year. Over the longer term, we believe that demand for semiconductors will continue to drive sustainable growth for our products and services across all of the markets we serve.

The following table summarizes certain key financial information for the periods indicated below (in thousands, except per share and percent data):

	Year Ended	
	January 1, 2022	December 26, 2020
Revenue	$ 788,899	$ 556,496
Gross profit	$ 429,086	$ 278,453
Gross profit as a percent of revenue	54%	50%
Total operating expenses	$ 272,679	$ 251,776
Net income	$ 142,349	$ 31,025
Diluted earnings per share	$ 2.86	$ 0.63

- In fiscal 2021, revenue increased 41.8% compared to the fiscal 2020, primarily due to an increase in sales to foundry and memory customers for both advanced nodes and specialty devices and advanced packaging applications.
- Gross margin as a percentage of revenue increased to 54% during fiscal 2021 compared to 50% in fiscal 2020 primarily driven by a favorable impact from higher revenue volume of products and services, charges to cost of goods sold in the 2020 period for both the sale of inventory written-up to fair value upon the 2019 Merger and inventory reserve charges for a discontinued product line.

- The increase in operating expenses in fiscal 2021 compared to fiscal 2020 was mainly driven by onboarding of new headcount to support the growth we are experiencing and an increase in employee-related expenses as a result of higher variable compensation plan costs recorded during the year.

Our cash, cash equivalents and marketable securities balance increased to $511.3 million at the end of fiscal 2021 compared to $373.7 million at the end of the fiscal 2020. This increase was primarily the result of $175.3 million of cash generated from operating activities. This source of cash was partially offset by net cash of $23.8 million used for the purchase of Inspectrology and $12.0 million used for capital expenditures.

Key Events

Business Combination. In the first quarter of 2021, the Company acquired Inspectrology, LLC, a supplier of overlay metrology for controlling lithography and etch processes in the compound semiconductor market. The purchase consideration consisted of $24.0 million in cash paid at closing and an earnout subject to achievement of certain revenue targets for fiscal year 2021 and fiscal year 2022. As of January 1, 2022, $2.3 million of the earnout has been achieved with potential for up to an additional payment of $5.0 million based on fiscal 2022 results.

Impact of the COVID-19 Pandemic on Our Business. As of February 25, 2022, our operations have been impacted by our pandemic response, as described below, given the global nature of our workforce and our operations, but we have not experienced significant financial impact directly related to the pandemic. The ultimate extent to which COVID-19 will impact our business depends on future developments, which are highly uncertain and very difficult to predict, including the effectiveness and utilization of vaccines for COVID-19 and its variants, new information that may emerge concerning the severity of COVID-19 and its variants, and actions to contain or limit their spread.

We have prioritized the health and safety of our employees and customers in our pandemic response. As governmental authorities implement restrictions on commercial operations, we have continued to ensure compliance with these directives while also maintaining business continuity for our essential operations. We have a global workforce. Although our manufacturing facilities are in the United States, we maintain offices and have employees in the United States, South Korea, Japan, Taiwan, China, Singapore and Europe. Our operations at these offices are subject to various governmental directives and, as a result thereof, we have instituted a work-from-home policy for these employees to the extent practical. Where our essential employees are required to continue to report to work to perform their responsibilities, we have implemented staggered shifts or otherwise adjusted work schedules to maximize our operating capacity while adhering to applicable restrictions, including recommended distancing between persons. We have also provided our essential employees with appropriate protective equipment and have enhanced and increased cleanings at our facilities. At this time, we have not experienced any reduction in productivity, though we have incurred certain costs related to the implementation of these policies and practices. In addition, we have enhanced our email screening and cyber monitoring of our devices to further support our work from home policy. As certain countries have relaxed restrictions over the past few months, we have restarted certain activities in accordance with local guidelines. We may take further actions that we determine to be in the best interests of our employees or as may be required by federal, state, or local authorities.

To date, the COVID-19 pandemic has disrupted the way that we conduct business but has not had a material adverse impact on our operations. We have not experienced significant delays in customer deliveries, but we are impacted by the global shortage in electronic components and our supply chain is strained in some cases as the availability of materials, logistics and freight options are challenging in many jurisdictions. Demand for our products was consistent with or exceeded our expectations for the fourth quarter of fiscal 2021. However, further disruptions to our supply chain in connection with the sourcing of materials, equipment and engineering support, and services from geographic areas that have been impacted by COVID-19 may pose risks to our business, results of operations and financial condition. In this time of uncertainty as a result of the COVID-19 pandemic, we are continuing to serve our customers while taking appropriate precautionary measures to provide a safe work environment for our employees and customers.

The extent of the pandemic's effect on our operational and financial performance will depend in large part on future developments, which cannot be predicted with confidence at this time. Future developments include the duration, scope and severity of the pandemic, the severity of newly identified strains of COVID-19, the actions taken to contain or mitigate its impact, such as the extent of restrictions on gatherings and travel, the impact on governmental programs and budgets, the development, administration, efficacy and public utilization of treatments and vaccines, and the resumption of widespread economic activity. Trade tensions between the United States and China may escalate as a result of COVID-19 or otherwise and could result in the imposition of additional tariffs, trade restrictions or policy changes, any of which could increase costs of our product components and pricing of, and consumer demand for, our products, which could have a negative effect on our results of operations.

Although the inherent uncertainty of the unprecedented and rapidly evolving crisis makes it difficult to predict with any confidence the likely impact on our future operations, the COVID-19 pandemic could have a material adverse impact on our consolidated business, results of operations and financial condition.

For a discussion of certain risks related to the international nature of our business and our operations and the COVID-19 pandemic, see Part I, Item 1A – Risk Factors of this 2021 Form 10-K.

Results of Operations

The following table sets forth, for the periods indicated, our results of operations as percentages of our revenue. Our results of operations are reported as one business segment.

	Year Ended		
	January 1, 2022	**December 26, 2020**	**December 31, 2019**
Revenue	100.0%	100.0%	100.0%
Cost of revenue	45.6%	50.0%	55.9%
Gross profit	54.4%	50.0%	44.1%
Operating expenses:			
Research and development	12.2%	15.2%	15.8%
Sales and marketing	7.3%	8.6%	9.2%
General and administrative	8.6%	11.7%	17.4%
Amortization	6.5%	9.7%	3.4%
Total operating expenses	34.6%	45.2%	45.8%
Operating income (loss)	19.8%	4.8%	(1.7)%
Interest income, net	0.1%	0.5%	1.2%
Other income (expense), net	(0.2)%	(0.5)%	0.3%
Income (loss) before provision (benefit) for income taxes	19.7%	4.8%	(0.2)%
Provision (benefit) for income taxes	1.7%	(0.7)%	(0.8)%
Net income	18.0%	5.5%	0.6%

Results of Operations for 2021, 2020 and 2019

Revenue. Our revenue is derived from the sale of our systems and software, spare parts, and services. Our revenue was $788.9 million, $556.5 million and $305.9 million for the years ended January 1, 2022, December 26, 2020 and December 31, 2019, respectively. This represents an increase of 41.8% from 2020 to 2021 and an increase of 81.9% from 2019 to 2020.

The following table lists, for the periods indicated, the different sources of our revenue in dollars (thousands) and as percentages of our total revenue:

	Year Ended					
	January 1, 2022		**December 26, 2020**		**December 31, 2019**	
Systems and software	$669,114	85%	$450,459	80%	$255,723	84%
Parts	72,753	9%	65,444	12%	34,892	11%
Services	47,032	6%	40,593	8%	15,281	5%
Total revenue	$788,899	100%	$556,496	100%	$305,896	100%

Total systems and software revenue increased $218.7 million for the year ended January 1, 2022, as compared to the year ended December 26, 2020, primarily due to an increase in overall demand for our products from semiconductor industry customers, particularly in specialty devices and advanced packaging and advanced nodes applications, and the inclusion of $22.3 million of revenue from the Inspectrology acquisition. The year-over-year change in systems revenue was primarily due to an increase in units shipped in our metrology and inspection product lines. Parts and services revenue is generated from part sales, maintenance service contracts, and system upgrades, as well as time and material billable service calls. During fiscal 2021, the increase in parts and services revenue was primarily due to increased spending by our customers on system upgrades and repairs of existing systems.

Total systems and software revenue increased $194.7 million for the year ended December 26, 2020, as compared to the year ended December 31, 2019, primarily due to the inclusion of $178.6 million of revenue from legacy Nanometrics for the period and increased investment from our foundry and logic customers. Parts and services revenue is generated from part sales, maintenance service contracts, system upgrades, as well as time and material billable service calls. During fiscal 2020, parts and services revenue increased primarily due to inclusion of $54.3 million of parts and service revenue from legacy Nanometrics for 2020.

The following table sets forth, for the periods indicated, our revenue by geographic region as percentages of our revenue.

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Revenue	$ 788,899	$ 556,496	$ 305,896
Taiwan	25%	22%	22%
South Korea	20%	16%	14%
China	19%	22%	26%
United States	16%	15%	15%
Europe	8%	9%	8%
Japan	8%	11%	10%
Southeast Asia	4%	5%	5%
Total revenue	100%	100%	100%

The overall Asia region continues to account for a majority of our revenues as a substantial amount of the worldwide capacity investments for semiconductor manufacturing continue to occur in this region and we expect that trend to continue.

Gross Profit. Our gross profit has been and will likely continue to be affected by a variety of factors, including manufacturing efficiencies, provision for excess and obsolete inventory, pricing by competitors or suppliers, new product introductions, production volume, inventory step-up from purchase accounting, customization and reconfiguration of systems, international and domestic sales mix, system and software product mix, and parts and services margins. Our gross profit was $429.1 million, $278.5 million and $135.0 million for the years ended January 1, 2022, December 26, 2020, and December 31, 2019, respectively. Our gross profit represented 54.4%, 50.0% and 44.1% for the years ended January 1, 2022, December 26, 2020, and December 31, 2019, respectively. The increase in gross profit as a percentage of revenue from 2020 to 2021 was primarily due to higher factory utilization associated with stronger sales levels in the 2021 fiscal period, inventory reserve charges for a discontinued product line and the sale of inventory written-up to fair value upon the 2019 Merger in the 2020 fiscal period. This increase in gross profit was partially offset by supply chain cost increases in the 2021 fiscal period. The increase in gross profit as a percentage of revenue from 2019 to 2020 was primarily due to a favorable impact from higher revenue volume of products and services from the 2019 Merger with inclusion of legacy Nanometrics results for the full fiscal year, partially offset by additional charges for excess and obsolete inventory in the 2020 fiscal period. During the fourth quarter of the year ended December 26, 2020, we recognized a write-down of inventory in the amount of $8.1 million for our JetStep X300 product line to net realizable value based on future demand and market conditions.

Operating Expenses.

Our operating expenses consist of:

- *Research and Development*. We believe that it is critical to continue to make substantial investments in research and development to ensure the availability of innovative technology that meets the current and projected requirements of our customers' most advanced designs. We have maintained, and intend to continue, our commitment to investing in research and development in order to continue to offer new products and technologies. Accordingly, we devote a significant portion of our technical, management and financial resources to research and development programs. Research and development expenditures consist primarily of salaries and related expenses of employees engaged in research, design and development activities. They also include consulting fees, the cost of related supplies and legal costs to defend our intellectual property. Our research and development expenses were $96.1 million, $84.6 million and $48.4 million in fiscal years 2021, 2020 and 2019, respectively. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased costs related to new product initiatives and increased variable compensation plan costs. The year-over-year dollar increase from 2019 through 2020 was primarily due to the 2019 Merger where research and development expenses for legacy Nanometrics was included for the full 2020 fiscal year and in 2019 included from October 25, 2019 to December 31, 2019. We continue to maintain our commitment to investing in new product development and enhancement to existing products.
- *Sales and Marketing*. Sales and marketing expenses are primarily comprised of salaries and related costs for sales and marketing personnel, as well as commissions and other non-personnel related expenses. Our sales and

marketing expenses were $57.2 million, $48.1 million and $28.3 million in fiscal years 2021, 2020 and 2019, respectively. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased personnel costs, including variable compensation plan costs. The year-over-year dollar increase from 2019 through 2020 was primarily due to the 2019 Merger where sales and marketing expenses for legacy Nanometrics was included for the full 2020 fiscal year and in 2019 included from October 25, 2019 to December 31, 2019.

- *General and Administrative*. General and administrative expenses are primarily comprised of salaries and related costs for general administrative personnel, as well as other non-personnel related expenses. Our general and administrative expenses were $68.0 million, $65.3 million and $53.0 million in fiscal years 2021, 2020 and 2019, respectively. The year-over-year dollar increase from 2020 through 2021 was primarily due to increased personnel costs, including variable compensation plan costs. The year-over-year dollar increases from 2019 through 2020 were primarily due to the 2019 Merger where general and administrative expenses for legacy Nanometrics was included for the full 2020 fiscal year and in 2019 included from October 25, 2019 to December 31, 2019.
- *Amortization of Identifiable Intangible Assets*. Amortization of identifiable intangible assets, primarily purchased technology, was $51.4 million, $53.7 million and $10.4 million in fiscal years 2021, 2020 and 2019, respectively. The year-over-year dollar decrease from 2020 through 2021 was primarily due to certain intangible assets becoming fully amortized, partially offset by amortization for newly acquired intangible assets in 2021. The year-over-year dollar increase from 2019 through 2020 was primarily due to amortization of additional purchased intangible assets recorded as a result of the 2019 Merger where such amortization expense was included for the full 2020 fiscal year and in 2019 included from October 25, 2019 to December 31, 2019.

Interest income, net. In fiscal years 2021, 2020 and 2019, net interest income was $1.2 million, $2.9 million and $3.7 million, respectively. The decrease in net interest income from 2020 to 2021 was due to lower interest rates during the 2021 period. The decrease in net interest income from 2019 to 2020 was due to lower interest rates during the 2020 period.

Income taxes. The following table provides details of income tax (dollars in millions):

	Year Ended		
	January 1, 2022	**December 26, 2020**	**December 31, 2019**
Income (loss) before provision (benefit) for income taxes	$ 155.7	$ 26.9	$ (0.6)
Provision (benefit) for income taxes	$ 13.3	$ (4.2)	$ (2.5)
Effective tax rate	8.6%	(15.5)%	(419.9)%

The income tax provision differs from the federal statutory income tax rate of 21% for 2021 primarily due to a benefit related to the Foreign Derived Intangible Income Deduction (“FDII”) of $11.1 million, excess benefits related to stock compensation of $3.8 million, tax benefits for research and development credits of $3.6 million, tax benefit from foreign income being taxed at lower rates of $3.8 million, and a one-time benefit of $2.0 million from a reduction to recorded tax reserve related to a lapse of statute of limitations. These benefits were partially offset by the inclusion of U.S. tax on foreign source income of $1.7 million.

The income tax provision differs from the federal statutory income tax rate of 21% for 2020 primarily due to a benefit related to the FDII of $4.3 million, tax benefits for research and development credits of $4.9 million, and a one-time benefit related to the closure of an IRS audit for tax years 2016 through 2018 of $2.9 million. These benefits were partially offset by the inclusion of Global Intangible Low-Taxed Income (“GILTI”) of $2.0 million.

The income tax provision differs from the federal statutory income tax rate of 21% for 2019 primarily due to a benefit related to the FDII of $2.3 million and tax benefits for research and development credits of $2.1 million, partially offset by non-deductible transaction costs of $1.1 million and Section 162(m) limitation on the deductibility of executive compensation of $0.8 million.

Our future effective income tax rate depends on various factors, such as future impacts of the Tax Act, possible further tax legislation, the geographic composition of our pre-tax income, the amount of our pre-tax income as business activities fluctuate, non-deductible expenses incurred in connection with acquisitions and research and development credits as a percentage of aggregate pre-tax income.

On March 27, 2020, the “Coronavirus Aid, Relief and Economic Security Act” (the “CARES Act”) was enacted. The CARES Act includes provisions relating to refundable payroll tax credits, deferral of the employer portion of certain payroll taxes, net operating loss carryback periods, alternative minimum tax credit refunds, modifications to the net interest deduction limitations and technical corrections to tax depreciation methods for qualified improvement property. The Company filed a claim for a refund of prior years' income taxes paid under the provisions of the CARES Act which resulted in a tax benefit of $1.9 million as the 2019 net operating loss was carried back to a year with higher tax rates.

Unanticipated changes in our tax provisions or exposure to additional tax liabilities could affect our profitability and cash flow. We are subject to income and other taxes in the United States and foreign jurisdictions. Changes in applicable U.S. (federal, state and local) or foreign tax laws and regulations, or their interpretation and application, including the possibility of retroactive effect, have affected and could continue to affect our tax expense and profitability as, for example, they did in 2017 upon passage of the Tax Cuts and Jobs Act. In addition, the final determination of any state or federal tax audits or related litigation, in particular with regard to the sustainment of our positions on research credits and timing of revenue recognition under IRC Section 451(b), could be materially different from our historical income tax provisions and accruals.

Beginning in 2022, the TCJA eliminates the existing option to deduct research and development expenditures and requires taxpayers to amortize them over five years pursuant to IRC Section 174. Although Congress is considering legislation that would defer the amortization requirement to later years, we have no assurance that the provision will be repealed or otherwise modified. If the requirement is not modified, it will reduce our cash flows beginning in 2022. Changes in our tax provisions or an increase in our tax liabilities, whether due to changes in applicable laws and regulations, the interpretation or application thereof, or a final determination of tax audits or litigation or agreements, could have a material adverse effect on our financial position, results of operations and/or cash flows.

Liquidity and Capital Resources

At January 1, 2022, we had $511.3 million of cash, cash equivalents and marketable securities and $793.6 million in working capital. At December 26, 2020, we had $373.7 million of cash, cash equivalents and marketable securities and $611.6 million in working capital.

Net cash and cash equivalents provided by operating activities for the years ended January 1, 2022, December 26, 2020 and December 31, 2019 totaled $175.3 million, $106.0 million and $18.1 million, respectively.

- Cash provided by operating activities increased in fiscal 2021 compared to fiscal 2020 primarily due to higher net income, adjusted to exclude the effect of non-cash charges, of $91.2 million, an increase in accrued and other liabilities of $3.8 million and an increase in income taxes of $2.5 million, partially offset by an increase in inventories of $14.7 million, an increase in prepaid expenses and other assets of $12.2 million and an increase in accounts receivable of $2.0 million.
- Cash provided by operating activities increased in fiscal 2020 compared to fiscal 2019 primarily due to higher net income, adjusted to exclude the effect of non-cash charges, of $81.3 million, an increase in accrued and other liabilities of $24.5 million, a decrease in prepaid expenses and other assets of $16.5 million and an increase in accounts payable of $23.5 million, partially offset by an increase in inventories of $33.1 million, an increase in accounts receivable of $16.1 million and a decrease in income taxes of $8.8 million.

Net cash and cash equivalents used in investing activities for the years ended January 1, 2022 and December 26, 2020 was $141.8 million and $48.6 million, respectively. For the year ended December 31, 2019, investing activities provided net cash and cash equivalents of $4.1 million.

- During the year ended January 1, 2022, net cash used in investing activities included purchases of marketable securities, net of proceeds from sales of marketable securities of $106.0 million, purchase of business net of cash acquired of $23.8 million, and purchases of property, plant and equipment of $12.0 million.
- During the year ended December 26, 2020, net cash used in investing activities included purchases of marketable securities, net of proceeds from sales of marketable securities of $47.6 million and purchases of property, plant and equipment of $3.8 million, partially offset by cash received from convertible note receivable of $2.8 million.
- During the year ended December 31, 2019, net cash provided by investing activities included cash acquired in the 2019 Merger of $43.9 million, partially offset by purchases of marketable securities, net of proceeds from marketable securities of $33.0 million and purchases of property, plant and equipment of $6.8 million.

Net cash provided by financing activities was $2.7 million for the year ended January 1, 2022. For the years ended December 26, 2020 and December 31, 2019 financing activities used $53.7 million and $4.2, respectively.

- During the year ended January 1, 2022, financing activities provided cash from shares issued through share-based compensation plans of $10.1 million, partially offset by cash used to pay taxes related to shares withheld for share based compensation plans of $7.4 million.
- During the year ended December 26, 2020, financing activities used cash to primarily purchase shares of our common stock under the share repurchase authorization of $52.0 million.
- During the year ended December 31, 2019, financing activities used cash to primarily pay taxes related to shares

withheld for share based compensation plans of $2.5 million and pay contingent consideration for acquired business of $1.8 million.

From time to time, we evaluate whether to acquire new or complementary businesses, products and/or technologies. We may fund all of or a portion of the price of these investments or acquisitions in cash, stock, or a combination of cash and stock. In the first quarter of 2021, the Company acquired Inspectrology, LLC for $24.0 million in cash and an earnout subject to the achievement of certain revenue targets earned for fiscal 2021 through 2022. The earnout achieved for fiscal 2021 was $2.3 million and is anticipated to be paid in the first half of fiscal 2022. There is potential earnout for up to an additional payment of $5.0 million depending on fiscal 2022 results.

In November 2020, the Onto Innovation Board of Directors approved a new share repurchase authorization, which allows the Company to repurchase up to $100 million worth of shares of its common stock. Repurchases may be made through both public market and private transactions from time to time with shares purchased being subsequently retired. At January 1, 2022, there was $100 million available for future share repurchases.

For further information regarding our share repurchases, see Note 17 in the accompanying Notes to the Consolidated Financial Statements included in this Form 10-K.

We have a credit agreement with a bank that provides for a line of credit that is secured by the marketable securities we have with the bank. We are permitted to borrow up to 70% of the value of eligible securities held at the time the line of credit is accessed. As of January 1, 2022, the available line of credit was approximately $131.4 million with an available interest rate of 1.8%. The credit agreement is available to us until such time that either party terminates the arrangement at its discretion. To date, we have not utilized the line of credit.

Our future capital requirements will depend on many factors, including the timing and amount of our revenue and our investment decisions, which will affect our ability to generate additional cash. In addition, although the ultimate impact of the COVID-19 pandemic on our future results remains uncertain, we believe our business model and our current cash reserves leave us well-positioned to manage our business through this crisis as it continues to unfold. We expect that our existing cash, cash equivalents, marketable securities and availability under our line of credit will be sufficient to meet our anticipated cash requirements for working capital, capital expenditures and other cash needs for the next 12 months following the filing of this Form 10-K. Thereafter, if cash generated from operations and financing activities is insufficient to satisfy our working capital requirements, we may seek additional funding through bank borrowings, sales of securities or other means. Market conditions due to the COVID-19 pandemic or other factors may have an impact on our ability to access such additional funding. Our borrowing capacity under our existing line of credit is tied to the value of eligible securities held at the time of borrowing, which may be negatively impacted by market conditions due to COVID-19 and government responses thereto or other factors. In addition, a reduction in or volatility with respect to our stock price or a general market downturn could materially impact our ability to sell securities on favorable terms or at all. There can be no assurance that we will be able to raise any such capital on terms acceptable to us or at all.

Contractual Obligations

The following table summarizes our significant contractual obligations at January 1, 2022, and the effect such obligations are expected to have on our liquidity and cash flows in future periods. We are currently unable to provide a reasonably reliable estimate of the amount or periods when cash settlement of this liability may occur (dollars in thousands).

	Payments due by period				
	Total	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
Operating lease obligations	$ 21,104	$ 5,029	$ 7,515	$ 5,261	$ 3,299
Purchase obligations[(1)]	373,638	345,334	28,304	—	—
Total	$ 394,742	$ 350,363	$ 35,819	$ 5,261	$ 3,299

(1) Represents our agreements to purchase goods and services consisting of outstanding purchase orders for goods and services.

Critical Accounting Policies and Estimates

Management's discussion and analysis of our financial condition and results of operations are based upon our Consolidated Financial Statements included in this Form 10-K, which have been prepared in accordance with accounting principles generally accepted in the United States. We review the accounting policies we use in reporting our financial results on a regular basis. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, accounts receivable, inventories, business acquisitions, intangible assets, share-based payments, income taxes and warranty obligations. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Results may differ from these estimates due to actual outcomes being different from those on which we based our assumptions. These estimates and judgments are regularly reviewed by management on an ongoing basis at the end of each quarter prior to the public release of our financial results. We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our Consolidated Financial Statements.

Revenue Recognition. Revenue is recognized when control of the promised goods or services are transferred to our customers in an amount that reflects the consideration we expect to be entitled to receive in exchange for those goods or services. We account for a contract when it has approval and commitment from both parties, the rights of the parties and payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

We account for shipping and handling activities as the fulfillment of a promise to transfer goods to the customer and therefore record these activities under the caption “Cost of revenue.” Sales tax and any other taxes collected concurrent with revenue producing activities are excluded from revenue. Incidental items that are immaterial in the context of the contract are recognized as expense.

Contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or the expected cost-plus margin.

Revenue from systems is recognized when we transfer control of the product to our customer. To indicate transfer of control, we must have a present right to payment, legal title must have passed to the customer and the customer must have the significant risks and rewards of ownership. We generally transfer control for system sales when the customer or the customer’s agent picks up the system at our facility. We provide an assurance warranty on our systems for a period of twelve to fourteen months against defects in material and workmanship. We provide for the estimated cost of product warranties at the time revenue is recognized.

Depending on the terms of the systems arrangement, we may also defer the recognition of a portion of the consideration expected to be received because we have to satisfy a future obligation (e.g., installation and extended warranties). We use an observable price to determine the standalone selling price for separate performance obligations or a cost-plus margin approach when one is not available.

Revenue from software licenses is recognized upfront at the point in time when the software is made available to the customer. Software licenses provide the customer with limited rights to use the software. Revenue from licensing support and maintenance is recognized as the support and maintenance are provided, which is over the contract period.

Revenue from parts is recognized when we transfer control of the product, which typically occurs when we ship the product from our facilities to the customer.

Revenue from services primarily consists of service contracts, which provide additional maintenance coverage beyond our assurance warranty on our products, service labor, consulting and training. Revenue from service contracts is recognized ratably over the term of the service contract. Revenue from service labor, consulting and training is recognized as services are performed.

We record contract liabilities when the customer has been billed in advance of completing our performance obligations. These amounts are recorded as deferred revenue in the Consolidated Balance Sheets.

Business combinations. We account for business combinations under the acquisition method of accounting, which requires us to recognize separately from goodwill the assets acquired, and the liabilities assumed at their acquisition date fair values. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recognized in our consolidated statements of operations. Accounting for business combinations requires our management to make significant estimates and assumptions, especially at the acquisition date including our estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Estimates in valuing certain acquired intangible assets under the income approach include growth in future expected cash flows from product sales, acquired technologies, technology obsolescence rates, estimated cash flows from the projects when completed and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

Excess and Obsolete Inventory. Inventories are stated at the lower of cost or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less predictable costs of completion, disposal and transportation. Cost is generally determined on a first-in, first-out basis, and includes material, labor and manufacturing overhead costs. We review and set standard costs as needed, but at a minimum, on an annual basis, at current manufacturing costs in order to approximate actual costs. We maintain reserves for our excess and obsolete inventory equal to the difference between the cost of inventory and the estimated market value based upon assumptions about future product lifecycles, product demand and market conditions. If actual product lifecycles, product demand and market conditions are less favorable than those originally projected by management, additional inventory write-downs may be required.

Goodwill and Indefinite Lived Intangible Assets. Goodwill is tested for impairment during the fourth quarter, or whenever events or circumstances indicate that its carrying value may not be recoverable. Goodwill impairment is tested at the reporting unit level, which is defined as an operating segment or one level below the operating segment. The Company has one operating segment. Goodwill is reviewed for impairment using either a qualitative assessment or a quantitative goodwill impairment test. If the Company chooses to perform a qualitative assessment and determine the fair value more likely than not exceeds the carrying value, no further evaluation is necessary. When the Company performs the quantitative goodwill impairment test, it compares fair value to carrying value, which includes goodwill. If fair value exceeds carrying value, the goodwill is not considered impaired. If the carrying value is higher than the fair value, the difference would be recognized as an impairment loss.

Intangible assets with indefinite lives, including in-process research and development ("IPR&D"), are tested for impairment if impairment indicators arise and, at a minimum, annually. However, the Company is permitted to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that an indefinite-lived intangible asset's fair value is less than its carrying amount. Otherwise, no further impairment testing is required. The indefinite-lived intangible asset impairment test consists of a one-step analysis that compares the fair value of the intangible asset with its carrying amount. If the carrying amount of an intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. We consider many factors in evaluating whether the value of intangible assets with indefinite lives may not be recoverable, including, but not limited to estimates of future cash flows, the discount rate, terminal growth rates, general economic conditions, our outlook and market performance of our industry and recent and forecasted financial performance.

There was no impairment of goodwill or IPR&D for the years presented.

Long-Lived Assets and Finite-Lived Acquired Intangible Assets. We periodically review long-lived assets, other than goodwill, for impairment whenever changes in events or circumstances indicate that the carrying amount of an asset may not be recoverable. Assumptions and estimates used in the determination of impairment losses, such as future cash flows and disposition costs, may affect the carrying value of long-lived assets and the impairment of such long-lived assets, if any, could have a material effect on our consolidated financial statements. During the year ended December 31, 2019, we recognized a $0.5 million impairment loss on long-lived assets. No such indicators were noted in 2021 or 2020.

Accounting for Income Taxes. As part of the process of preparing our consolidated financial statements, we are required to estimate our current tax exposure together with our temporary differences resulting from differing treatment of items for tax and accounting purposes. These temporary differences result in deferred tax assets and liabilities, which are included within our consolidated balance sheet. We must then assess the likelihood that our deferred tax assets will be recovered from future taxable income and to the extent we believe that recovery is not likely, we must establish a valuation allowance. Management judgment is required in determining our provision for income taxes and any valuation allowance recorded against our deferred tax assets. The need for a valuation allowance is based on our estimates of taxable income by jurisdiction in which we operate and the period over which our deferred taxes will be recoverable. In the event that actual results differ from these estimates or we adjust these estimates in future periods, we may need to adjust the valuation allowance, which could materially impact our financial position and results of operations. At January 1, 2022 and December 26, 2020, we had recorded valuation allowances of $10.9 million and $14.2 million on certain of our deferred tax assets to reflect the deferred tax assets at the net amount that is more likely than not to be realized. We evaluated the realizability of the deferred tax assets based on positive earnings as well as the projected earnings in future years and believe it is more likely than not that the substantial majority of our deferred tax asset will be realized in the future years. We will continue to monitor the realizability of the deferred tax assets and evaluate the valuation allowance.

We recognize liabilities for uncertain tax positions based on a two-step process. The first step requires us to determine if the weight of available evidence indicates that the tax position has met the threshold for recognition; therefore, we must evaluate whether it is more likely than not that the position will be sustained on audit, including resolution of any related appeals or litigation processes. The second step requires us to measure the tax benefit of the tax position taken, or expected to be taken, in an income tax return as the largest amount that is more than 50% likely of being realized when effectively settled. This measurement step is inherently difficult and requires subjective estimations of such amounts to determine the probability of various possible outcomes. We reevaluate the uncertain tax positions each quarter based on factors including, but not limited to, changes in facts or circumstances, changes in tax law, effectively settled issues, and new audit activity. Such a change in recognition or measurement could result in the recognition of a tax benefit or an additional charge to the tax provision in the period.

Although we believe the measurement of our liabilities for uncertain tax positions is reasonable, no assurance can be given that the final outcome of these matters will not be different than what is reflected in the historical income tax provisions and accruals. If additional taxes are assessed as a result of an audit or litigation, it could have a material effect on our income tax provision and net income in the period or periods for which that determination is made.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate and Credit Market Risk

We are exposed to changes in interest rates and market liquidity including our investments in certain available-for-sale securities. Our available-for-sale securities consist of fixed and variable rate income investments, such as municipal notes, municipal bonds and corporate bonds. We continually monitor our exposure to changes in interest rates, market liquidity and credit ratings of issuers for our available-for-sale securities. It is possible that we are at risk if interest rates, market liquidity or credit ratings of issuers change in an unfavorable direction. The magnitude of any gain or loss will be a function of the difference between the fixed or variable rate of the financial instrument and the market rate, and our financial condition and results of operations could be materially affected. Based on a sensitivity analysis performed on our financial investments held as of January 1, 2022, a hypothetical increase of 100 basis points in interest rates would result in a decrease of $2.2 million in the fair value of our available-for-sale debt securities and would not have a material impact on our consolidated financial position, results of operations or cash flows.

Foreign Currency Risk

A substantial portion of our systems and software revenues are denominated in U.S. dollars. However, our international operations are exposed to foreign currency exchange rate fluctuations arising from U.S. dollar denominated intercompany balances between our U.S. headquarters and that of our foreign owned entities. Since each foreign entity's functional currency is generally denominated in its local currency, there is exposure to foreign exchange risk when the foreign entity's intercompany balance is remeasured at a reporting date, resulting in transaction gains or losses. The intercompany balance, exposed to foreign currency risk, as of January 1, 2022 was approximately $46.8 million. A hypothetical change of 10% in the relative value of the U.S. dollar versus local functional currencies could result in approximately $0.5 million in foreign currency exchange losses / (gains).

We enter into foreign currency forward contracts to minimize the short-term impact of exchange rate fluctuations on certain foreign currency denominated monetary assets and liabilities, primarily cash and intercompany receivables and payables. In addition, we hedge certain anticipated foreign currency cash flows, primarily on revenues denominated in Japanese yen. These forward contracts are not designated as accounting hedges, so the change in fair value of the forward exchange contracts is recognized under the caption "Other income (expense), net" in the Consolidated Statements of Operations for each reporting period. As of January 1, 2022, and December 26, 2020, we had seven and eight outstanding forward contracts, respectively, with a total notional contract value of $32.3 million and $37.6 million, respectively. We do not use derivative financial instruments for trading or speculative purposes.

Item 8. Financial Statements and Supplementary Data.

The consolidated financial statements and related information required by this Item are set forth on the pages indicated in Item 15(a) of this Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time period specified in SEC rules and forms. These controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating disclosure controls and procedures, we have recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. Management is required to apply judgment in evaluating its controls and procedures.

We performed an evaluation under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, to assess the effectiveness of the design and operation of our disclosure controls and procedures under the Exchange Act as of January 1, 2022. Based on that evaluation, our management, including our principal executive officer and principal financial officer, concluded that our disclosure controls and procedures were effective as of January 1, 2022 at the reasonable assurance level.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) ("COSO"). Based on our evaluation, our management concluded that our internal control over financial reporting was effective as of January 1, 2022.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may be circumvented or deteriorate.

Attestation Report of the Registered Public Accounting Firm

Our consolidated financial statements as of and for the year ended January 1, 2022 have been audited by Ernst & Young LLP, our independent registered public accounting firm, in accordance with the standards of the Public Company Accounting Oversight Board (United States). Ernst & Young LLP has also audited our internal control over financial reporting as of January 1, 2022, as stated in its attestation report included elsewhere in this Form 10-K.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during our fiscal quarter ended January 1, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We have not experienced any material impact to our internal controls over financial reporting due to the fact that most of our employees responsible for financial reporting are working remotely during the COVID-19 pandemic. We are continually monitoring and assessing the impact of the COVID-19 pandemic on our internal controls to minimize the impact to their design and operating effectiveness.

Item 9B. Other Information.

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspection.

Not applicable.

PART III

Certain information required by Part III is omitted from this Form 10-K because we expect to file a definitive proxy statement within one hundred twenty (120) days after the end of our fiscal year pursuant to Regulation 14A (the "Proxy Statement") for our Annual Meeting of Stockholders currently scheduled for May 10, 2022, and the information included in the Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this Item with respect to directors and executive officers is included under the headings "Proposal One: Election of Directors," "Named Executive Officers (NEOs)" and "Corporate Governance Principles and Practices" in the Proxy Statement, which is incorporated herein by reference. Information regarding compliance with Section 16 of the Exchange Act is incorporated by reference to the information under the heading "Delinquent Section 16(a) Reports" in the Proxy Statement.

Code of Business Conduct and Ethics. We have adopted a code of business conduct and ethics that applies to our principal executive officer, principal financial officer and controller. This code of business conduct and ethics is posted on our internet website address at http://investors.ontoinnovation.com. We will post on our website any amendment to or waiver from a provision of our code of business conduct and ethics as may be required, and within the time period specified, by applicable SEC rules.

Item 11. Executive Compensation.

The information required by this Item is included under the headings "Executive Officer Compensation," "Compensation of Directors," "Compensation Committee Report on Executive Officer Compensation," "Stock Ownership/Retention Guidelines for Directors" and "Compensation Committee Interlocks and Insider Participation" in the Proxy Statement, which is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item is included under the headings "Security Ownership of Certain Beneficial Owners" and "Equity Compensation Plan Information" in the Proxy Statement, which is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item is included under the headings "Related Persons Transactions Policy" and "Board Independence" in the Proxy Statement, which is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by this Item is included under the heading "Proposal 3: Ratification of Appointment of Independent Registered Public Accounting Firm" in the Proxy Statement, which is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedule.

(a) The following documents are filed as part of this Form 10-K:

1. Financial Statements

The consolidated financial statements and consolidated financial statement information required by this Item are included on pages F-1 through F-10 of this report. The Reports of Independent Registered Public Accounting Firm appear on pages F-2 through F-4 of this report.

2. Financial Statement Schedule

See Index to financial statements on page F-1 of this report.

3. Exhibits

Exhibits are as set forth in the "Exhibit Index", provided below. Where so indicated, exhibits, which were previously filed, are incorporated by reference.

Exhibit No.	Exhibit Description	Form	File Number	Date of First Filing	Exhibit No./Appendix Reference
2.1	Agreement and Plan of Merger, dated as of June 23, 2019, by and among Nanometrics Incorporated, Rudolph Technologies, Inc. and PV Equipment Inc.	8-K	000-13470	June 24, 2019	2.1
3.1	Amended and Restated Certificate of Incorporation of Onto Innovation Inc.	8-K	001-39110	October 28, 2019	3.2
3.2	Amended and Restated Bylaws of Onto Innovation Inc.	8-K	001-39110	January 27, 2020	3.1
4.1	Form of Common Stock Certificate	10-K	001-39110	February 25, 2020	4.1
4.2	Description of Securities	10-K	001-39110	February 25, 2020	4.2
10.1*	Nanometrics Incorporated Amended and Restated 2005 Equity Incentive Plan	DEF14A	000-13470	April 4, 2017	Appendix B
10.1.1*	Form of Performance-Based Restricted Stock Unit Agreement	8-K	000-13470	March 24, 2015	99.1
10.1.2*	Nanometrics Incorporated Amended and Restated 2005 Equity Incentive Plan forms of Stock Option and Restricted Stock Unit Agreements	10-K	000-13470	March 13, 2008	10.8
10.2*	Rudolph Technologies, Inc. 2009 Stock Plan	DEFR14A	000-27965	May 8, 2009	Appendix A
10.2.1*	Amended form of Employee Restricted Stock Unit Purchase Agreement pursuant to the Rudolph Technologies, Inc. 2009 Stock Plan	10-Q	001-36226	August 3, 2017	10.12
10.3*	Rudolph Technologies, Inc. 2018 Stock Plan	8-K	001-36226	May 16, 2018	10.1
10.3.1*	Form of Employee Performance Stock Unit Purchase Agreement pursuant to the Rudolph Technologies, Inc. 2018 Stock Plan	10-Q	001-36226	August 2, 2018	10.1

Exhibit No.	Exhibit Description	Form	File Number	Date of First Filing	Exhibit No./Appendix Reference
10.4*	Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.2*	Form of Employee Stock Option Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.3*	Form of Director Stock Option Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	8-K	001-39110	May 14, 2020	10.1
10.4.5*	Form of Employee Restricted Stock Unit Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.6*	Form of Director Restricted Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.7*	Form of Employee Performance Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	August 5, 2021	10.1
10.4.8*	Form of Employee Incentive Restricted Stock Unit Purchase Agreement for usage under the Onto Innovation Inc. 2020 Stock Plan	10-Q	001-39110	November 4, 2021	10.1
10.5*	Onto Innovation Inc. 2020 Employee Stock Purchase Plan	S-8	333-238492	May 19, 2020	10.2
10.6*	Form of Indemnification Agreement	8-K	001-39110	November 6, 2019	10.1
10.7*	Form of Onto Innovation Inc. Indemnification Agreement	8-K	001-39110	September 13, 2021	10.1
10.8*	General Severance Benefits and Change in Control Severance Benefits Agreement between Kevin Heidrich and Nanometrics Incorporated, dated May 19, 2015.	8-K	000-13470	May 22, 2015	10.4
10.9*	Management Agreement, dated as of July 24, 2000 by and between Rudolph Technologies, Inc. and Steven R. Roth as restated and amended on July 29, 2014.	10-Q	001-36226	August 6, 2014	10.2
10.10*	Employment Agreement, dated as of November 9, 2015, by and between Rudolph Technologies, Inc. and Michael Plisinski.	8-K	001-36226	November 9, 2015	10.1

Exhibit No.	Exhibit Description	Form	File Number	Date of First Filing	Exhibit No./Appendix Reference
10.11*	Executive Change of Control Agreement, dated August 20, 2009, by and between Rudolph Technologies, Inc. and Robert A. Koch.	10-Q	000-27965	November 6, 2009	10.3
10.12	License Agreement, dated June 28, 1995, between Rudolph Technologies Inc. and Brown University Research Foundation.	S-1	333-86821	September 9, 1999	10.1
21.1+	Subsidiaries.	—	—	—	—
23.1+	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.	—	—	—	—
31.1+	Rule 13a-14(a) Certification of Chief Executive Officer of the Registrant pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
31.2+	Rule 13a-14(a) Certification of Chief Financial Officer of the Registrant pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
32.1+	Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
32.2+	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	—	—	—	—
101.INS	Inline XBRL Instance Document				
101.SCH	Inline XBRL Taxonomy Extension Schema Document				
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				
104	Cover Page Interactive Data File (formatted in inline XBRL and contained in Exhibit 101)				
*	Management contract, compensatory plan or arrangement.				
+	Filed herewith.				

ONTO INNOVATION INC.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS AND FINANCIAL STATEMENT SCHEDULE

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Onto Innovation Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Onto Innovation Inc. (the Company) as of January 1, 2022 and December 26, 2020, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended January 1, 2022, and the related notes and financial statement schedule listed in the Index at Item 15(a) (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at January 1, 2022 and December 26, 2020, and the results of its operations and its cash flows for each of the three years in the period ended January 1, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of January 1, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 25, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosure to which it relates.

	Excess Inventory Reserve
Description of the Matter	As described in Notes 1 and 8 to the consolidated financial statements, the Company records inventory net of a reserve for excess and obsolete inventory resulting in net inventories of $243.1 million as of January 1, 2022. The valuation of certain of the Company's inventory is subject to risks associated with supply and demand. As described in Note 2 to the consolidated financial statements, the Company maintains reserves for excess and obsolete inventory equal to the difference between the cost of inventory and its estimated net realizable value based upon assumptions about historical and future demand for the Company's products and market conditions Auditing management's estimate of the excess and obsolete inventory reserve was subjective and required significant judgment as the excess and obsolete inventory reserve is sensitive to changes in the Company's operations and assumptions used to estimate the reserve including management's assumptions with regards to product life-cycles, product demand and market conditions, which includes historical usage, expected future usage, on-hand quantities of individual materials, and anticipated engineering design changes or advancements.

How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's excess and obsolete inventory reserve process, including those over the validity and reasonableness of the data and assumptions used in estimating the excess and obsolete inventory reserve. To test the adequacy of the Company's excess and obsolete inventory reserve, we performed audit procedures that included, among others, assessing methodologies and assumptions used, testing the completeness and accuracy of the underlying data used by management in its analysis including the usage of historical materials, considering potential product obsolescence, observing physical inventory on-hand and inspecting historical gross margins to assess whether any items are being sold at a loss or lower margins that may need to be included in the reserve. We assessed the historical accuracy of management's estimated excess and obsolete inventory reserve and performed sensitivity analyses to evaluate changes in the estimate that result from changes in the Company's significant assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2008.

Iselin, New Jersey
February 25, 2022

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Onto Innovation Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Onto Innovation Inc.'s internal control over financial reporting as of January 1, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Onto Innovation Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of January 1, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of January 1, 2022 and December 26, 2020, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended January 1, 2022, and the related notes and financial statement schedule listed in the Index at Item 15(a) and our report dated February 25, 2022 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Iselin, New Jersey
February 25, 2022

ONTO INNOVATION INC.

CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share data)

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Revenue	$ 788,899	$ 556,496	$ 305,896
Cost of revenue	359,813	278,043	170,868
Gross profit	429,086	278,453	135,028
Operating expenses:			
Research and development	96,118	84,584	48,358
Sales and marketing	57,235	48,136	28,251
General and administrative	67,960	65,310	53,017
Amortization	51,366	53,746	10,445
Total operating expenses	272,679	251,776	140,071
Operating income (loss)	156,407	26,677	(5,043)
Interest income, net	1,163	2,899	3,666
Other income (expense), net	(1,888)	(2,708)	780
Income (loss) before provision (benefit) for income taxes	155,682	26,868	(597)
Provision (benefit) for income taxes	13,333	(4,157)	(2,507)
Net income	$ 142,349	$ 31,025	$ 1,910
Earnings per share:			
Basic	$ 2.89	$ 0.63	$ 0.06
Diluted	$ 2.86	$ 0.63	$ 0.06
Weighted average number of shares outstanding:			
Basic	49,242	49,136	29,729
Diluted	49,728	49,475	30,007

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Net income	$ 142,349	$ 31,025	$ 1,910
Other comprehensive income (loss), net of tax:			
Change in net unrealized gains (losses) on available-for-sale marketable securities	(537)	123	(44)
Change in currency translation adjustments	(2,715)	5,043	709
Total other comprehensive income (loss), net of tax	(3,252)	5,166	665
Total comprehensive income	$ 139,097	$ 36,191	$ 2,575

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.

CONSOLIDATED BALANCE SHEETS
(In thousands, except per share data)

	January 1, 2022	December 26, 2020
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 169,602	$ 136,720
Marketable securities	341,741	237,002
Accounts receivable, less allowance of $1,303 at January 1, 2022 and $784 at December 26, 2020	177,205	149,251
Inventories	243,108	191,217
Prepaid expenses and other current assets	16,433	17,471
Total current assets	948,089	731,661
Property, plant and equipment, net	82,094	87,950
Goodwill	315,811	306,632
Identifiable intangible assets, net	277,281	318,357
Deferred income taxes	4,822	2,235
Other assets	21,716	21,337
Total assets	$ 1,649,813	$ 1,468,172
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 53,345	$ 40,183
Accrued liabilities	43,042	37,075
Deferred revenue	29,979	14,334
Other current liabilities	28,160	28,499
Total current liabilities	154,526	120,091
Deferred and other tax liabilities	40,281	55,623
Other non-current liabilities	28,951	27,712
Total liabilities	223,758	203,426
Commitments and contingencies (Note 9)		
Stockholders' equity:		
Preferred stock, $0.001 par value, 3,000 shares authorized, no shares issued and outstanding	—	—
Common stock, $0.001 par value, 97,000 shares authorized, 49,300 and 48,758 issued and outstanding at January 1, 2022 and December 26, 2020, respectively	49	49
Additional paid-in capital	1,256,179	1,233,967
Accumulated other comprehensive income	1,316	4,568
Accumulated earnings	168,511	26,162
Total stockholders' equity	1,426,055	1,264,746
Total liabilities and stockholders' equity	$ 1,649,813	$ 1,468,172

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Cash flows from operating activities:			
Net income	$ 142,350	$ 31,025	$ 1,910
Adjustments to reconcile net income to net cash and cash equivalents provided by operating activities:			
Depreciation	14,435	13,832	5,965
Amortization of intangibles	51,366	53,746	10,445
Share-based compensation	19,542	17,662	10,585
Acquired inventory step-up amortization	393	10,678	15,370
Provision for inventory valuation	8,175	14,703	10,841
Deferred income taxes	(12,618)	(11,631)	(4,116)
Other, net	2,267	4,711	2,459
Change in operating assets and liabilities net of assets acquired and liabilities assumed in merger and acquisition:			
Accounts receivable	(27,829)	(25,816)	(9,721)
Income taxes	1,307	(1,196)	7,648
Inventories	(57,175)	(42,409)	(9,338)
Prepaid expenses and other assets	(768)	11,409	(5,079)
Accounts payable	12,142	11,403	(12,138)
Accrued and other liabilities	21,694	17,867	(6,685)
Net cash and cash equivalents provided by operating activities	175,281	105,984	18,146
Cash flows from investing activities:			
Purchases of marketable securities	(361,022)	(313,027)	(127,462)
Proceeds from maturities and sales of marketable securities	255,063	265,409	94,486
Purchases of property, plant and equipment	(12,039)	(3,829)	(6,802)
Purchase of business, net of cash acquired	(23,795)	—	—
Cash acquired from merger	—	—	43,882
Cash received from convertible note receivable	—	2,848	—
Net cash and cash equivalents provided by (used in) investing activities	(141,793)	(48,599)	4,104
Cash flows from financing activities:			
Purchases of common stock	—	(52,000)	(744)
Tax payments related to shares withheld for share-based compensation plans	(7,403)	(4,052)	(2,540)
Payment of contingent consideration for acquired business	—	(569)	(1,758)
Issuance of shares through share-based compensation plans	10,073	2,919	844
Net cash and cash equivalents provided by (used in) financing activities	2,670	(53,702)	(4,198)
Effect of exchange rate changes on cash and cash equivalents	(3,276)	2,364	233
Net increase in cash and cash equivalents	32,882	6,047	18,285
Cash and cash equivalents at beginning of year	136,720	130,673	112,388
Cash and cash equivalents at end of year	$ 169,602	$ 136,720	$ 130,673
Supplemental disclosure of cash flow information:			
Income taxes paid (received), net	$ 23,766	$ 6,415	$ (3,848)

The accompanying notes are an integral part of these consolidated financial statements.

ONTO INNOVATION INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
For the years ended January 1, 2022, December 26, 2020 and December 31, 2019
(In thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income / (Loss)	Accumulated Earnings / (Deficit)	Total
	Shares	Amount				
Balance at December 31, 2018	24,855	$ 31	$ 369,893	$ (1,263)	$ (6,773)	$ 361,888
Effect of merger	25,060	19	890,112	—	—	890,131
Issuance of shares through share-based compensation plans, net	377	—	2,131	—	—	2,131
Repurchase of common stock	(30)	—	(744)	—	—	(744)
Net income	—	—	—	—	1,910	1,910
Share-based compensation	—	—	10,585	—	—	10,585
Share-based compensation plan withholdings	(78)	—	(2,540)	—	—	(2,540)
Currency translation	—	—	—	709	—	709
Unrealized loss on investments	—	—	—	(44)	—	(44)
Balance at December 31, 2019	50,184	50	1,269,437	(598)	(4,863)	1,264,026
Issuance of shares through share-based compensation plans, net	668	1	2,918	—	—	2,919
Repurchase of common stock	(1,882)	(2)	(51,998)	—	—	(52,000)
Net income	—	—	—	—	31,025	31,025
Share-based compensation	—	—	17,662	—	—	17,662
Share-based compensation plan withholdings	(118)	—	(4,052)	—	—	(4,052)
Other	(94)	—	—	—	—	—
Currency translation	—	—	—	5,043	—	5,043
Unrealized gain on investments	—	—	—	123	—	123
Balance at December 26, 2020	48,758	49	1,233,967	4,568	26,162	1,264,746
Issuance of shares through share-based compensation plans, net	650	—	10,072	—	—	10,072
Net income	—	—	—	—	142,349	142,349
Share-based compensation	—	—	19,542	—	—	19,542
Share-based compensation plan withholdings	(108)	—	(7,402)	—	—	(7,402)
Currency translation	—	—	—	(2,715)	—	(2,715)
Unrealized loss on investments	—	—	—	(537)	—	(537)
Balance at January 1, 2022	49,300	$ 49	$ 1,256,179	$ 1,316	$ 168,511	$ 1,426,055

The accompanying notes are an integral part of these consolidated financial statements

1. Organization and Nature of Operations:

Onto Innovation Inc. ("Onto Innovation" or the "Company") is a worldwide leader in the design, development, manufacture and support of process control tools that perform macro-defect inspection and metrology, lithography systems, and process control analytical software used by semiconductor and advanced packaging device manufacturers. The Company delivers comprehensive solutions throughout the semiconductor fabrication process with our families of proprietary products that provide critical yield-enhancing information, enabling microelectronic device manufacturers to drive down costs and time to market of their devices. The Company provides process and yield management solutions used in both wafer processing facilities, often referred to as "front-end" manufacturing, and in device packaging and test facilities, commonly referred to as "back-end" manufacturing. The Company's advanced process control software portfolio includes powerful solutions for standalone tools, groups of tools, or factory-wide suites to enhance productivity and achieve significant cost savings. Onto Innovation's systems are backed by worldwide customer service and applications support. The Company has branch sales and service offices or subsidiaries in Korea, Japan, China, Taiwan, Singapore and in several countries in Europe. The Company operates in a single reportable segment and is a provider of process characterization equipment and software for wafer fabs and advanced packaging facilities.

2. Summary of Significant Accounting Policies:

Consolidation. The consolidated financial statements reflect the accounts of the Company and its wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated.

Fiscal Year. In the first quarter of 2020, the Company changed its fiscal year end from December 31 to a 52-53 week fiscal year ending on the Saturday closest to December 31. The Company made the fiscal year change on a prospective basis and has not adjusted operating results for prior periods. The fiscal year of 2021 began on December 27, 2020 and ended January 1, 2022. The fiscal year of 2020 began on January 1, 2020 and ended December 26, 2020. Financial statements for 2019 continue to be presented on the basis of our previous calendar year end.

Revenue Recognition. Revenue is recognized when control of the promised goods or services are transferred to the Company's customers in an amount that reflects the consideration the Company expects to be entitled to receive in exchange for those goods or services. The Company accounts for a contract when it has approval and commitment from both parties, the rights of the parties and payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

The Company has elected to account for shipping and handling activities as the fulfillment of a promise to transfer goods to the customer and therefore records these activities under the caption "Cost of revenue." Sales tax and any other taxes collected concurrent with revenue producing activities are excluded from revenue. Incidental items that are immaterial in the context of the contract are recognized as expense. These accounting policy elections are consistent with the manner in which the Company has historically recorded these items.

Contracts with customers may include multiple performance obligations. For such arrangements, the Company allocates revenue to each performance obligation based on its relative standalone selling price. The Company generally determines standalone selling prices based on the prices charged to customers or the expected cost-plus margin.

Systems and Software Revenue

Revenue from systems is recognized when the Company transfers control of the product to the customer. To indicate transfer of control, the Company must have a present right to payment, legal title must have passed to the customer and the customer must have the significant risks and rewards of ownership. The Company generally transfers control for system sales when the customer or the customer's agent picks up the system at the Company's facility. The Company provides an assurance warranty on its systems for a period of twelve to fourteen months against defects in material and workmanship. The Company provides for the estimated cost of product warranties at the time revenue is recognized.

Depending on the terms of the systems arrangement, the Company may also defer the recognition of a portion of the consideration expected to be received because the Company has to satisfy a future obligation (e.g., installation and extended warranties). The Company uses an observable price to determine the standalone selling price for separate performance obligations or a cost-plus margin approach when one is not available.

Revenue from software licenses provides the customer with a right to use the software as it exists when made available to the customer. Revenue from software licenses is recognized upfront at the point in time when the software is made available to the customer. Revenue from licensing support and maintenance is recognized as the support and maintenance are provided, which is over the contract period.

Parts Revenue

Revenue from parts is recognized when the Company transfers control of the product, which typically occurs when the Company ships the product from its facilities to the customer.

Services Revenue

Revenue from services primarily consists of service contracts, which provide additional maintenance coverage beyond the Company's assurance warranty on its products, service labor, consulting and training. Revenue from service contracts is recognized ratably over the term of the service contract. Revenue from service labor, consulting and training is recognized as services are performed. Revenue from installation services is recognized at a point in time when installation is complete.

Practical Expedients

The Company generally expenses sales commissions when incurred because the amortization period is one year or less. These costs are recorded within selling, general and administrative expenses.

The Company does not adjust the amount of consideration for the effects of a significant financing component as the payment terms are one year or less.

The Company does not disclose the value of remaining performance obligations for contracts with an original expected length of one year or less and contracts for which the Company recognizes revenue in the amount to which it has the right to invoice.

For additional information on the Company's revenue recognition, see Note 10 of Notes to the Consolidated Financial Statements.

Business Combinations. The Company accounts for business combinations under the acquisition method of accounting, which requires us to recognize separately from goodwill the assets acquired, and the liabilities assumed at their acquisition date fair values. While the Company uses its best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, the Company's estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, the Company records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recognized in its consolidated statements of operations. Accounting for business combinations requires the Company's management to make significant estimates and assumptions, especially at the acquisition date including its estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although the Company believes the assumptions and estimates it has made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Estimates in valuing certain acquired intangible assets under the income approach include growth in future expected cash flows from product sales, acquired technologies, technology obsolescence rates, estimated cash flows from the projects when completed and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

For additional information on the Company's business combinations, see Note 3 of Notes to the Consolidated Financial Statements.

Use of Estimates. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Significant estimates made by management include the allowance for credit losses, excess and obsolete inventory, fair value of assets acquired and liabilities assumed in a business combination, recoverability and useful lives of property, plant and equipment and identifiable intangible assets, recoverability of goodwill, recoverability of deferred tax assets, liabilities for product warranty, contingencies, including litigation reserves and share-based payments and liabilities for tax uncertainties. Actual results could differ from those estimates.

These estimates and assumptions are based on historical experience and on various other factors which the Company believes to be reasonable under the circumstances. The Company may engage third-party valuation specialists to assist with estimates related to the valuation of financial instruments, assets and stock awards associated with various contractual arrangements. Such estimates often require the selection of appropriate valuation methodologies and significant judgment. Actual results could differ from these estimates under different assumptions or circumstances and such differences could be material.

Cash and Cash Equivalents. Cash and cash equivalents include cash and highly liquid debt instruments with original maturities of three months or less when purchased.

Marketable Securities. The Company determined that all of its investment securities are to be classified as available-for-sale. Available-for-sale debt securities are carried at fair value, with the unrealized gains and losses reported in stockholders' equity under the caption "Accumulated other comprehensive loss." Realized gains and losses and, interest and dividends on available-for-sale securities are included in interest income and other, net. Available-for-sale securities are classified as current assets regardless of their maturity date if they are available for use in current operations. The Company reviews its investment portfolio to identify and evaluate investments that have indications of possible impairment. Factors considered in determining whether a loss is other-than-temporary include the length of time and extent to which fair value has been less than the cost basis, credit quality and the Company's ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. When a decline in fair value is determined to be other-than-temporary, unrealized losses on available-for-sale securities are charged against earnings. The specific identification method is used to determine the gains and losses on marketable securities.

For additional information on the Company's marketable securities, see Note 5 of Notes to the Consolidated Financial Statements.

Allowance for Credit Losses. The Company maintains an allowance for credit losses that is estimated based on a combination of factors including write-off history, aging analysis, forecast of future economic conditions and any specific known troubled accounts. The Company believes the allowance is adequate to cover expected losses on trade receivables. Provisions for expected credit losses are classified as selling, general and administrative expense in the Consolidated Statements of Operations. If the financial condition of the Company's customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required.

Inventories. Inventories are stated at the lower of cost or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less predictable costs of completion, disposal and transportation. Cost is generally determined on a first-in, first-out basis, and includes material, labor and manufacturing overhead costs. The Company reviews and sets standard costs as needed, but at a minimum, on an annual basis, at current manufacturing costs in order to approximate actual costs.

The Company evaluates inventories for excess quantities and obsolescence. The Company establishes inventory reserves when conditions exist that suggest that inventory may be in excess of anticipated demand or is obsolete based upon assumptions about historical and future demand for the Company's products and market conditions. In addition, inventories are evaluated for potential obsolescence due to the effect of known and anticipated engineering design changes. Once a reserve has been established, it is maintained until the item to which it relates is scrapped or sold. The Company regularly evaluates its ability to realize the value of inventory based on a combination of factors including the following: historical usage rates, forecasted sales, product end-of-life dates, estimated current and future market values and new product introductions. When recorded, reserves are intended to reduce the carrying value of the Company's inventory to its net realizable value. If actual demand for the Company's products deteriorates, or market conditions are less favorable than those that the Company projects, additional reserves may be required.

Property, Plant and Equipment. Property, plant and equipment are stated at cost. Depreciation of property, plant and equipment is computed using the straight-line method over the estimated useful lives of the assets, which are five to twenty-two years for buildings, three to ten years for machinery and equipment, three to ten years for furniture and fixtures, three years for computer equipment, and three to seven years for software. Leasehold improvements are amortized using the straight-line method over the lesser of the lease term or the estimated useful life of the related asset. Repairs and maintenance costs are expensed as incurred and major renewals and betterments are capitalized.

Long-Lived Assets and Finite-Lived Acquired Intangible Assets. Long-lived assets, such as property, plant, and equipment, and identifiable acquired intangible assets with finite useful lives, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset, which is generally based on discounted cash flows. For the year ended December 31, 2019, there was an impairment to an item in property, plant and equipment of $507, which was recorded in general and administrative expenses in the Consolidated Statements of Operations. There were no impairments of long-lived assets for the years ended January 1, 2022 and December 26, 2020.

Goodwill and Indefinite Lived Intangible Assets. Goodwill and indefinite lived intangible assets are tested for impairment on an annual basis or when an event or changes in circumstances indicate that its carrying value may not be recoverable. Goodwill impairment is tested at the reporting unit level, which is defined as an operating segment or one level below the operating segment. The Company has one operating segment. No goodwill impairment occurred in fiscal years 2021, 2020, or 2019. Goodwill is reviewed for impairment using either a qualitative assessment or a quantitative goodwill impairment test. If the Company chooses to perform a qualitative assessment and determine the fair value more likely than not exceeds the carrying value, no further evaluation is necessary. When the Company performs the quantitative goodwill impairment test, it compares fair value to carrying value, which includes goodwill. If fair value exceeds carrying value, the goodwill is not considered impaired. If the carrying value is higher than the fair value, the difference would be recognized as an impairment loss.

Intangible assets with indefinite lives, including in-process research and development ("IPR&D"), are tested for impairment if impairment indicators arise and, at a minimum, annually. However, the Company is permitted to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that an indefinite-lived intangible asset's fair value is less than its carrying amount. Otherwise, no further impairment testing is required. The indefinite-lived intangible asset impairment test consists of a one-step analysis that compares the fair value of the intangible asset with its carrying amount. If the carrying amount of an intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. We consider many factors in evaluating whether the value of intangible assets with indefinite lives may not be recoverable, including, but not limited to estimates of future cash flows, the discount rate, terminal growth rates, general economic conditions, our outlook and market performance of our industry and recent and forecasted financial performance.

There was no impairment of goodwill or IPR&D for the years ended January 1, 2022, December 26, 2020 and December 31, 2019.

For additional information on the Company's goodwill and purchased intangible assets, see Note 6 of Notes to the Consolidated Financial Statements.

Concentration of Credit Risk. Financial instruments, which potentially subject the Company to concentrations of credit risk, consist primarily of accounts receivable, cash and cash equivalents and marketable securities.

The Company maintains cash and cash equivalents and marketable securities with higher credit quality issuers and monitors the amount of credit exposure to any one issuer. The Company's investment policy provides guidelines and limits regarding credit quality, investment concentration, investment type, and maturity that the Company believes will provide liquidity while reducing risk of loss of capital. Investments are of a short-term nature and include investments in commercial paper, corporate debt securities, asset-backed securities, U.S. Treasury, U.S. Government, and U.S. Agency debt.

The Company's accounts receivable result primarily from the sale of semiconductor equipment, related accessories and replacement parts. The Company's customer base is highly concentrated and historically, a relatively small number of customers have accounted for a significant portion of its revenues. Write-offs of uncollectible accounts have historically not been material. The Company actively monitors its customers' financial strength to reduce the risk of loss.

Warranties. The Company generally provides a warranty on its products for a period of twelve to fourteen months against defects in material and workmanship. The Company provides for the estimated cost of product warranties at the time revenue is recognized. The estimated future warranty obligations are affected by the warranty periods, sales volumes, product failure rates, material usage and labor and replacement costs incurred in correcting a product failure. If actual product failure rates, material usage, labor or replacement costs differ from the Company's estimates, revisions to the estimated warranty obligations would be required. The warranty accrual represents the best estimate of the amount necessary to settle future and existing claims on products sold as of the balance sheet date. The Company periodically assesses the adequacy of its recorded warranty reserve and adjusts the amounts in accordance with changes in these factors.

Income Taxes. The Company accounts for income taxes using the asset and liability approach for deferred taxes which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the Company's consolidated financial statements or tax returns. A valuation allowance is recorded to reduce a deferred tax asset to that portion which more likely than not will be realized.

For additional information on the Company's income taxes, see Note 13 of Notes to the Consolidated Financial Statements.

Translation of Foreign Currencies. The Company's international branches and subsidiaries primarily generate and expend cash in their local functional currency. Accordingly, all balance sheet accounts of these local functional currency branches and subsidiaries are translated into U.S. dollars at the fiscal period-end exchange rate, and income and expense accounts are translated into U.S. dollars using average rates in effect for the period. The resulting translation adjustments are recorded as cumulative translation adjustments and are recorded directly as a separate component of stockholders' equity under the caption, "Accumulated other comprehensive loss." The Company had accumulated exchange losses resulting from the translation of foreign operation financial statements of $1,764 and $4,479 as of January 1, 2022 and December 26, 2020, respectively.

Share-based Compensation. The Company measures the cost of employee services received in exchange for the award of equity instruments based on the fair value of the award at the date of grant. Compensation expense is recognized using the straight-line attribution method to recognize share-based compensation over the service period of the award, with adjustments recorded for forfeitures as they occur.

For additional information on the Company's share-based compensation plans, see Note 11 of Notes to the Consolidated Financial Statements.

Research and Development Costs. Expenditures for research and development are expensed as incurred.

Derivative Instruments and Hedging Activities. The Company's policy is to mitigate the effect of exchange rate fluctuations on certain foreign currency denominated business exposures. The Company has a policy that allows for the use of derivative financial instruments to hedge foreign currency exchange rate fluctuations on forecasted revenue and net monetary assets or liabilities denominated in various foreign currencies. The Company carries derivative financial instruments (derivatives) on the balance sheet at their fair values, in either prepaid expenses and other current assets or other current liabilities in the Consolidated Balance Sheets. The Company does not use derivatives for trading or speculative purposes. The Company does not believe that it is exposed to more than a nominal amount of credit risk in its foreign currency hedges, as counterparties are large, global and well-capitalized financial institutions. The Company's exposures are in liquid currencies (Japanese yen, euros, Korean won, Taiwanese dollars, Chinese renminbi, British pound sterling, Singapore dollars and Israeli shekel), so there is minimal risk that appropriate derivatives to maintain the Company's hedging program would not be available in the future.

To hedge foreign currency risks, the Company uses foreign currency exchange forward contracts, where possible and prudent. These hedge contracts are valued using standard valuation formulas with assumptions about future foreign currency exchange rates derived from existing exchange rates, interest rates, and other market factors.

The dollar equivalent of the U.S. dollar forward contracts and related fair values as of January 1, 2022 and December 26, 2020 were as follows:

	January 1, 2022	December 26, 2020
Notional amount	$ 32,293	$ 37,580
Fair value of liability	26	36

During the year ended January 1, 2022, the Company recognized a loss of $1,650 on maturities of forward contracts. During the years ended December 26, 2020 and December 31, 2019, the Company recognized gains of $510 and $343 on maturities of forward contracts, respectively. The aggregate notional amounts of matured contracts were $420,460, $373,749 and $58,522 for 2021, 2020 and 2019, respectively.

Contingencies and Litigation. The Company is subject to the possibility of losses from various contingencies, including certain legal proceedings, lawsuits and other claims. The Company accrues for a loss contingency when it concludes that the likelihood of a loss is probable and the amount of the loss can be reasonably estimated. If the Company concludes that loss contingencies that could be material to any one of its financial statements are not probable, but are reasonably possible, or are probable, but cannot be estimated, then the Company discloses the nature of the loss contingencies, together with an estimate of the range of possible loss or a statement that such loss is not reasonably estimable. The Company expenses as incurred the costs of defending legal claims against the Company. The Company does not recognize gain contingencies until realized. See Note 9 of the Notes to the Consolidated Financial Statements, "Commitments and Contingencies" for a detailed description.

Recent Accounting Pronouncements.

Recently Adopted

Effective December 27, 2020, the Company adopted Accounting Standards Update ("ASU") No. 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes." This standard simplified the accounting for income taxes by eliminating certain exceptions to the guidance in Topic 740 related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The new guidance also simplified aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarified the accounting for transactions that resulted in a step-up in the tax basis of goodwill and allocating consolidated income taxes to separate financial statements of entities not subject to income tax. The adoption of ASU No. 2019-12 did not have a significant impact on the Company's consolidated financial position, results of operations, and cash flows.

Recently Issued

Recently issued accounting guidance not discussed above is not applicable or did not have, or is not expected to have, a material impact to the Company.

3. Business Combination:

Inspectrology, LLC

During the first quarter of 2021, the Company acquired Inspectrology, LLC ("Inspectrology"), a supplier of overlay metrology for controlling lithography and etch processes in the compound semiconductor market for $24,015 in cash and an earnout subject to achievement of certain revenue targets earned for fiscal year 2021 and fiscal year 2022. As of January 1, 2022, $2,287 of the earnout has been achieved and was recorded in operating expenses. There is potential earnout for up to an additional payment of $5,000 based on fiscal 2022 results. Certain payments, including the earnout, are subject to the principals remaining with the Company for a period of one to three years.

The following table summarizes the preliminary fair value of assets acquired and liabilities assumed at the date of acquisition:

Cash and cash equivalents	$	220
Account receivables		4,071
Inventories		2,587
Prepaid expenses and other current assets		104
Property, plant and equipment		86
Identifiable intangible assets		10,290
Total assets acquired		17,358
Accounts payable		(1,048)
Payroll and related expenses		(512)
Deferred revenue		(386)
Other current liabilities		(576)
Net assets acquired		14,836
Goodwill		9,179
Total purchase consideration	$	24,015

Onto Innovation

On October 25, 2019, the Company became Onto Innovation Inc. upon the effectiveness of the merger (the "2019 Merger") between Nanometrics Incorporated ("Nanometrics") and Rudolph Technologies, Inc. ("Rudolph"). The Company accounted for the 2019 Merger as a reverse acquisition using the acquisition method of accounting in accordance with generally accepted accounting principles ("GAAP"). GAAP requires that either Nanometrics or Rudolph is designated as the acquirer for accounting and financial reporting purposes ("Accounting Acquirer"). Based on the evidence available, Rudolph was designated as the Accounting Acquirer while Nanometrics was the acquirer for legal purposes. Therefore, Rudolph's historical results of operations replaced Nanometrics' historical results of operations for all periods prior to the 2019 Merger.

The aggregate purchase price of $890,131 consisted of 25,060 shares of common stock valued at $884,801 and the fair value of assumed Nanometrics equity awards of $5,330. Total transaction costs incurred by the Company were $9,907 during the year ended December 31, 2019 and are included in general and administrative expense in the Consolidated Statements of Operations.

During the quarter ended December 26, 2020, the Company finalized its fair value determination of the assets acquired and the liabilities assumed. The following table summarizes the final allocation of the total purchase consideration to the fair values of the assets acquired and liabilities assumed at the merger date.

Cash and cash equivalents	$43,882
Marketable securities	94,389
Account receivables	49,917
Inventories	98,478
Prepaid expenses and other current assets	6,659
Property, plant and equipment	77,451
Operating lease right-of-use assets	9,658
Identifiable intangible assets	374,900
Deferred income taxes	2,191
Other assets	850
Total assets acquired	758,375
Accounts payable	(23,361)
Payroll and related expenses	(20,290)
Deferred revenue	(5,931)
Other current liabilities	(10,679)
Income taxes payable	(2,007)
Other non-current liabilities	(90,113)
Net assets acquired	605,994
Goodwill	284,137
Total purchase consideration	$890,131

The allocation of the intangible assets subject to amortization is as follows:

	Estimated Fair Value	Weighted Average Useful Life (years)
Developed technology	$260,500	6.6
In-process research and development	46,600	indefinite
Customer relationships	53,000	13.1
Backlog	6,700	1.1
Trademarks and trade names	8,100	7.5
Total intangible assets	$374,900	

Acquired intangible assets reported above are being amortized using the straight-line method over their estimated useful lives, which approximates the pattern of how the economic life is expected to be used. This includes amounts allocated to customer relationships because of anticipated high customer retention rates that are common in the semiconductor capital equipment industry.

Developed technology relates to Nanometrics' product family and was valued using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the developed technology less charges representing the contribution of other assets to those cash flows. The average estimated useful life of developed technologies was determined to be 6.6 years and was based on the technology cycle related to each developed technology, as well as the cash flows over the respective forecast period.

The fair value of the in-process research and development ("IPRD") was determined using the multi-period excess earnings method under the income approach. Such method reflects the present value of the projected cash flows that are expected to be generated by the IPRD, less costs to complete the development and charges representing the contribution of other assets to those cash flows. The Company has determined that the estimated useful life of the acquired in-process research and development is currently indeterminate; thus, it has been categorized as indefinite and will be reviewed annually for impairment, along with the Company's other long-lived assets with indefinite lives, unless its estimated useful life is known.

Customer relationships represent the fair value of future projected revenue that will be derived from sales of products to new and existing customers and was valued using the distributor method under the income approach. This method reflects the present value of projected distributor margins to be derived from sales to existing customers less charges representing the contribution of other assets to those cash flows. The estimated useful life of the customer relationships was determined to be 13.1 years and was based on historical customer turnover rates.

Order backlog represents the fair value of future projected revenue that will be derived from outstanding orders from customers that have not yet been shipped and was valued using the multi-period excess earnings method under the income approach, which reflects the present value of such outstanding orders less charges representing the contribution of other assets to those cash flows. The estimated useful life of the order backlog was determined to be 1.1 years and was based on historical order fulfilment rates.

Trademarks and trade names relate to the "Nanometrics" trademarks and trade names and were fair valued by applying the relief-from-royalty method under the income approach. This method is based on the application of a royalty rate to forecasted revenue under the trademarks and trade names. The estimated useful life of the trademarks and trade names was determined to be 7.5 years and was based on the expected life of the trademarks and trade names and the cash flows anticipated over the forecast period.

4. Fair Value Measurements:

Fair Value of Financial Instruments

The Company has evaluated the estimated fair value of financial instruments using available market information and valuations as provided by third-party sources. The use of different market assumptions and/or estimation methodologies could have a significant effect on the estimated fair value amounts. The carrying value of cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximates fair value because of the short-term maturity of these instruments.

Fair Value Hierarchy

The Company applies a three-level valuation hierarchy for fair value measurements. This hierarchy prioritizes the inputs into three broad levels. Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities. Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the asset or liability. Level 3 inputs are unobservable inputs based on management's assumptions used to measure assets and liabilities at fair value. A financial asset's or liability's fair value measurement classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement.

The following tables provide the assets and liabilities carried at fair value measured on a recurring basis at January 1, 2022 and December 26, 2020:

		Fair Value Measurements Using		
	Carrying Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
January 1, 2022				
Assets:				
Available-for-sale debt securities:				
Municipal notes and bonds	$ 170,980	$ —	$ 170,980	$ —
Asset-backed securities	2,009	—	2,009	—
Certificates of deposit	33,192	—	33,192	—
Commercial paper	73,113	—	73,113	—
Corporate bonds	62,447	—	62,447	—
Total assets	$ 341,741	$ —	$ 341,741	$ —
Liabilities:				
Foreign currency forward contracts	$ 26	$ —	$ 26	$ —
Total liabilities	$ 26	$ —	$ 26	$ —

		Fair Value Measurements Using		
	Carrying Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 26, 2020				
Assets:				
Available-for-sale debt securities:				
Municipal notes and bonds	$ 124,640	$ —	$ 124,640	$ —
Asset-backed securities	11,708	—	11,708	—
Certificates of deposit	36,373	—	36,373	—
Commercial paper	32,699	—	32,699	—
Corporate bonds	31,582	—	31,582	—
Total assets	$ 237,002	$ —	$ 237,002	$ —
Liabilities:				
Foreign currency forward contracts	$ 36	$ —	$ 36	$ —
Total liabilities	$ 36	$ —	$ 36	$ —

Available-for-sale debt securities classified as Level 2 are valued using observable inputs to quoted market prices, benchmark yields, reported trades, broker/dealer quotes or alternative pricing sources with reasonable levels of price transparency. The foreign currency forward contracts are primarily measured based on the foreign currency spot and forward rates quoted by the banks or foreign currency dealers. Investment prices are obtained from third party pricing providers, which model prices utilizing the above observable inputs, for each asset class.

Level 3 liabilities consisted of contingent consideration related to an acquisition for which the Company uses a discounted cash flow model to value these liabilities. The Level 3 assumptions used in the discounted cash flow model for the contingent consideration included projected revenue, timing of cash flows and estimates of discount rates.

See Note 5 for additional discussion regarding the fair value of the Company's marketable securities.

5. Marketable Securities:

At January 1, 2022 and December 26, 2020, marketable securities are categorized as follows:

	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
January 1, 2022				
Municipal notes and bonds	$ 171,203	$ 38	$ 261	$ 170,980
Asset-backed securities	2,009	—	—	2,009
Certificates of deposit	33,200	2	10	33,192
Commercial paper	73,152	2	41	73,113
Corporate bonds	62,634	29	216	62,447
Total marketable securities	$ 342,198	$ 71	$ 528	$ 341,741
December 26, 2020				
Municipal notes and bonds	$ 124,387	$ 257	$ 4	$ 124,640
Asset-backed securities	11,679	29	—	11,708
Certificates of deposit	36,349	24	—	36,373
Commercial paper	32,690	12	3	32,699
Corporate bonds	31,544	50	12	31,582
Total marketable securities	$ 236,649	$ 372	$ 19	$ 237,002

The amortized cost and estimated fair value of marketable securities classified by the maturity date listed on the security, regardless of the Consolidated Balance Sheet classification, is as follows at January 1, 2022 and December 26, 2020:

	January 1, 2022		December 26, 2020	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Due within one year	$ 219,353	$ 219,211	$ 170,099	$ 170,321
Due after one through five years	122,845	122,530	66,550	66,681
Due after five through ten years	—	—	—	—
Due after ten years	—	—	—	—
Total marketable securities	$ 342,198	$ 341,741	$ 236,649	$ 237,002

The following table summarizes the estimated fair value and gross unrealized holding losses of marketable securities, aggregated by investment instrument and period of time in an unrealized loss position, at January 1, 2022 and December 26, 2020.

	In Unrealized Loss Position For Less Than 12 Months		In Unrealized Loss Position For Greater Than 12 Months	
	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
January 1, 2022				
Municipal notes and bonds	$ 113,790	$ 262	$ —	$ —
Certificates of deposit	16,300	10	—	—
Commercial paper	58,681	40	—	—
Corporate bonds	53,661	150	2,587	66
Total marketable securities	$ 242,432	$ 462	$ 2,587	$ 66
December 26, 2020				
Municipal notes and bonds	$ 8,641	$ 4	$ —	$ —
Commercial paper	8,862	3	—	—
Corporate bonds	14,947	12	—	—
Total marketable securities	$ 32,450	$ 19	$ —	$ —

See Note 4 for additional discussion regarding the fair value of the Company's marketable securities.

6. Goodwill and Purchased Intangible Assets:

Goodwill and purchased intangible assets with indefinite useful lives are not amortized but are reviewed for impairment annually during the fourth quarter of each fiscal year and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The process of evaluating the potential impairment of goodwill and intangible assets requires significant judgment. The Company regularly monitors current business conditions and considers other factors including, but not limited to, adverse industry or economic trends, restructuring actions and lower projections of profitability that may impact future operating results. The Company performed its annual assessment in the fourth quarter of fiscal 2021 and concluded that no impairment charge was required.

Goodwill

The changes in the carrying amount of goodwill are as follows:

Balance at December 31, 2019	$ 307,148
Goodwill adjustments (Note 3)	(516)
Balance at December 26, 2020	306,632
Goodwill from Inspectrology acquisition (Note 3)	9,179
Balance at January 1, 2022	$ 315,811

Purchased Intangible Assets

Purchased intangible assets as of January 1, 2022 and December 26, 2020 are as follows:

	Gross Carrying Amount	Accumulated Amortization	Net
January 1, 2022			
Finite-lived intangible assets:			
Developed technology	$ 377,997	$ 155,976	$ 222,021
Customer and distributor relationships	73,321	25,608	47,713
Trademarks and trade names	14,171	6,624	7,547
Total identifiable intangible assets	$ 465,489	$ 188,208	$ 277,281
December 26, 2020			
Finite-lived intangible assets:			
Developed technology	$ 326,877	$ 110,851	$ 216,026
Customer and distributor relationships	69,261	20,654	48,607
Trademarks and trade names	12,461	5,337	7,124
Total finite-lived intangible assets	408,599	136,842	271,757
In-process research and development	46,600	—	46,600
Total identifiable intangible assets	$ 455,199	$ 136,842	$ 318,357

Intangible asset amortization expense amounted to $51,366, $53,746 and $10,445 for the years ended January 1, 2022, December 26, 2020 and December 31, 2019, respectively. Assuming no change in the gross carrying value of identifiable intangible assets and estimated lives, estimated amortization expenses are $55,273 for 2022, $54,798 for 2023, $49,113 for 2024, $32,563 for 2025, and $31,370 for 2026.

7. Leasing Arrangements:

The Company determines if an arrangement is a lease at its inception. Operating lease arrangements are comprised primarily of real estate and equipment agreements for which the right-of-use assets are included in “Other assets” and the corresponding lease liabilities, depending on their maturity, are included in “Other current liabilities” or “Other non-current liabilities” in the Consolidated Balance Sheets.

Right-of-use assets represent the right to use an underlying asset for the lease term and lease liabilities represent the obligation to make lease payments arising from the lease. Right-of-use assets and lease liabilities are recognized at the lease commencement date based on the estimated present value of lease payments over the lease term. The lease term includes options to extend the lease when it is reasonably certain that the option will be exercised. Lease agreements frequently require the Company to pay real estate taxes, insurance and maintenance costs. Leases with a term of one year or less are not recorded on the Consolidated Balance Sheets and lease expense for these leases is recognized on a straight-line basis over the lease term.

The Company uses its estimated incremental borrowing rate in determining the present value of lease payments considering the term of the lease, which is derived from information available at the lease commencement date, giving consideration to publicly available data for instruments with similar characteristics. The Company accounts for the lease and non-lease components as a single lease component.

Lease costs for operating leases were $5,964 and $6,756 for the years ended January 1, 2022 and December 26, 2020, respectively. Operating lease costs are generally recognized over the lease term. The Company elected the practical expedient to not provide comparable presentation for periods prior to adoption.

Details of the Company's operating leases are as follows:

Cash Flow Information	Year Ended January 1, 2022		Year Ended December 26, 2020	
Cash paid for operating lease liabilities	$	6,247	$	6,700
Right-of-use assets obtained in exchange for operating lease liabilities	$	304	$	725

Operating Lease Information	January 1, 2022	December 26, 2020
Weighted average remaining lease term	5.3	6.0
Weighted average discount rate	4.5%	4.7%

As of January 1, 2022, there was an insignificant amount of commitments for operating leases that have not yet commenced. The reconciliation of the maturities of operating leases to the lease liabilities recorded on the Consolidated Balance Sheet as of January 1, 2022 is as follows:

Fiscal Year		
2022	$	5,029
2023		4,058
2024		3,457
2025		3,342
2026		1,919
Thereafter		3,299
Total undiscounted operating lease payments		21,104
Less: imputed interest		2,402
Present value of operating lease liabilities	$	18,702

8. Balance Sheet Components:

Inventories

Inventories are comprised of the following:

	January 1, 2022		December 26, 2020	
Materials	$	157,343	$	124,926
Work-in-process		60,415		44,829
Finished goods		25,350		21,462
Total inventories	$	243,108	$	191,217

Property, Plant and Equipment

Property, plant and equipment, net, is comprised of the following:

	January 1, 2022		December 26, 2020	
Land and building	$	48,297	$	47,544
Machinery and equipment		50,226		52,833
Furniture and fixtures		2,534		4,013
Computer equipment and software		13,856		15,549
Leasehold improvements		13,710		12,927
		128,623		132,866
Accumulated depreciation		(46,529)		(44,916)
Total property, plant and equipment, net	$	82,094	$	87,950

Depreciation expense amounted to $14,435, $13,832 and $5,965 for the years ended January 1, 2022, December 26, 2020 and December 31, 2019, respectively.

Other assets

Other assets is comprised of the following:

	January 1, 2022	December 26, 2020
Operating lease right-of-use assets	$ 17,488	$ 19,669
Other	4,228	1,668
Total other assets	$ 21,716	$ 21,337

Accrued liabilities

Accrued liabilities is comprised of the following:

	January 1, 2022	December 26, 2020
Payroll and related expenses	$ 32,581	$ 30,270
Warranty	9,093	6,062
Other	1,368	743
Total accrued liabilities	$ 43,042	$ 37,075

Other current liabilities

Other current liabilities is comprised of the following:

	January 1, 2022	December 26, 2020
Customer deposits	$ 9,459	$ 15,177
Current operating lease obligations	3,968	4,470
Income tax payable	6,315	4,109
Accrued professional fees	912	1,184
Other	7,506	3,559
Total other current liabilities	$ 28,160	$ 28,499

Other non-current liabilities

Other non-current liabilities is comprised of the following:

	January 1, 2022	December 26, 2020
Non-current operating lease obligations	$ 13,754	$ 16,455
Unrecognized tax benefits (including interest)	7,861	3,812
Deferred revenue	1,693	1,292
Other	5,643	6,153
Total non-current liabilities	$ 28,951	$ 27,712

9. Commitments and Contingencies:

Factoring

The Company maintains arrangements under which eligible accounts receivable in Japan are sold without recourse to unrelated third-party financial institutions. The Company sold $20,384 of receivables during the year ended January 1, 2022. There were no material gains or losses on the sale of such receivables. There were no amounts due from such third-party financial institutions at January 1, 2022.

Intellectual property Indemnification Obligations

The Company has entered into agreements with customers that include limited intellectual property indemnification obligations that are customary in the industry. These guarantees generally require the Company to compensate the other party for certain damages and costs incurred as a result of third-party intellectual property claims arising from these transactions. The nature of the intellectual property indemnification obligations prevents the Company from making a reasonable estimate of the maximum potential amount it could be required to pay to its customers. Historically, the Company has not made any indemnification payments under such agreements and no amount has been accrued in the accompanying consolidated financial statements with respect to these indemnification guarantees.

Warranty Reserves

The Company generally provides a warranty on its products for a period of 12 to 14 months against defects in material and workmanship. The Company estimates the costs that may be incurred during the warranty period and records a liability in the amount of such costs at the time revenue is recognized. The Company's estimate is based primarily on historical experience. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary. Settlements of warranty reserves are generally associated with sales that occurred during the 12 to 14 months prior to the year-end and warranty accruals are related to sales during the same year.

Changes in the Company's warranty reserves are as follows:

	Year Ended	
	January 1, 2022	December 26, 2020
Balance, beginning of the period	$ 6,485	$ 6,348
Accruals	11,892	7,707
Warranty liability assumed from Inspectrology acquisition (Note 3).	407	—
Usage	(9,102)	(7,570)
Balance, end of the period	$ 9,682	$ 6,485

Legal Matters

From time to time, the Company is subject to legal proceedings and claims in the ordinary course of business. The following reflects an overview of the material developments with regard to the Company's pending material legal proceedings.

Optical Solutions Inc. v. Nanometrics Incorporated (Case No. 18-cv-00417-BLF): On August 2, 2017, Nanometrics was named as defendant in a complaint filed in New Hampshire Superior Court (the "Complaint"). The Complaint, brought by Optical Solutions, Inc. ("OSI"), alleges claims arising from a purported exclusive purchase contract between OSI and Nanometrics pertaining to certain products. The relief sought is the award of damages in an amount to be proven at trial, attorney's fees and cost as well as other relief the court deems just and proper. On September 18, 2017, Nanometrics removed the action to the United States District Court for the District of New Hampshire (the "District of New Hampshire"). On September 25, 2017, Nanometrics moved to transfer the Complaint to the United States District Court for the Northern District of California (the "Northern District of California"). On December 20, 2017, Nanometrics filed its complaint against OSI in the California Superior Court for the County of Santa Clara alleging claims arising from OSI's breach of certain purchase orders. The relief sought is the award of damages in an amount to be proven at trial including pre- and post-judgment interest, punitive damages, restitution for benefits unjustly received by OSI, attorney's fees and cost as well as other relief the court deems just and proper. Nanometrics' complaint was later removed by OSI to the Northern District of California. On May 29, 2018, the District of New Hampshire issued an order granting Nanometrics' motion to transfer the Complaint to the Northern District of California and denying Nanometrics' motion to dismiss the Complaint without prejudice. On June 14, 2018, the Complaint was consolidated with Nanometrics' complaint against OSI. On August 9, 2018, OSI filed an Amended Complaint. On September 19, 2018, Nanometrics filed a motion to dismiss OSI's Amended Complaint for failure to state a claim. Nanometrics' motion to dismiss was heard on February 28, 2019. On March 5, 2019, the Northern District of California granted Nanometrics' motion to dismiss with leave to amend. OSI filed a Second Amended Complaint on March 29, 2019. Nanometrics filed a motion to dismiss OSI's Second Amended Complaint on May 31, 2019. In October 2019, Nanometrics was renamed Onto Innovation Inc. as a result of the Merger. Thereafter, the Company's second motion to dismiss was heard on November 14, 2019. On November 26, 2019, the Northern District of California granted the Company's motion to dismiss with leave to amend. OSI filed a Third Amended Complaint on January 21, 2020. On March 2, 2020, the Company filed a motion to dismiss OSI's Third Amended Complaint and a hearing on the motion was held on June 11, 2020. On June 23, 2020, the Northern District of California granted the Company's motion to dismiss with prejudice with regard to two claims asserted by OSI and dismissed two other claims asserted by OSI with leave to amend. Thereafter, on July 7, 2020, OSI filed a Fourth Amended Complaint. On August 14, 2020, the Company filed a motion to dismiss with regard to one of the two remaining claims. On December 1, 2020, the Northern District of California denied this final motion to dismiss and as a result the Company filed its Answer in this matter on December 22, 2020. This matter is currently in discovery. The Northern District of California granted a joint stipulation that discovery cutoff is November 1, 2022 and the trial date is set for December 4, 2023. At this time, the loss contingency in this matter is remote and the Company does not anticipate the outcome of the matter to have a material impact on its financial position, results of operations, or cash flows.

Open and Committed Purchase Orders

As of January 1, 2022, the Company has open and committed purchase orders of $373,638, of which $345,334 is for less than one year.

Line of Credit

The Company has a credit agreement with a bank that provides for a line of credit which is secured by the marketable securities the Company has with the bank. The Company is permitted to borrow up to 70% of the value of eligible securities held at the time the line of credit is accessed. The available line of credit as of January 1, 2022 was approximately $131,402 with an available interest rate of 1.8%. The credit agreement is available to the Company until such time that either party terminates the arrangement at their discretion. The Company has not utilized the line of credit to date.

10. Revenue

The following table represents a disaggregation of revenue by timing of revenue:

	Year Ended	
	January 1, 2022	December 26, 2020
Point-in-time	$ 749,276	$ 527,677
Over-time	39,623	28,819
Total revenue	$ 788,899	$ 556,496

See Note 15 of the Notes to the Consolidated Financial Statements for additional discussion of the Company's disaggregated revenue in detail.

Contract Liabilities

The Company records contract liabilities when the customer has been billed in advance of the Company completing its performance obligations primarily related to service contracts and installation. For contracts that have a duration of one year or less, these amounts are recorded as current deferred revenue in the Consolidated Balance Sheets. As of January 1, 2022 and December 26, 2022, the Company carried a long-term deferred revenue balance of $1,693 and $1,292, respectively, in "other non-current liabilities" on the Consolidated Balance Sheets.

Changes in deferred revenue were as follows:

	Year Ended	
	January 1, 2022	December 26, 2020
Balance, beginning of the period	$ 15,627	$ 15,093
Deferred revenue assumed from Inspectrology acquisition (Note 3)	386	—
Deferral of revenue	69,656	43,398
Recognition of deferred revenue	(53,997)	(42,864)
Balance, ending of the period	$ 31,672	$ 15,627

11. Share-Based Compensation and Employee Benefit Plans:

Share-Based Compensation Plans

The Company's share-based compensation plans are intended to attract and retain employees and to provide an incentive for them to assist the Company to achieve long-range performance goals and to enable them to participate in long-term growth of the Company. The Company settles restricted stock unit awards, employee stock purchase option exercises and stock option exercises with newly issued common shares.

Onto Innovation Inc. 2020 Stock Plan (the "2020 Plan"). The 2020 Plan provides for the grant of 3,744 stock options and other stock awards to employees, directors and consultants at an exercise price equal to the fair market value of the common stock on the date of grant. Options granted under the 2020 Plan typically grade vest over a three-year period and expire ten years from the date of grant. Restricted stock units granted under the 2020 Plan typically vest over a three-year period for employees and one year for directors; however, other vesting periods are allowable under the 2020 Plan. Restricted stock units ("RSU") granted to employees have time based or performance-based vesting. As of January 1, 2022, there were 3,376 shares of common stock available for issuance pursuant to future grants under the 2020 Plan.

Onto Innovation Inc. 2020 Employee Stock Purchase Plan (the "2020 ESPP"). Under the terms of the 2020 ESPP, eligible employees may have up to 10 % of eligible compensation deducted from their pay and applied to the purchase of shares of Company common stock. The price the employee pays for each share of stock is 85 % of the lesser of the fair market value of Company common stock at the beginning or the end of the applicable six-month purchase period. The 2020 ESPP is intended to qualify under Section 423 of the Internal Revenue Code and is a compensatory plan as defined by FASB ASC 718, "Stock Compensation." Through the Company's employee stock purchase plans, employees purchased 242, 91 and 72 shares during the twelve months ended January 1, 2022, December 26, 2020 and December 31, 2019, respectively. As of January 1, 2022 and December 26, 2020, there were 1,258 and 1,500, shares available for issuance under the Company's employee stock purchase plan, respectively.

The following table reflects share-based compensation expense by type of award:

	Year Ended		
	January 1, 2022	**December 26, 2020**	**December 31, 2019**
Share-based compensation expense:			
Restricted stock units, including all performance and market based awards	$ 17,174	$ 15,780	$ 10,421
Stock options and employee stock purchase options	2,368	1,882	164
Total share-based compensation	19,542	17,662	10,585
Tax effect on share-based compensation	4,255	3,849	2,283
Net effect on net income	$ 15,287	$ 13,813	$ 8,302
Effect on earnings per share:			
Basic	$ (0.31)	$ (0.28)	$ (0.28)
Diluted	$ (0.31)	$ (0.28)	$ (0.28)

Restricted Stock Units

During the fiscal years 2021, 2020, and the 2019 calendar year, the Company issued both service-based RSUs and market-based performance RSUs ("PRSUs"). Service-based RSUs typically vest over a period of 3 years or less. Market-based PRSUs generally vest three years from the grant date if certain performance criteria are achieved and require continued employment. Based upon the terms of such awards, the number of shares that can be earned over the performance periods is based on the Company's Common Stock price performance compared to the market price performance of a designated benchmark index, ranging from 0% to 200% of target. The designated benchmark index was the Philadelphia Semiconductor Sector Index for market-based PRSUs issued in 2021 and 2020. The designated benchmark was a peer group in 2019. The stock price performance or market price performance is measured using the closing price for the 20-trading days prior to the dates the performance period begins and ends.

The following table summarizes the Company's combined service-based RSUs and market-based PRSUs:

	Number of Shares	Weighted Average Grant Date Fair Value
Nonvested at December 31, 2018	639	$ 24.26
Granted	271	$ 29.58
Assumed in Merger	598	$ 31.43
Vested	(366)	$ 25.69
Forfeited	(35)	$ 26.44
Nonvested at December 31, 2019	1,107	$ 28.89
Granted	498	$ 34.71
Vested	(498)	$ 29.46
Forfeited	(143)	$ 29.99
Nonvested at December 26, 2020	964	$ 31.37
Granted	338	$ 69.82
Vested	(441)	$ 30.90
Forfeited	(96)	$ 42.40
Nonvested at January 1, 2022	765	$ 48.25

Of the 765 shares outstanding at January 1, 2022, 667 are service-based RSUs and 98 are market-based PRSUs. The fair value of the Company's service-based RSUs was calculated based on the fair market value of the Company's stock at the date of grant. The fair value of the Company's market-based PRSUs granted during fiscal years 2021, 2020, and 2019 was calculated using a Monte Carlo simulation model at the date of the grant, resulting in a weighted average grant-date fair value per share of $80.04, $47.86, and $21.49, respectively.

As of January 1, 2022, there was $21,019 of total unrecognized compensation cost related to restricted stock units granted under the plans. That cost is expected to be recognized over a weighted average period of 1.5 years.

Stock Options

The Company did not grant any stock options during fiscal years 2021, 2020 and 2019. As of January 1, 2022, there were 2 stock options outstanding and exercisable with a weighted average exercise price of $15.20, and aggregate intrinsic value of $191 and a contract term that will expire within one year. The total intrinsic value of the stock options exercised during fiscal years 2021, 2020 and 2019 was $1,365, $420 and $51, respectively.

401(k) Savings Plan

The Company has a 401(k) savings plan that allows employees to contribute up to 100% of their annual compensation to the Plan on a pre-tax or after-tax basis, limited to a maximum annual amount as set periodically by the Internal Revenue Service. The plan provides a 50% match of all employee contributions up to 6 percent of the employee's salary. Matching contributions to the plan totaled $2,544, $2,315 and $1,317 for the years ended January 1, 2022, December 26, 2020 and December 31, 2019, respectively.

12. Other Income (Expense), Net:

Other income (expense), net is comprised of the following:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Foreign currency exchange gains (losses), net	$ (2,020)	$ (3,070)	$ 676
Other	132	362	104
Total other income (expense), net	$ (1,888)	$ (2,708)	$ 780

13. Income Taxes:

The components of income tax expense are as follows:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Current:			
Federal	$ 21,791	$ 1,466	$ (27)
State	1,007	371	88
Foreign	3,153	5,637	1,548
	25,951	7,474	1,609
Deferred:			
Federal	(9,475)	(10,355)	(4,730)
State	(540)	(1,036)	506
Foreign	(2,603)	(240)	108
	(12,618)	(11,631)	(4,116)
Total income tax expense (benefit)	$ 13,333	$ (4,157)	$ (2,507)

The income before tax is comprised of the following:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Domestic operations	$ 136,143	$ (120)	$ (7,087)
Foreign operations	$ 19,539	$ 26,988	$ 6,490

The provision for income taxes differs from the amount of income tax determined by applying the applicable U.S. federal income tax rate of 21% for the years ended January 1, 2022, December 26, 2020 and December 31, 2019, to income before provision for income taxes as follows:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Federal income tax provision (benefit) at statutory rate	$ 32,693	$ 5,642	$ (125)
State taxes, net of federal effect	1,066	126	113
Foreign taxes, net of federal effect	(3,817)	596	(1,277)
Foreign Derived Intangible Income (“FDII”) Deduction	(11,061)	(4,262)	(2,278)
Global Intangible Low-Taxes Income (“GILTI”) inclusion	1,721	2,013	1,786
Non-deductible officer's compensation	689	213	826
Research & development tax credit	(3,607)	(4,858)	(2,126)
Tax impact of audit and statue closures	(1,987)	(2,905)	—
Impact of the CARES Act	(732)	(1,141)	—
Other	(1,632)	419	574
Provision (benefit) for income taxes	$ 13,333	$ (4,157)	$ (2,507)
Effective tax rate	9%	(16)%	(420)%

Deferred tax assets and liabilities are comprised of the following:

	January 1, 2022	December 26, 2020
Deferred tax assets:		
Reserves and accruals	$ 15,084	$ 13,874
Deferred revenue	4,729	1,648
Share-based compensation	3,023	2,556
Tax credit carryforward	10,339	10,801
Net operating losses	3,254	4,849
Depreciation and amortization	368	687
Operating lease liabilities	3,575	4,261
Other	2,364	1,877
Gross deferred tax assets	42,736	40,553
Less: valuation allowance	(10,948)	(14,238)
Total deferred tax assets after valuation allowance	31,788	26,315
Deferred tax liabilities:		
Depreciation and amortization	(63,554)	(75,608)
Operating lease right of use assets	(3,469)	(3,960)
Other	(224)	(135)
Gross deferred tax liabilities	(67,247)	(79,703)
Net deferred tax liabilities	$ (35,459)	$ (53,388)

At January 1, 2022 and December 26, 2020, the Company had recorded valuation allowances of $10,948 and $14,238, respectively, on a certain portion of the Company's deferred tax assets to reflect the deferred tax assets at the net amount that is more likely than not to be realized. The Company maintains a valuation allowance against a portion of its federal, California and foreign deferred tax assets of $3,232, $7,547, and $169, respectively.

In assessing the realizability of deferred tax assets, the Company uses a more likely than not standard. If it is determined that it is more-likely-than-not that deferred tax assets will not be realized, a valuation allowance must be established against the deferred tax assets. The ultimate realization of the assets is dependent on the generation of future taxable income during the periods in which the associated temporary differences become deductible. Management considers the scheduled reversal of deferred income tax liabilities, projected future taxable income and tax planning strategies when making this assessment. In making the determination that it is more likely than not that the Company's deferred tax assets will be realized as of January 1, 2022, the Company relied primarily on the reversal of deferred tax liabilities as well as projected future taxable income.

At January 1, 2022, the Company had tax effected state and foreign net operating loss carryforwards of $1,732 and $1,522, respectively. The federal, state and foreign net operating loss carryforwards expire on various dates beginning in 2022 through 2037.

At January 1, 2022, the Company had foreign tax credit carryforwards and state research & development credits of $3,232, and $10,672, respectively. The foreign tax credit is set to expire at various dates beginning at December 31, 2029. The state research & development credits have no expiration dates.

As of January 1, 2022, the Company has provided U.S. income taxes on all its foreign earnings. The Company continues to permanently reinvest the cash held offshore to support its working capital needs. Accordingly, no additional foreign withholding taxes that may be required from certain jurisdictions in the event of a cash distribution have been provided for.

The total amount of unrecognized tax benefits are as follows:

	January 1, 2022	December 26, 2020	December 31, 2019
Balance, beginning of the period	$ 13,486	$ 15,143	$ 5,528
Gross increases—tax positions in prior period	156	347	9,989
Gross decreases—tax positions in prior period	(204)	—	(932)
Gross increases—current-period tax positions	1,193	1,048	558
Closure of audit/statute limitation	(2,258)	(3,052)	—
Balance, end of the period	$ 12,373	$ 13,486	$ 15,143

The unrecognized tax benefits at January 1, 2022 and December 26, 2020 were $12,373 and $13,486, respectively, of which $7,832 and $8,863, respectively, would be reflected as an adjustment to income tax expense if recognized. The year over year decrease from 2020 to 2021 is primarily due to expiring tax statutes, offset by additional unrecognized tax benefits related to federal tax exposures. It is reasonably possible that certain amounts of unrecognized tax benefits may reverse in the next 12 months; however, the Company does not expect such reversals to have a significant impact on its results of operations or financial position.

The Company recognizes accrued interest and penalties related to unrecognized tax benefits in income tax expense. During the years ended January 1, 2022, December 26, 2020 and December 31, 2019, the Company recognized approximately $(814), $(193) and $236, respectively, in interest and penalties (benefit) expense associated with uncertain tax positions. As of January 1, 2022 and December 26, 2020, the Company had accrued interest and penalties expense included in the table of unrecognized tax benefits of $430 and $1,487, respectively.

The Company is subject to U.S. federal income tax as well as income tax in multiple state and foreign jurisdictions. The Company is subject to ordinary statute of limitation rules of three and four years for federal and state returns, respectively. However, due to tax attribute carryforwards, the Company is subject to examination for tax years 2003 forward for U.S. federal tax purposes with respect to carryforward amounts. The Company is also subject to examination in various states for tax years 2002 forward with respect to carryforward amounts. The Company is subject to examination for tax years 2011 forward for various foreign jurisdictions. The Company believes that adequate amounts have been reserved for any adjustments that may ultimately result from any future examinations of these years.

In the normal course of business, the Company is subject to tax audits in various jurisdictions, and such jurisdictions may assess additional income taxes or other taxes against it. Although the Company believes its tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from the Company' s historical income tax provisions and accruals. The results of an audit or litigation could have a material adverse effect on the Company' s results of operations or cash flows in the period or periods for which that determination is made.

14. Accumulated Other Comprehensive Income (Loss):

Comprehensive income includes net income, foreign currency translation adjustments, and net unrealized gains and losses on available-for-sale debt securities. See the Consolidated Statements of Comprehensive Income for the effect of the components of comprehensive income on the Company's net income.

The components of accumulated other comprehensive income (loss), net of tax, are as follows:

	Foreign currency translation adjustments	Net unrealized gains (losses) on marketable securities	Accumulated other comprehensive income (loss)
Balance at December 31, 2019	$ (564)	$ (34)	$ (598)
Net current period other comprehensive income	5,043	123	5,166
Reclassifications	—	—	—
Balance at December 26, 2020	4,479	89	4,568
Net current period other comprehensive loss	(2,715)	(537)	(3,252)
Reclassifications	—	—	—
Balance at January 1, 2022	$ 1,764	$ (448)	$ 1,316

15. Segment Reporting and Geographic Information:

The Company is engaged in the design, development, manufacture and support of high-performance control metrology, defect inspection, lithography and data analysis systems used by microelectronics device manufacturers. The Company and its subsidiaries currently operate in a single operating segment: the design, development, manufacture and support of high-performance process control defect inspection and metrology, lithography and process control software systems used by microelectronics device manufacturers. Therefore, the Company has one reportable segment. The Company's chief operating decision maker is the Chief Executive Officer (the "CEO"). The CEO allocates resources and assesses performance of the business and other activities at the reportable segment level.

The following table lists the different sources of revenue:

	Year Ended					
	January 1, 2022		December 26, 2020		December 31, 2019	
Systems and software	$669,114	85%	$450,459	80%	$255,723	84%
Parts	72,753	9%	65,444	12%	34,892	11%
Services	47,032	6%	40,593	8%	15,281	5%
Total revenue	$788,899	100%	$556,496	100%	$305,896	100%

The Company's significant operations outside the United States include sales, service and application offices in Asia and Europe. For geographical revenue reporting, revenue is attributed to the geographic location to which the product is shipped. Revenue by geographic region is as follows:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Revenue from third parties:			
Taiwan	$ 194,458	$ 120,959	$ 66,601
South Korea	160,373	90,193	43,997
China	151,027	125,023	80,017
United States	123,858	81,708	46,717
Europe	64,943	49,697	23,023
Japan	61,186	59,295	29,816
Southeast Asia	33,054	29,621	15,725
Total revenue	$ 788,899	$ 556,496	$ 305,896

The following chart identifies our customers that represented 10% or more of total revenue for each of the last three fiscal years:

	2021	2020	2019
Taiwan Semiconductor Manufacturing Co. Ltd.	18%	14%	13%
Samsung Semiconductor	16%	15%	^
SK Hynix Inc.	^	^	13%

^ The customer accounted for less than 10% of total revenue during the period.

At January 1, 2022, one customer, Taiwan Semiconductor Manufacturing Co. Ltd. accounted for more than 10% of net accounts receivable. At December 26, 2020, three customers, Samsung Semiconductor, Taiwan Semiconductor Manufacturing Co. Ltd., and SK Hynix Inc., accounted for more than 10% of net accounts receivable.

Substantially all of the Company's long-lived assets are located within the United States of America.

16. Earnings Per Share:

Basic income per share is calculated using the weighted average number of shares of common stock outstanding during the period. Restricted stock units and stock options are included in the calculation of diluted earnings per share, except when their effect would be anti-dilutive.

The Company's basic and diluted earnings per share amounts are as follows:

	January 1, 2022	December 26, 2020	December 31, 2019
Numerator:			
Net income	$ 142,349	$ 31,025	$ 1,910
Denominator:			
Basic earnings per share - weighted average shares outstanding	49,242	49,136	29,729
Effect of potential dilutive securities:			
Restricted stock units, employee stock purchase grants and stock options - dilutive shares	486	339	278
Diluted earnings per share - weighted average shares outstanding	49,728	49,475	30,007
Earnings per share:			
Basic	$ 2.89	$ 0.63	$ 0.06
Diluted	$ 2.86	$ 0.63	$ 0.06

17. Share Repurchase Authorization:

In November 2020, the Onto Innovation Board of Directors approved a new share repurchase authorization, which allows the Company to repurchase up to $100,000 worth of shares of its common stock. Repurchases may be made through both public market and private transactions from time to time. At January 1, 2022, there was $100,000 available for future share repurchases.

The following table summarizes the Company's stock repurchases:

	Year Ended		
	January 1, 2022	December 26, 2020	December 31, 2019
Shares of common stock repurchased	—	1,882	37
Cost of stock repurchased	$ —	$ 52,000	$ 744
Average price paid per share	$ —	$ 27.62	$ 19.85

ONTO INNOVATION INC. AND SUBSIDIARIES

SCHEDULE OF VALUATION AND QUALIFYING ACCOUNTS
(In thousands)

Column A	Column B	Column C		Column D	Column E
Description	**Balance at Beginning of Period**	**Charged to (Recovery of) Costs and Expense**	**Charged to Other Accounts (net)**	**Deductions**	**Balance at End of Period**
Fiscal Year 2021:					
Allowance for credit losses	$ 784	$ 955	$ —	$ 436	$ 1,303
Deferred tax valuation allowance	14,238	(3,290)	—	—	10,948
Fiscal Year 2020:					
Allowance for credit losses	$ 1,247	$ 327	$ —	$ 790	$ 784
Deferred tax valuation allowance.......................	14,160	78	—	—	14,238
Allowance for convertible notes receivable............	2,000	—	—	2,000	—
Fiscal Year 2019:					
Allowance for doubtful Accounts	$ 691	$ 363	$ —	$ (193)	$ 1,247
Deferred tax valuation allowance	3,172	942	10,046	—	14,160
Allowance for convertible notes receivable	—	2,000	—	—	2,000

SIGNATURES

PURSUANT TO THE REQUIREMENTS OF SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934, THE REGISTRANT HAS DULY CAUSED THIS REPORT TO BE SIGNED ON ITS BEHALF BY THE UNDERSIGNED, THEREUNTO DULY AUTHORIZED.

Onto Innovation Inc.
(Registrant)

By: /s/ Michael P. Plisinski
Michael P. Plisinski
Chief Executive Officer

Date: February 25, 2022

PURSUANT TO THE REQUIREMENTS OF THE SECURITIES EXCHANGE ACT OF 1934, THIS REPORT HAS BEEN SIGNED BELOW BY THE FOLLOWING PERSONS ON BEHALF OF THE REGISTRANT AND IN THE CAPACITIES AND ON THE DATES INDICATED.

Signature	Title	Date
/s/ Michael P. Plisinski **Michael P. Plisinski**	Chief Executive Officer (Principal Executive Officer)	February 25, 2022
/s/ Steven R. Roth **Steven R. Roth**	Senior Vice President, Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 25, 2022
/s/ Leo Berlinghieri **Leo Berlinghieri**	Director	February 25, 2022
/s/ Edward J. Brown, Jr. **Edward J. Brown Jr.**	Director	February 25, 2022
/s/ David B. Miller **David B. Miller**	Director	February 25, 2022
/s/ Karen M. Rogge **Karen M. Rogge**	Director	February 25, 2022
/s/ Bruce C. Rhine **Bruce C. Rhine**	Director	February 25, 2022
/s/ Christopher A. Seams **Christopher A. Seams**	Director	February 25, 2022
/s/ Christine A. Tsingos **Christine A. Tsingos**	Director	February 25, 2022

Exhibit 21.1

SUBSIDIARIES

Name	Jurisdiction
Rudolph Technologies, Inc.	U.S.A.
4D Technology Corporation	U.S.A.
Inspectrology LLC	U.S.A.
Onto Innovation Japan Co. Ltd.	Japan
Onto Innovation (Shanghai) Trading Co., Ltd.	China
Nanometrics China Company Ltd.	China
Onto Innovation Germany GmbH	Germany
Onto Innovation Hong Kong Limited	Hong Kong
Onto Innovation Europe, B.V.	Netherlands
Onto Innovation France S.A.S.	France
Onto Innovation Switzerland GmBH	Switzerland
Nanometrics U.K. Ltd.	United Kingdom
Nanometrics Israel, Ltd.	Israel
Onto Innovation Korea Ltd.	Korea
Onto Innovation Southeast Asia Pte. Limited	Singapore
Onto Innovation Ireland Limited	Ireland

Exhibit 31.1

Rule 13a-14(a) Certification of Chief Executive Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Michael P. Plisinski, certify that:

1. I have reviewed this annual report on Form 10-K of Onto Innovation Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 25, 2022

By: /s/ Michael P. Plisinski
Michael P. Plisinski
Chief Executive Officer

Exhibit 31.2

Rule 13a-14(a) Certification of Chief Financial Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Steven R. Roth, certify that:

1. I have reviewed this annual report on Form 10-K of Onto Innovation Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 25, 2022

By: /s/ Steven R. Roth
Steven R. Roth
Senior Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael P. Plisinski, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Onto Innovation Inc. on Form 10-K for the year ended January 1, 2022 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Onto Innovation Inc.

Date: February 25, 2022

By: /s/ Michael P. Plisinski
Michael P. Plisinski
Chief Executive Officer

Exhibit 32.2

**CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Steven R. Roth, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Onto Innovation Inc. on Form 10-K for the year ended January 1, 2022 fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Onto Innovation Inc.

Date: February 25, 2022

By: /s/ Steven R. Roth
Steven R. Roth
Senior Vice President and Chief Financial Officer

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 14A

PROXY STATEMENT PURSUANT TO SECTION 14(a) OF

THE SECURITIES EXCHANGE ACT OF 1934

Filed by the Registrant ☒

Filed by a Party other than the Registrant ☐

Check the appropriate box:

☐ Preliminary Proxy Statement

☐ Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))

☒ Definitive Proxy Statement

☐ Definitive Additional Materials

☐ Soliciting Material Pursuant to Rule 14a-12

Onto Innovation Inc.

(Name of Registrant as specified in its charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

☒ No fee required.

☐ Fee paid previously with preliminary materials.

☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11.

PROXY STATEMENT

TABLE OF CONTENTS

Forward Looking Statements

This proxy statement contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 (the "Act") which include those concerning Onto Innovation's business momentum and future growth; acceptance of Onto Innovation's products and services; Onto Innovation's ability to both deliver products and services consistent with its customers' demands and expectations and strengthen its market position; as well as other matters that are not purely historical data. Onto Innovation wishes to take advantage of the "safe harbor" provided for by the Act and cautions that actual results may differ materially from those projected as a result of various factors, including risks and uncertainties, many of which are beyond Onto Innovation's control. Such factors include, but are not limited to, the following: variations in the level of orders, which can be affected by general economic conditions; seasonality and growth rates in the semiconductor manufacturing industry and in the markets served by Onto Innovation's customers; the global economic and political climates; the impact on supply, production, sales and delivery of our products and services due to the global spread of the coronavirus (COVID-19) and any of its variants; the length, severity and potential business impact of the COVID-19 pandemic; difficulties or delays in product functionality or performance; the Company's ability to effectively manage its supply chain and adequately source components from suppliers to meet customer demand; the delivery performance of sole source vendors; the timing of future product releases; failure to respond to changes in technology or customer preferences; changes in pricing by Onto Innovation or its competitors; Onto Innovation's ability to leverage its resources to improve its position in its core markets, to weather difficult economic environments, to open new market opportunities and to target high-margin markets; the strength/weakness of the back-end and/or front-end semiconductor market segments; the imposition of tariffs or trade restrictions and costs, burdens and restrictions associated with other governmental actions; its ability to adequately protect its intellectual property rights and maintain data security; the Company's ability to maintain relationships with its customers and manage appropriate levels of inventory to meet customer demands; the ability to successfully integrate acquired businesses and technologies and the response of business partners and retention as a result of such acquisitions. Additional information and considerations regarding the risks faced by Onto Innovation are available in the Company's Annual Report on Form 10-K for the year ended January 1, 2022 and other filings with the Securities and Exchange Commission. As the forward-looking statements are based on Onto Innovation's current expectations, the Company cannot guarantee any related future results, levels of activity, performance or achievements. Onto Innovation does not assume any obligation to update the forward-looking information contained in this proxy statement.

innovation®

onto

NOTICE OF 2022 ANNUAL MEETING OF STOCKHOLDERS

Date:	Tuesday, May 10, 2022
Time:	10:00 a.m., Pacific Time
Place:	The Company's offices located at 1550 Buckeye Drive, Milpitas, California, 95035*
Record Date:	Only stockholders of record at the close of business on March 14, 2022 are entitled to vote at the meeting and any adjournment or postponement thereof for which no new record date is set.
Items of Business:	1. To elect the Board's seven nominees for director to serve until the next Annual Meeting and until their successors are duly elected and qualified;
	2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement;
	3. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022; and
	4. To transact such other business as may properly come before the meeting and any adjournment or postponement thereof.

These items of business are described more fully in the accompanying proxy statement. This year we will be providing access to our proxy materials via the internet in accordance with the Securities and Exchange Commission's "Notice and Access" rules. On or about March 31, 2022, we will be mailing to our stockholders our Notice of Internet Availability of Proxy Materials, which contains instructions for accessing our 2022 proxy statement and 2021 annual report to stockholders and how to vote online. In addition, the Notice of Internet Availability of Proxy Materials contains instructions on how to request a paper copy of the 2022 proxy statement and 2021 annual report to stockholders.

Your vote is important. As always, but especially now given the uncertainties posed by the coronavirus (COVID-19) pandemic, we encourage you to vote your shares as soon as possible and prior to the Annual Meeting even if you plan to attend the Annual Meeting. Voting early will ensure your shares are represented at the Annual Meeting, regardless of whether you attend the Annual Meeting. You may cast your vote via the internet, by telephone, by mail or during the Annual Meeting. If you receive a paper copy of the proxy card by mail, you may also mark, sign, date, and return the proxy card in the accompanying postage-prepaid envelope.

* We intend to hold the Annual Meeting in person. However, we are sensitive to the public health and travel concerns our stockholders may have and recommendations that public health officials have issued in light of the COVID-19 pandemic. As a result, we will require all attendees to comply with certain health and safety protocols, which are described in the proxy statement, and we may decide to hold the meeting in a different location or solely by means of remote communication (i.e., a virtual-only meeting). If we change the location of the meeting, we will announce any such updates in additional proxy materials filed with the Securities and Exchange Commission and in a press release that we would make available on our website at https://investors.ontoinnovation.com. We encourage you to check this website prior to the meeting if you plan to attend.

IMPORTANT NOTICE REGARDING THE AVAILABILITY OF PROXY MATERIALS FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD MAY 10, 2022:

This notice, the proxy statement, and the 2021 Annual Report to Stockholders are available at:

https://www.ontoinnovation.com/ar-proxy

FOR THE BOARD OF DIRECTORS

Yoon Ah E. Oh
Corporate Secretary

Wilmington, Massachusetts
March 31, 2022

PROXY SUMMARY

On October 25, 2019 (the “Merger Date”), Rudolph Technologies, Inc. merged with and into Nanometrics Incorporated, which was then renamed Onto Innovation Inc. (the “2019 Merger”). Unless otherwise indicated or context otherwise requires, as used herein “Nanometrics” refers to Nanometrics Incorporated and its subsidiaries prior to the Merger Date and “Rudolph” refers to Rudolph Technologies, Inc. and its subsidiaries prior to the Merger Date.

This summary highlights information contained elsewhere in the proxy statement. This summary does not contain all of the information that you should consider, and you should read the entire proxy statement carefully before voting.

Stockholder Voting Matters

Voting Matter		Board Vote Recommendation	Page Reference for more information
Proposal 1:	Election of Directors	FOR ALL	19
Proposal 2:	Advisory Vote on Named Executive Officer Compensation	FOR	29
Proposal 3:	Ratification of Appointment of Independent Registered Public Accounting Firm for the Fiscal Year Ending December 31, 2022	FOR	30

Corporate Governance Highlights

Snapshot Of Board Composition

The following table presents a snapshot of the expected composition of the Onto Innovation Board of Directors (the “Board”) immediately following the 2022 Annual Meeting, assuming the election of all nominees named in the proxy statement.

Board Characteristic	Onto Innovation
Total Number of Directors	7
Percentage of Independent Directors	85.7%
Average Age of Directors (years)	62.8
Average Tenure of Directors (years)	5.9
Separate Chairman and CEO roles	Yes
Independent Chairman	Yes
Audit Committee Qualified Financial Experts	2
Female Director Representation	42.9%
Race/Ethnicity Diversity Representation	14.3%

Snapshot Of Board Governance And Compensation Policies

The following table presents a snapshot of the Onto Innovation Board Governance and Compensation Policies currently in effect.

Policy	Onto Innovation
Majority Voting for All Directors	Yes
Regular Executive Sessions of Independent Directors	Yes
Annual Board, Committee and Director Evaluations	Yes
Risk Oversight by Full Board and Committees	Yes
Independent Audit, Compensation and Nominating & Governance Committees	Yes
Code of Business Conduct and Ethics for Employees and Directors	Yes
Financial Information Integrity Policy	Yes
Stock Ownership Requirement for Directors	3x annual retainer
Stock Ownership Requirement for CEO	3x base salary
Stock Ownership Requirement for other NEOs	1x base salary
Anti-Hedging, Anti-Short Sale & Anti-Margining Policy	Yes
Compensation Clawback Policy	Yes
No Future Tax Gross-Up Provisions	Yes
No Poison Pill	Yes
Stock Buyback Program	Yes
Double Trigger Change-in-Control Provisions for Executive Officers	Yes
Annual Corporate Social Responsibility Report	Yes

Snapshot Of Board Governance And Compensation Policies Newly Implemented Or Adjusted In Past Year

The following presents a snapshot of the Onto Innovation Board Governance and Compensation Policies that were newly implemented or adjusted in the past year.

- After the 2021 Annual Meeting of Stockholders, the following actions were taken with regard to the composition and leadership structure of the Board and standing committees of the Board:
  - Board size of seven (7) Directors.
  - Board Chairman: Christopher A. Seams
  - Audit Committee:
    - Four (4) members
    - Chairperson: Christine A. Tsingos
  - Compensation Committee:
    - Four (4) members
    - Chairperson: Edward J. Brown, Jr.
  - Nominating & Governance Committee:
    - Four (4) members
    - Chairperson: Leo Berlinghieri
- The annual review of the charters for the Audit, Compensation and Nominating & Governance Committees, the Code of Business Conduct and Ethics and the Financial Information Integrity Policy and the Summary of Corporate Governance Policies for the Company was performed and completed.
- In September of 2021, the Board size was expanded to eight (8) Directors and Karen M. Rogge was appointed to the Board of Directors at that time.
- In November of 2021, Edward Brown, Jr. notified the Board of his intention to retire at the end of his current term. Mr. Brown served on the Nanometrics Board of Directors from 2013 to the Merger Date and continued his service to the Company following the 2019 Merger. In addition, in January of 2022, Bruce Rhine notified the Board of his intention to retire at the end of his current term. Mr. Rhine served on the Nanometrics Board of Directors from 2006 to the Merger Date and continued his service to the Company following the 2019 Merger. Their leadership, insights and contributions to the Board and the Company are greatly appreciated.
- In January 2022, the membership of the Audit Committee was increased to five (5) members with the addition of Mr. Seams to the Committee.
- In March 2022, the Board size was expanded to nine (9) directors and May Su was appointed to the Board of Directors and the Compensation Committee at that time.
- The Board has determined that, effective as of the 2022 Annual Meeting of Stockholders, the size of the Board will be reduced to seven (7) members.

PROXY STATEMENT

The proxy detailed herein is solicited on behalf of the Board of Directors (the “Board” or “Board of Directors”) of Onto Innovation Inc. (“Onto Innovation,” the “Company,” “we,” “us” or “our”) for use at the 2022 Annual Meeting of Stockholders to be held May 10, 2022 at 10:00 a.m. Pacific Time (the “Annual Meeting”), or at any adjournment or postponement thereof, for the purposes set forth herein and in the accompanying Notice of Annual Meeting of Stockholders. The Annual Meeting will be held at the Company’s offices located at 1550 Buckeye Drive, Milpitas, California 95035. Directions to the Annual Meeting may be found on our website (www.ontoinnovation.com) by clicking on “Company,” “Locations,” “California” and then accessing the interactive map. The Company’s telephone number is (978) 253-6200.

We intend to hold the Annual Meeting in person. However, we are sensitive to the public health and travel concerns our stockholders may have and recommendations that public health officials have issued in light of the coronavirus (COVID-19) pandemic. As a result, we will require all attendees to comply with certain health and safety protocols, which are described in this proxy statement under “Questions and Answers About the Annual Meeting – What Is Required To Be Admitted To The Annual Meeting?,” and we may decide to hold the meeting in a different location or solely by means of remote communication (i.e., a virtual-only meeting). If we change the meeting location, we will announce any such updates in additional proxy materials filed with the SEC and in a press release that will be available on our website at https://investors.ontoinnovation.com. We encourage you to check this website prior to the meeting if you plan to attend.

On or about March 31, 2022, we will furnish a Notice of Internet Availability of Proxy Materials (“Notice”) to our stockholders containing instructions on how to access the proxy materials online at:

https://www.ontoinnovation.com/ar-proxy

Instructions on how to vote online and to request a printed copy of the proxy materials may be found in the Notice. If you receive a Notice by mail, you will not receive a paper copy of the proxy materials unless you request such materials by following the instructions contained in the Notice. Your vote is important, regardless of the extent of your holdings.

QUESTIONS AND ANSWERS ABOUT THE ANNUAL MEETING

What Is The Purpose Of The Annual Meeting?

At the Annual Meeting, stockholders will be asked to vote upon the matters set forth in the accompanying Notice of Annual Meeting, including:

- the election of seven (7) directors;
- an advisory resolution on named executive officer compensation; and
- the ratification of the appointment of our independent registered public accounting firm for fiscal 2022,

all of which are more fully described herein.

Will Other Matters Be Voted On At The Annual Meeting?

We are not currently aware of any matters to be presented at the Annual Meeting other than those described in this proxy statement. If any other matters not described in the proxy statement are properly presented at the meeting, any proxies received by us will be voted in the discretion of the proxy holders.

Who Is Entitled To Vote?

If you were a stockholder of record as of the close of business on March 14, 2022, which is referred to in this proxy statement as the "record date," you are entitled to receive notice of the Annual Meeting and to vote the shares of common stock that you held as of the close of business on the record date. Each stockholder is entitled to one (1) vote for each share of common stock held by such stockholder on the record date.

May I Attend The Meeting?

All stockholders of record as of the record date may attend the Annual Meeting, which will be held at the Company's offices located at 1550 Buckeye Drive, Milpitas, California 95035. To obtain directions to attend the Annual Meeting and vote in person, please visit our website (www.ontoinnovation.com), and click on "Company," then "Locations," and then "California" to access the interactive map. We currently intend to hold the Annual Meeting in person. In the event it is not possible or advisable to hold the Annual Meeting in person, we will announce alternative arrangements for the meeting as promptly as practicable, which may include holding the meeting partially or solely by means of remote communication (i.e., a virtual-only meeting). Please monitor our website at https://investors.ontoinnovation.com for updated information. If you are planning to attend the Annual Meeting, please check the website prior to the Annual Meeting date. As always, we encourage you to vote your shares prior to the Annual Meeting.

What is Required To Be Admitted To The Annual Meeting?

If you have a stock certificate or hold shares in an account with our transfer agent, you are considered the "stockholder of record" with respect to those shares. If you are a stockholder of record, you will need valid picture identification and proof that you are a stockholder of record of the Company as of the record date to gain admission to the Annual Meeting.

If you are a beneficial holder, you will be required to present a valid picture identification and proof from your bank, broker or other record holder of your shares that you are the beneficial owner of such shares to gain admission to the Annual Meeting. If you are a beneficial holder and wish to vote your shares at the meeting, you will need a legal proxy from your bank, broker or other record holder of your shares.

All attendees will be expected to comply with any health and safety protocols in effect at the Company's facility at the time of the Annual Meeting, which may include wearing an appropriate face covering, hand washing and/or applying hand sanitizer upon arrival and practicing social distancing. We reserve the right to take any additional precautionary measures and may ask attendees to leave the Annual Meeting if they are not following our procedures.

What Constitutes A Quorum?

The required quorum for the transaction of business at the Annual Meeting is a majority of the issued and outstanding shares of Common Stock of the Company, $0.001 par value per share ("Common Stock"), present in person or by proxy and entitled to vote at the Annual Meeting. On the record date, 49,437,537 shares of the Company's Common Stock were issued and outstanding, each entitled to one vote on each matter to be acted upon at the Annual Meeting. Your shares will be counted towards the quorum only if you submit a valid proxy (or one is submitted on your behalf by your broker, bank or other nominee) or if you vote in person at the meeting. Abstentions and broker non-votes will be counted to determine whether there is a quorum present. If a quorum is not present, the Annual Meeting may be adjourned or postponed to a later date.

What Are "Broker Non-Votes"?

A broker non-vote occurs when a bank, broker or other registered holder of record holds shares for a beneficial owner but is not empowered to vote on a particular proposal on behalf of such beneficial owner because the proposal is considered "non-routine" and the beneficial owner has not provided voting instructions on that proposal. The election of directors and the advisory vote on named executive officer compensation are treated as "non-routine" proposals. This means that if a brokerage firm holds your shares on your behalf, those shares will not be voted with respect to either of these proposals unless you provide instructions to that firm. See below under "What Is the Vote Required for Election of Directors?" and "What Is the Vote Required for the Approval of Proposals Other Than Director Elections?" for a discussion of the impact of broker non-votes on each of the proposals that will be presented at the Annual Meeting. **In order to ensure that any shares held on your behalf by a bank, broker or other registered holder of record are voted in accordance with your wishes, we encourage you to provide instructions to that firm or organization in accordance with the Notice or voting instruction form provided by**

the broker, bank or other registered holder or to contact your broker, bank or other registered holder to request a proxy form.

Who Bears The Cost Of Soliciting Proxies?

The Company will bear the cost of soliciting proxies. In addition, the Company may reimburse brokerage firms and other persons representing beneficial owners of shares for their expenses in forwarding solicitation material to such beneficial owners. Solicitation of proxies by mail may be supplemented by telephone, facsimile, e-mail or other electronic means or personal solicitation by directors, officers or regular employees of the Company. No additional compensation will be paid to such persons for such services. We have engaged The Proxy Advisory Group, LLC to assist in the solicitation of proxies and provide related advice and informational support, for a services fee and the reimbursement of customary disbursements, which are not expected to exceed $20,000 in total.

Why Did I Receive A "Notice Of Internet Availability Of Proxy Materials" But No Proxy Materials?

We are distributing the Company's proxy materials to stockholders of record via the internet in accordance with the "Notice and Access" approach permitted by rules of the Securities and Exchange Commission ("SEC"). This approach benefits the environment, while providing a timely and convenient method of accessing the materials and voting. Accordingly, we have sent you a Notice because the Board of the Company is soliciting your proxy to vote at the 2022 Annual Meeting of Stockholders, including at any adjournments or postponements of the meeting. On or about March 31, 2022, the Company will begin mailing the Notice to all stockholders of record entitled to vote at the Annual Meeting. All stockholders will have the ability to access the proxy materials on the website referred to in the Notice or request to receive a printed set of the proxy materials. Instructions on how to access the proxy materials over the Internet or to request a printed copy of the proxy materials and the Company's 2021 Annual Report may be found in the Notice.

What Does It Mean If I Received More Than One Notice?

If you receive more than one Notice, your shares may be registered in more than one name or in different accounts. Please follow the voting instructions on each of the Notices to ensure that all of your shares are voted.

How Do I Go About Voting?

You may vote "For" or "Against" each of the director nominees or you may "Abstain" from voting with respect to any nominee. For each of the other matters to be voted on, you may vote "For" or "Against" or "Abstain" from voting.

Voting For Shares Registered Directly In The Name Of The Stockholder

If you are a stockholder of record with shares registered in your name, you can vote by one of the following methods:

- **In Person** - To vote in person, come to the Annual Meeting and you will receive a ballot when you arrive. You will be required to show valid picture identification and proof that you are a stockholder of record of the Company as of the record date to be admitted to the Annual Meeting.
- **Via the Internet** - To submit your proxy by Internet, go to www.investorvote.com/ONTO and follow the instructions on the secure website. The deadline for proxy submission via the Internet is 11:59 p.m. (EDT) on May 9, 2022.
- **Via Telephone** – To submit your proxy by telephone, call toll free 1-800-652-VOTE (8683) within the United States, US territories and Canada.
- **By Mail** – Stockholders who receive a paper proxy card may complete, sign and date their proxy card and mail it in the pre-addressed postage-paid envelope that accompanies the proxy card. Proxy cards submitted by mail must be received prior to the time of the Annual Meeting in order for your shares to be voted.

Even if you plan to attend the Annual Meeting, we recommend that you submit your proxy in advance so that your shares are represented at the Annual Meeting in the event you are unable to attend the meeting. Each stockholder of record is entitled to one (1) vote for each share of Common Stock owned by such stockholder on all matters presented at the Annual Meeting. Stockholders do not have the right to cumulate their votes in the election of directors.

If you return a signed and dated proxy card but do not indicate how the shares are to be voted, those shares will be voted in accordance with Onto Innovation's Board's recommendations. A valid proxy card also authorizes the individuals named therein as proxies to vote your shares in their discretion on any other matters, which, although not described in the proxy statement, are properly presented for action at the Annual Meeting. If you indicate on your proxy card that you wish to "abstain" from voting on an item, your shares will not be voted on that item.

While Internet proxy voting is being provided to allow you to submit your proxy online, with procedures designed to ensure the authenticity and correctness of your proxy vote instructions, please be aware that you must bear any costs associated with your Internet access, such as usage charges from Internet access providers and telephone companies.

Voting By Proxy For Shares Registered In Street Name

If your shares are held in a stock brokerage account or by a bank or other holder of record, you are considered the "beneficial owner" of shares held in "street name." As the beneficial owner, you have the right to direct your broker, bank or other holder of record on how to vote your shares by submitting voting instructions to such person in accordance with the directions that the entity provides. In the event you are considered the "beneficial owner" of shares held in "street name" and you wish to vote in person at the Annual Meeting, you must obtain a legal proxy from your broker, bank or another agent. Your vote also authorizes the person(s) acting as your proxy to vote your shares in their discretion. Follow the instructions from your broker or bank included with these proxy materials or contact your broker or bank to request a legal proxy.

May I Revoke My Proxy Or My Voting Instructions?

If you are a stockholder of record, you may revoke your proxy or change your vote after submitting your proxy at any time before the polls close at the Annual Meeting by doing any of the following:

- By delivering a written notice of revocation or a duly executed proxy card bearing a later date to the Corporate Secretary of the Company at the Company's principal executive offices prior to the Annual Meeting;
- By submitting a timely and valid later proxy online at www.investorvote.com/ONTO;
- By submitting a timely and valid later proxy by telephone call to 1-800-652-VOTE (8683) within the USA, US territories and Canada; or
- By attending the Annual Meeting and voting in person.

If you are a beneficial owner of shares, please contact your bank, broker or other holder of record for specific instructions on how to change or revoke your voting instructions.

What Happens If I Do Not Vote?

Stockholder Of Record: Shares Registered In Your Name

If you are a stockholder of record and do not submit a proxy by mail, telephone, or the Internet or by attending the Annual Meeting and voting in person, your shares will not be voted.

Beneficial Owner: Shares Registered In The Name Of Broker Or Bank

If you are a beneficial owner and do not instruct your broker, bank, or other agent how to vote your shares, the question of whether your broker or nominee will still be able to vote your shares depends on whether the New York Stock Exchange ("NYSE") deems the particular proposal to be a "routine" matter. Brokers and nominees can use their discretion to vote "uninstructed" shares with respect to matters that are considered to be "routine," but not with respect to "non-routine" matters. Under the rules and interpretations of the NYSE, "non-routine" matters are matters that may substantially affect the rights or privileges of stockholders, such as mergers, stockholder proposals, elections of directors (even if not contested), executive officer compensation (including any advisory stockholder votes on executive officer compensation and on the frequency of stockholder advisory votes on executive officer compensation), and certain corporate governance proposals, even if management supported. Accordingly, your broker or nominee may not vote your shares on the election of directors or the advisory proposal to approve the named executive officer compensation without your instructions, but may vote your shares on the proposal to ratify the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2022 even in the absence of your instruction.

What If I Return A Proxy Card Or Otherwise Submit a Proxy But Do Not Make Specific Choices?

If you return a signed and dated proxy card or otherwise submit a proxy without marking voting selections, your shares will be voted, as applicable, "For" the election of all seven (7) nominees for director, "For" the advisory approval of the named executive officer compensation and "For" the ratification of the appointment of Ernst & Young, LLP as the independent registered public accounting firm of the Company for its fiscal year ending December 31, 2022. If any other matter is properly presented at the meeting, your proxyholder will vote your shares using his or her best judgment.

What Is The Vote Required For Election Of Directors?

For the election of directors, each director is elected by a majority of the votes cast (except that if the number of nominees exceeds the number of directors to be elected, directors will be elected by a plurality voting standard). This means that in order for a director nominee to be elected to our Board, the number of votes cast "for" a director's election must exceed the number of votes cast "against" that director's election (with "abstentions" and "broker non-votes" not counted as a vote cast either "for" or "against" that director's election, although abstentions and broker non-votes count for the purpose of determining a quorum). Our Amended and Restated Bylaws ("Bylaws") provide for election of directors by a majority of votes cast in uncontested elections, and our Summary of Corporate Governance Policies provides that any incumbent director nominee in an uncontested election who does not receive an affirmative majority of votes cast must promptly tender such director's resignation to our Board. Further information regarding the process that will be followed if such an event occurs can be located under the heading "Proposal 1 - Election of Directors."

What Is The Vote Required For The Approval Of Proposals Other Than Director Elections?

The proposal to approve, on an advisory basis, the compensation of our named executive officers and the proposal to ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022 each requires the affirmative vote, in person or by proxy, of a majority of the shares present in person or represented by proxy at the meeting and entitled to vote on the matter to be approved. For such proposals, abstentions in effect count as negative votes, because they are shares represented in person or by proxy that are entitled to vote on the matter and not voted in the affirmative. Broker non-votes are not counted as part of the vote total (because they are not considered "entitled to vote" on the matter) and have no effect on the outcome of those proposals.

What Is Householding?

The Company has adopted a procedure approved by the SEC called "householding." Under this procedure, when multiple stockholders of record share the same address, we may deliver only one (1) Notice or set of householding materials to that address unless we have received contrary instructions from one or more of those stockholders. The same procedure may be followed by brokers and other nominees holding shares of our stock in "street name" for more than one (1) beneficial owner with the same address.

If a stockholder holds shares of stock in multiple accounts (e.g., with our transfer agent and/or banks, brokers or other registered stockholders), we may be unable to use the householding procedures and, therefore, that stockholder may receive multiple copies of the Notice. You should follow the instructions on each Notice that you receive in order to vote the shares you hold in different accounts.

A stockholder that shares an address with another stockholder if such household has received only one (1) Notice, may write or call us as specified below:

(i) To request a separate copy of such materials, which will be promptly mailed without charge; and
(ii) To request that separate copies of these materials be sent to his or her home for future meetings.

Conversely, a stockholder of record who shares the same address with another stockholder of record may write or call us as specified below to request that a single set of the proxy materials be delivered to that address. Such stockholder requests may be made to our Investor Relations Department either via phone at 978-253-6200 or by mail directed to:

Investor Relations Department
Onto Innovation Inc.
16 Jonspin Road
Wilmington, Massachusetts 01887

If you are a beneficial owner of shares held in street name, please contact your bank, broker or other holder of record regarding such requests.

How Can I Find Out the Results Of The Voting At The Annual Meeting?

Preliminary voting results will be announced at the Annual Meeting. Final voting results will be published in a Current Report on Form 8-K that we expect to file within four (4) business days after the Annual Meeting. If final voting results are not available to us in time to file a Form 8-K within four (4) business days after the meeting, we intend to file a Form 8-K to publish preliminary results and, within four (4) business days after the final results are known to us, file an additional Form 8-K to publish the final results.

What Are The Deadlines For Submission Of Stockholder Proposals For The 2023 Annual Meeting?

Stockholders of the Company are entitled to present proposals for consideration at forthcoming stockholder meetings provided that they comply with the proxy rules promulgated by the SEC, if applicable, and the Bylaws of the Company. Stockholders wishing to present a proposal at the Company's 2023 Annual Meeting of Stockholders must submit such proposal in writing to the Corporate Secretary at Onto Innovation Inc., 16 Jonspin Road, Wilmington, Massachusetts 01887 no later than December 1, 2022 in accordance with Rule 14a-8 under the Securities Exchange Act of 1934, as amended ("Exchange Act"), if they wish for it to be eligible for inclusion in the proxy statement and form of proxy relating to that meeting. In addition, under the Company's Bylaws, a stockholder wishing to nominate a director or make a proposal at the 2023 Annual Meeting of Stockholders outside of Exchange Act Rule 14a-8 must submit such nomination or proposal in writing to the Corporate Secretary at the above address no earlier than January 10, 2023 and no later than February 9, 2023. To comply with universal proxy rules recently adopted by the SEC (once effective), stockholders who intend to solicit proxies in support of director nominees other than the Company nominees in connection with the 2023 Annual Meeting of Stockholders must provide notice that sets forth the information required by Rule 14a-19 under the Exchange Act no later than March 13, 2023.

The Nominating & Governance Committee will also consider qualified director nominees recommended by stockholders. Our process for receiving and evaluating Board member nominations from our stockholders is described below under the caption "Consideration Of Director Nominees."

You are also advised to review the Company's Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations.

CORPORATE GOVERNANCE PRINCIPLES AND PRACTICES

Onto Innovation is committed to sound and effective corporate governance practices. Having such practices is essential to running our business efficiently and to maintaining our integrity in the marketplace. The major components of our corporate governance practices are described below.

Board Leadership Structure

Our Company management is led by Michael P. Plisinski, who has served as our Chief Executive Officer ("CEO") and a director since the Merger Date and Christopher A. Seams, who is an independent director and has served as the Chairman of the Company's Board since the Merger Date.

Our Board is currently comprised of one (1) non-independent director, Mr. Plisinski, and eight (8) directors each of whom has been affirmatively determined by our Board to meet the criteria for independence established by the SEC and the NYSE. Effective as of the conclusion of the Annual Meeting, the size Board will be reduced to seven (7) directors, including six (6) independent directors. The independent directors meet periodically in executive session chaired by the Chairman without the CEO or other management present. Furthermore, each director is encouraged to suggest items for the Board agenda and to raise at any Board meeting subjects that are not on the agenda for that meeting.

In accordance with our sound and effective corporate governance practice, the roles of CEO and Chairman of the Board are held by separate individuals, with the independent Chairman of the Board being designated by the Board. The Board believes that, at the current time, the designation of an independent Chairman of the Board facilitates the functioning of the Board, while leaving the CEO responsible for setting the strategic direction for the Company and for the day-to-day leadership and performance of the Company. The independent Chairman of the Board:

- Presides at all meetings of the stockholders and the Board at which he or she is present;
- Establishes the agenda for each Board meeting;
- Sets the schedule and annual agenda, to the extent foreseeable;
- Calls and prepares the agenda for and presides over separate executive sessions of the independent directors;
- Acts as a liaison between the independent directors and the Company's management;
- Serves as a point of communications with stockholders; and
- Performs such other powers and duties as may from time to time be assigned by the Board or as may be prescribed by the Company's Bylaws.

Board Meetings

Each director attended at least 95% of the aggregate of the total number of Board meetings and the total number of meetings of Board committees on which such director served during the time such director served on the Board or committees. Jeffrey Aukerman and Vita Cassese both attended 100% of the Board meetings and meetings of committees on which they participated that were held during 2021 until the Company's 2021 Annual Meeting date at which Mr. Aukerman and Ms. Cassese did not stand for reelection to the Board. While the Company does not currently have a formal policy regarding the attendance of directors at the Annual Meeting of stockholders, directors are encouraged to attend. All members of the Board then serving attended the Company's 2021 Annual Meeting of Stockholders.

In 2021, the Board held a total of six (6) Board meetings. On four (4) occasions during 2021, the Company's Board met in executive session in which only the independent Board members were present.

Board Independence

The Board makes an annual determination as to the independence of each of our Board members under the current standards for "independence" established by the NYSE and the SEC. The Board has determined that the following nominees for election as directors to our Board are independent under the NYSE Listing Rules and SEC rules: Leo Berlinghieri, David B. Miller, Karen M. Rogge, Christopher A. Seams, May Su and Christine A. Tsingos. Michael P. Plisinski, due to his position as our CEO, is not considered to be independent. The two (2) directors not standing for re-election in 2022, Edward J. Brown, Jr. and Bruce C. Rhine, and the two directors who did not stand for re-election in 2021, Jeffrey A. Aukerman and Vita A. Cassese, were all determined by the Board to be independent under applicable NYSE and SEC rules.

From July 2006 to February 2008, Mr. Rhine served as Nanometrics Chief Strategy Officer, and from March 2007 to August 2007, Mr. Rhine served as Nanometrics Chief Executive Officer. Prior to the 2019 Merger, the Nanometrics Board determined that Mr. Rhine became an independent member of the Board effective February 2011 under the Nasdaq Listing Rules due to the passage of time subsequent to his previous management role with Nanometrics, and this designation was confirmed under the NYSE Listing Rules by the Company Board.

During 2021, none of the independent members of our Board was a party to any transactions, relationships or arrangements that were considered by the Board to impair his or her independence.

Oversight Of Risk

One of the Board's primary responsibilities is reviewing the Company's strategic plans and objectives, including oversight of the principal risk exposures of the Company. In particular, the Board is responsible for monitoring and assessing strategic risk exposure, including a determination of the nature and level of risk appropriate for the Company. The Board does not have a standing risk management committee, but rather administers this oversight function directly through the Board as a whole, as well as through various Board standing committees that address risks inherent in their respective areas of oversight. The Audit Committee assists the Board in oversight and monitoring of the legal and financial risks facing the Company, management's approach to addressing these risks and strategies for risk mitigation and serves as the contact point for employees to report corporate compliance issues. On at least an annual basis, the Audit Committee reviews and discusses with management policies and systems pursuant to which management addresses risk, including risks associated with our audit, financial reporting, internal control, disclosure control, cybersecurity, regulatory compliance and investment policies. Our Compensation Committee, at least annually, reviews our compensation programs to ensure that they do not encourage excessive risk-taking. Our Nominating & Governance Committee oversees risks related to governance issues, such as succession planning, as well as monitors and oversees legal compliance and compliance with the Company's Code of Business Conduct and Ethics, including the investigation and enforcement of the provisions of the Code. Each of our Committees regularly reviews with our Board any issues that arise in connection with the risk matters within the scope of its responsibilities and, in accordance with our Summary of Corporate Governance Guidelines, our full Board regularly engages in discussions of risk management to assess major risks facing our Company and review options for the mitigation of such risks. As a result of the foregoing, we believe that our CEO, together with the Chairpersons of our Audit, Compensation and Nominating & Governance Committees and our full Board, provides effective oversight of the Company's risk management function.

As part of the Company's cybersecurity initiatives, we have established the Cyber Security Council (CSC), a cybersecurity oversight committee composed of members of the management team. The CSC oversees and is responsible for the executive level supervision of the Company's cybersecurity risk, information security, and technology risk, as well as IT management's actions to identify, assess, mitigate, and remediate cyber related issues. The CSC receives regular quarterly reports from the Vice President of Information Technology on the Company's cybersecurity risk profile and enterprise cybersecurity program and meets with the Board's Audit Committee on at least a quarterly basis. The CSC annually reviews and recommends the Company's information security policy and information security program to the Board for approval. At least annually, the Board reviews and discusses the Company's technology strategy with the Vice President of Information Technology and approves the Company's technology strategic plan.

Board Committees

The Board has three standing committees with separate chairs - the Audit, Compensation, and Nominating & Governance Committees. Each of the Board committees is comprised solely of independent directors. The Audit Committee, Compensation Committee and Nominating & Governance Committee have each adopted a written charter that sets forth the specific responsibilities and qualifications for membership on the committee. The charters of these committees are available on our website at https://investors.ontoinnovation.com/governance/governance-documents/.

In 2021, the composition of and number of meetings held by the Company's Board committees were as follows:

Committee Chairperson	Committee Members	Number of Meetings Held in 2021
Audit Committee		
Christine A. Tsingos	Jeffrey A. Aukerman[1] Edward J. Brown, Jr. [2] Vita A. Cassese[1] Bruce C. Rhine Karen M. Rogge[3] Christopher A. Seams[4]	9
Nominating & Governance Committee		
Leo Berlinghieri	David B. Miller Bruce C. Rhine Christopher A. Seams	13
Compensation Committee		
Edward J. Brown, Jr.	Jeffrey A. Aukerman[1] Leo Berlinghieri[2] David B. Miller May Su[5] Christine A. Tsingos[2]	5

1 Committee member through the 2021 Annual Meeting.
2 Committee member effective as of the conclusion of the 2021 Annual Meeting.
3 Committee member effective as of appointment to the Board in September 2021.
4 Committee member effective as of the conclusion of the 2021 Annual Meeting through September 2021 and reappointed in January 2022.
5 Committee member effective as of appointment to the Board in March 2022.

Audit Committee

The Audit Committee assists the Board in fulfilling its responsibilities for general oversight of the integrity of our financial statements, our accounting policies and procedures and our compliance with legal and regulatory requirements. Among its functions, the Audit Committee is responsible for:

- The appointment, compensation, performance evaluation, retention and oversight of the Company's independent registered public accounting firm;
- The approval of services performed by the Company's independent registered public accounting firm;
- Reviewing the responsibilities, functions and performance of the Company's internal audit function;
- Reviewing the scope and results of internal audits and ongoing assessments of the Company's risk management processes;
- Reviewing and approving in advance any related party transactions; and
- Evaluating the Company's system of internal control over financial reporting and disclosure controls and procedures.

The report of our Audit Committee is found below under the caption "Audit Committee Report."

The Board has determined that each of the Audit Committee members meets the Audit Committee membership requirements set forth by the NYSE and the SEC, including that they be "independent" and financially literate. Furthermore, the Board has determined that Ms. Tsingos and Ms. Rogge each qualify as an "Audit Committee Financial Expert" as that term is defined under SEC rules and have "accounting or related financial management expertise" as contemplated by NYSE rules.

Compensation Committee

The Compensation Committee is responsible for the establishment of the policies upon which compensation of and incentives for the Company's executive officers will be based, the review and recommendation for approval by the independent members of the Board of the compensation of the Company's executive officers, and the administration of the Company's equity compensation plans.

In general, the Compensation Committee reviews and recommends for approval by the independent members of the Board the Company's compensation policies and practices and reviews and approves the executive officer salary levels and variable compensation programs, both cash-based and equity-based, benefits, severance and equity-based and other compensation plans, policies and programs. With respect to the compensation of the Company's CEO, the Compensation Committee reviews and approves the various elements of the CEO's compensation. With respect to other executive officers, including each of our named executive officers ("NEOs"), the Compensation Committee reviews and approves the compensation for such individuals presented to the Compensation Committee by the CEO and the reasons therefor and, in its discretion, may modify the compensation packages for any such individuals. The Compensation Committee has delegated to the Company's CEO the authority, within certain parameters, to approve the grant of restricted stock units ("RSUs") to employees and consultants who are not executive officers for purposes of Section 16 of the Exchange Act and hold positions below the level of vice president. All such grants are thereafter reviewed and ratified by the Compensation Committee. The Compensation Committee also reviews and recommends to the Board for approval the compensation policy for the Company's non-employee directors.

In accordance with its charter, the Compensation Committee may form, and delegate its authority to, subcommittees when appropriate. Further, the Compensation Committee has the authority to retain, and to terminate, any compensation consultants or other advisors to assist in the evaluation of director, CEO or executive officer compensation or other matters within the scope of the Compensation Committee's responsibilities and is directly responsible for the appointment, compensation and oversight of such consultants and other advisors, including their fees and other retention terms. From time to time, the Compensation Committee engages the services of such outside compensation consultants to provide advice on compensation plans and issues related to the Company's executive officer and non-executive officer employees. In 2021, the Compensation Committee engaged Compensia, Inc. ("Compensia") to provide such assistance to the Compensation Committee. The Compensation Committee also has authority to obtain advice and assistance from internal or external legal, accounting and other advisors.

Each current member of our Compensation Committee is a "non-employee" director within the meaning of Rule 16b-3 under the Exchange Act. The Board has determined that each of the Compensation Committee members meet the Compensation Committee membership requirements set forth by the NYSE and the SEC, including that they be "independent."

For further discussion of the Compensation Committee and its processes and procedures, please refer to the "Compensation Program Objectives, Design and Practices" section in the Compensation Discussion and Analysis below. The Compensation Committee Report is included under the caption "Compensation Committee Report on Executive Officer Compensation" in this Proxy Statement.

Nominating & Governance Committee

The responsibilities of the Nominating & Governance Committee include:

- Identifying prospective director nominees and recommending to the Board director nominees for the next Annual Meeting of stockholders and replacements of a director in the event of a vacancy on the Board;
- Recommending to the Board the appointment of directors to Board committees;
- Developing and recommending to the Board, and monitoring compliance with, the corporate governance principles and standards applicable to the Company;
- Managing the CEO selection process; and
- Together with our CEO, overseeing our Company's management succession planning.

The Nominating & Governance Committee also oversees the annual evaluation of the Board, the committees of the Board and the individual directors. Among other topics, the evaluation in general assesses:

- For both the Board and the committees:
  - Their structure and composition;
  - The format and content of meetings; and
  - The effectiveness of the Board and the committees, as applicable.
- For each individual director:
  - Their performance and approach to their directorship;
  - Their understanding of their role as a director;
  - Their understanding of critical aspects of the Company's business, products and strategy; and
  - Their skills, experience and ongoing training.

In addition, the Nominating & Governance Committee reviews the issues faced during the past year, assesses the Board's response and makes determinations as to whether additional resources or approaches might be applied to further optimize the handling of the issues. The goal of the evaluation is to identify and address any performance issues at the Board, committee or individual level, should they exist, identify potential gaps in the boardroom and to assure the maintenance of an appropriate mix of director skills and qualifications. Upon completion of the evaluation, the Nominating & Governance Committee provides feedback to the Board, the committees and the individual directors regarding the results of the evaluation and raises any issues that have been identified which may need to be addressed.

The Nominating & Governance Committee utilizes a variety of methods for identifying and evaluating potential candidates for joining the Board. For 2021, the Nominating & Governance Committee engaged Spencer Stuart, a global executive search and leadership consulting firm, to assist with this process. The Nominating & Governance Committee's general policy is to assess the appropriate size and needs of the Board and whether any vacancies are expected due to retirement or otherwise. In addition, candidates for director are typically reviewed in the context of the current composition of the Board, the operating requirements of the Company, the current needs of the Board, and the long-term interests of stockholders, with the goal of maintaining a balance of knowledge, experience and capability. In the event those vacancies are anticipated, or otherwise arise, the Nominating & Governance Committee will consider recommending various potential candidates to fill such vacancies. Candidates may also come to the attention of the Nominating & Governance Committee through its current members, stockholders or other persons.

The Board has determined that each of the Nominating & Governance Committee members meets the Nominating & Governance Committee membership requirements, including the independence requirements of the NYSE and SEC.

Other Committees

Our Board may from time to time establish other special or standing committees to facilitate the management of the Company or to discharge specific duties delegated to the committee by the full Board.

Compensation Committee Interlocks And Insider Participation

In 2021, no member serving on the Compensation Committee (Edward J Brown, Jr., Jeffrey A. Aukerman, Leo Berlinghieri, David B. Miller, Christine A. Tsingos) at any time during the year had any form of interlocking relationship as described in Item 407(e)(4) of Regulation S-K with the Company. Further, no member of the Compensation Committee as currently constituted in 2022 (Edward J Brown, Jr., Leo Berlinghieri, David B. Miller, May Su, Christine A. Tsingos) has any form of interlocking relationship as described in Item 407(e)(4) of Regulation S-K as of the date of this proxy statement.

Board Membership Criteria And Nominee Identification

The Nominating & Governance Committee of the Board determines the required selection criteria and qualifications of director nominees based upon the needs of the Company at the time nominees are considered. While the Nominating & Governance Committee has no specific minimum qualifications for director candidates, persons considered for nomination to the Board must demonstrate the following qualifications to be recommended by the Nominating & Governance Committee for election:

- The candidate must exhibit proven leadership capabilities, high integrity and experience with a high level of responsibilities within his or her chosen field;
- The candidate must possess the ability to apply good business judgment and be of sound mind and high moral character;
- The candidate must have no personal or financial interest that would conflict or appear to conflict with the interests of the Company;
- The candidate must be in a position to properly exercise his or her duties of loyalty and care and be willing and able to commit the necessary time for Board and committee service; and
- The candidate must have the ability to grasp complex principles of business, finance, international transactions and semiconductor inspection, metrology, lithography and related software technologies.

The Nominating & Governance Committee retains the right to modify these qualifications from time to time.

In selecting director nominees, the Nominating & Governance Committee considers, among other factors:

- The competencies and skills that the candidate possesses and the candidate's areas of qualification and expertise that would enhance the composition of the Board and further its ability to offer advice and guidance to management;
- How the candidate would contribute to the Board's overall balance of expertise, perspectives, backgrounds and experiences in substantive matters pertaining to the Company's business; and
- The candidate's demonstrated excellence in his or her field and commitment to rigorously representing the long-term interests of the Company's stockholders.

In its identification of director nominees, the Nominating & Governance Committee will consider how the candidate would contribute to the Board's overall balance of diversity of expertise, perspectives, backgrounds and experiences in substantive matters pertaining to the Company's business. When current Board members are considered for nomination for reelection, the Nominating & Governance Committee also takes into consideration their prior contributions to and performance on the Board and their record of attendance.

The Nominating & Governance Committee will consider the above criteria for nominees identified by the Nominating & Governance Committee itself, by stockholders, or through some other source. The Nominating & Governance Committee uses the same process for evaluating all nominees, regardless of the original source of nomination. The Nominating & Governance Committee may use the services of a third-party search firm to assist in the identification or evaluation of Board member candidates.

Consideration Of Director Nominees

The Nominating & Governance Committee has a formal policy with regard to consideration of director candidates recommended by the Company's stockholders, the Director Candidate Policy, which may be found on our website at:

https://investors.ontoinnovation.com/governance/governance-documents/

In accordance with the policy, the Nominating & Governance Committee will consider recommendations for candidates to the Board from stockholders of the Company holding no less than 1% of the Company's securities for at least twelve (12) months prior to the date of the submission of the recommendation. Stockholders wishing to recommend persons for consideration by the Nominating & Governance Committee as nominees for election to the Company's Board can do so by writing to the Office of the General Counsel of the Company at its principal executive offices giving:

- The candidate's name, age, business address and residence address;
- The candidate's detailed biographical data and qualifications including principal occupation and employment history;
- The class and number of shares of the Company which are beneficially owned by the candidate;
- The candidate's written consent to being named as a nominee and to serving as a director, if elected;
- Information regarding any relationship between the candidate and the Company in the last three (3) years;
- Any other information relating to the candidate that is required by law to be disclosed in solicitations of proxies for election of directors;
- The name and address of the recommending or nominating stockholder;
- The class and number of shares of the Company which are beneficially owned by the recommending or nominating stockholder; and
- A description of all arrangements or understandings between such stockholder and each nominee and any other person or persons (naming such person or persons) relating to the nomination.

Stockholders also have the right to directly nominate director candidates, without any action or recommendation on the part of the Nominating & Governance Committee or the Board, by following the procedures set forth in Section 2.5 of the Company's Bylaws.

Corporate Governance Guidelines

Our Board adopted corporate governance guidelines, a copy of which is available on our website under "Corporate Governance Summary" at:

https://investors.ontoinnovation.com/governance/governance-documents/

Codes Of Ethics

We have adopted a Code of Business Conduct and Ethics (applicable to all employees, executive officers and directors) and a Financial Information Integrity Policy (applicable to our financial officers, including our CEO and Chief Financial Officer ("CFO")) that set forth principles to guide all employees, executive officers and directors and establish procedures for reporting any violations of these principles. Copies of the Code of Business Conduct and Ethics and the Financial Information Integrity Policy may be found on our website at:

https://investors.ontoinnovation.com/governance/governance-documents/

or may be requested (without charge) by writing to:

Onto Innovation Inc.
Attention: Investor Relations
16 Jonspin Road
Wilmington, Massachusetts 01887

The Company will disclose any amendment to the Code of Business Conduct and Ethics and any waiver of a provision thereof applicable to its executive officers or directors, including the name of the executive officer or director to whom the waiver was granted, on our website at www.ontoinnovation.com, on the Investors page.

Corporate Social Responsibility

An important part of advancing the semiconductor industry through our innovation is being a socially responsible company. Our Company's core values of Passion, Integrity, Collaboration and Results underpin our commitments to sustainable growth and to making a positive contribution to people and the planet. We are committed to responsible and sustainable business practices and continuous improvement in our own operations, in our partnerships with our customers, across our supply chain and in our engagements with our other stakeholders. Our Company invests in environmental, social and governance ("ESG") initiatives across our business and integrates ESG principles into our day-to-day operations.

Business and Governance. Our Company has established a cross-functional ESG executive leadership team that is responsible for proposing goals, developing and executing strategy, and embedding ESG into our operations management system. This ESG leadership team provides regular updates to the Board and engages them to discuss ESG strategy, gain alignment on goals, and report on progress. Our Board is actively engaged in the Company's ESG oversight and has the primary responsibility for our ESG priorities. Board committees provide further guidance and oversight on relevant ESG topics including the Compensation Committee on workforce-related issues, the Audit Committee on information security and the Nominating & Governance Committee on ethics compliance.

Workplace. As described in the "Social Programs" section in our Corporate Social Responsibility Report, our Company strives to provide a work environment that fosters inclusion and diversity, ensures every voice is heard, and enables employees to achieve their full potential. Our Company aims to maintain a collaborative, supportive, and opportunity-rich culture that enhances innovation and employee engagement. We strive to protect the health and safety of our personnel throughout our entire operation, including our offices, manufacturing sites, research and development ("R&D") centers, and our field team working at customer sites.

Community. Our Company believes that positively involving our employees and giving back to our community is central to our culture and an expression of our core values. In 2021, the Company initiated RISE "Reimagining Initiatives for Society and the Environment" Teams, which have direct oversight from the ESG leadership team. These teams are formed at each location globally in order to promote local charitable giving including employee volunteer hours and employee donations. Our RISE Teams' philanthropy and volunteerism programs provide financial and human services to improve the quality of life in the communities in which we operate. We are committed to creating positive impacts in communities around the world by contributing to local, national, and international organizations that support community needs such as hunger, food and water security, disadvantaged children and senior citizens, health improvement, and environmental protection.

Sustainable Operations. Incorporating environmental sustainability into business leads to better products, more efficient operations, and added value for our customers. As the world tackles climate change and other critical environmental issues, our Company seeks to do our part by responsibly managing our impact with global goals for energy efficiency, greenhouse gas emissions, water conservation, and waste reduction. We carefully monitor and manage our environmental impact across our business and work to implement cost-effective best practices, focusing our efforts where we believe we can have the biggest long-term impact. Our Company looks at impacts from procurement to manufacturing, during R&D and product design, and throughout a product's lifecycle. We carefully manage our greenhouse gas emissions, set goals, and report progress annually through our annual ESG report.

Products and Customers. Our Company demands excellence in our quality and environmental performance, as demonstrated through our product and process qualification commitments, which resulted in our ISO 9001 Quality Management certification. We continuously strive to develop innovative products and solutions that help our customers improve their product yields and reduce the amount of scrapped materials. We achieve this through our monitoring processes and through the alerting of customers via our software products before specification limits are reached, thereby avoiding the scrap that could result from customer product test failures. In addition, our equipment meets or exceeds safety requirements and incorporates higher throughput to reduce the energy required to process customer products on a per unit basis, benefiting our customers and the environment. Our Company also strives to extend the life of our products and solutions to enable our customers to realize greater value from our products with a potentially lower environmental impact.

Responsible Supply Chain. Our Company understands the importance of an ethical, responsible, resilient, and diverse supply chain, and we engage with our suppliers to address a wide range of issues including human rights, supplier diversity, environmental impact, and mineral sourcing. We are a strong proponent of supply-chain-related industry standards and uphold the guidelines published by the Responsible Business Alliance (“RBA”). Since joining in 2021, the Company has been an affiliate member of the RBA, the world’s largest industry coalition dedicated to corporate responsibility in global supply chains. Beginning in 2022, our direct suppliers will be expected to adhere to our Global Supplier Code of Conduct, which incorporates the RBA code of conduct and covers topics such as ethics, integrity, transparency, anti-corruption, conflict minerals, human trafficking, environmental sustainability, and social responsibility. Acknowledgment of and consent to adhere to our Global Supplier Code of Conduct is a mandatory requirement of our new supplier onboarding process.

For more information about our ESG efforts, please refer to our Annual Corporate Social Responsibility Report available in the Company section of our website at https://ontoinnovation.com/company/corporate-social-responsibility. Our Corporate Social Responsibility Report shall not be deemed “filed” with the SEC for purposes of federal securities law, and it shall not be incorporated by reference into any of the Company’s current, past or future SEC filings unless specifically noted in such filing. The information contained on our website is not part of this document and the ESG report shall not be deemed soliciting material.

Related Person Transactions Policy

There have been no “related person transactions” from December 27, 2020 to the date of this proxy statement, nor are there any currently proposed “related person transactions,” involving any director, director nominee or executive officer of the Company, any known 5% stockholder of the Company or any immediate family member of any of the foregoing persons (which are referred to together as “related persons”). A “related person transaction” generally means a transaction involving more than $120,000 in which the Company (including any of its subsidiaries) is a participant and in which a related person has a direct or indirect material interest.

The Board has adopted policies addressing the Company’s procedures with respect to the review, approval and ratification of “related person transactions” that are required to be disclosed pursuant to Item 404(a) of Regulation S-K. Our related person practices and policies are designed to ensure that our directors, officers and employees are proactively screened from any conflicts of interests that may interfere with their obligations to the Company. Our policies are included in our corporate governance documents, including our Code of Business Conduct and Ethics, the Audit Committee Charter and Summary of Corporate Governance Policies, each of which is available on the Investors section of our website located at:

https://investors.ontoinnovation.com/governance/governance-documents/

- Pursuant to our Code of Business Conduct and Ethics, our directors, officers and employees are required to avoid any actual or apparent conflicts of interest (other than conflicts of interest that have received appropriate approval as described below), which includes taking actions or having interests that may interfere with the objective or efficient performance of such person’s duties to the Company or that may result in such person receiving improper personal benefits as a result of their position with the Company.
- Pursuant to our Summary of Corporate Governance Policies, if a director becomes involved in any activity or interest that may result in an actual or potential conflict (or the appearance of a conflict) with the interests of the Company, that director is required to disclose such information promptly to the Board, which will determine an appropriate resolution on a case-by-case basis. This policy further reflects that all directors must recuse themselves from any discussion or decision affecting their personal, business or professional interests. Similarly, our Board will determine the appropriate resolution of any actual or potential conflict of interest involving our CEO, and our CEO will determine the appropriate resolution of any conflict-of-interest issue involving any other officer of the Company. When necessary or appropriate, resolution of such issues may require consideration of the matter by the Audit Committee.

Pursuant to both the Board’s Summary of Corporate Governance Policies and the Audit Committee Charter, the Audit Committee, which consists entirely of independent directors, will review any proposed transaction in which the Company or its subsidiaries are to participate if the amount involved in the transaction exceeds $120,000 and any related person may have a direct or indirect material interest in the transaction. The Audit Committee will consider the facts and circumstances and will approve or ratify a proposed transaction if the Audit Committee considers it appropriate and believes that such transaction will serve the long-term interests of our stockholders. The Compensation Committee of the Board reviews and recommends to the Board for approval compensation decisions for Board members and employees of the Company as directed by the Board pursuant to the Compensation Committee Charter.

Communications With The Board Of Directors

We have a formal policy regarding communications with the Board, our Stockholder & Interested Party Communications Policy, which is found on our website at https://investors.ontoinnovation.com/governance/governance-documents/.

Stockholders may communicate with the Board, any of the Company's Board committees (Audit, Compensation or Nominating & Governance) or any of the Company's directors by writing to:

Onto Innovation Inc.
Office of the General Counsel
16 Jonspin Road
Wilmington, Massachusetts 01887

and such communications will be forwarded to the intended recipient(s) to the extent appropriate. Prior to forwarding any communication, the General Counsel will review it and, in his or her discretion, will not forward a communication deemed to be of a commercial nature or otherwise inappropriate.

PROPOSAL 1

ELECTION OF DIRECTORS

Nominees

The Board currently has nine (9) members. Effective as of the conclusion of the 2022 Annual Meeting of Stockholders, the authorized number of directors for the Board will be reduced to seven (7) members. All current directors are standing for election at the Annual Meeting with the exception of Edward J. Brown, Jr. and Bruce C. Rhine, each of whom has notified the Board of his intention to retire at the end of his current term as director.

The Company's Amended and Restated Certificate of Incorporation provides that at each annual meeting of stockholders, each director of the Company shall be elected to hold office, and shall serve, until the expiration of the term for which he or she is elected and until his or her successor is duly elected and qualified or until his or her death, resignation, or removal; except that if any such election shall not be so held, such election shall take place at a stockholders' meeting called and held in accordance with the General Corporation Law of the State of Delaware.

Based on the recommendation of the Nominating & Governance Committee, the seven (7) director nominees approved by the Board for inclusion in this proxy statement and for election at the Annual Meeting are:

Leo Berlinghieri   David B. Miller   Michael P. Plisinski
Karen M. Rogge   Christopher A. Seams   May Su   Christine A. Tsingos

Each nominee is currently serving as a director of Onto Innovation. In making its recommendations, the Nominating & Governance Committee considered a number of factors, including its criteria for Board membership, which include the qualifications that must be possessed by a director candidate in order to be nominated for a position on our Board. Each nominee has indicated that he or she will serve if elected. Unless otherwise instructed, the proxy holders will vote the proxies received by them for the Company's seven (7) nominees. In the event that any nominee of the Company becomes unable or unavailable to serve as a director at the time of the Annual Meeting (which we do not anticipate), the proxy holders will vote the proxies for any substitute nominee who is designated by the current Board to fill the vacancy. Alternatively, the Board, in its discretion, may elect to reduce the number of directors serving on the Board. We do not have any reason to believe that any of the nominees will be unable or will decline to serve as a director.

Board Composition And Refreshment

A priority of the Nominating & Governance Committee and the Board as a whole is making certain that the composition of the Board reflects the desired professional experience, skills and backgrounds in order to present an array of viewpoints and perspectives, help develop and execute strategy for the future and effectively represent the long-term interests of stockholders. Further, the Board recognizes the importance of Board refreshment in order to continue to achieve an appropriate balance of tenure, turnover, diversity and skills on the Board.

Vote Required

Pursuant to the Company's Bylaws, our directors are elected by the affirmative vote of the majority of the votes cast (provided, however, that if the number of nominees exceeds the number of directors to be elected, directors will be elected by a plurality voting standard). In order for a director in an uncontested election to be elected, the number of votes cast "for" his/her election must exceed the number of votes cast "against" his/her election (with "abstentions" and "broker non-votes" not counted as a vote cast either "for" or "against" that director's election). If a nominee who is an incumbent director in an uncontested election receives a greater number of "against" votes for election than "for" votes in an uncontested election and is not elected, our Summary of Corporate Governance Policies provides that such director must promptly tender a resignation to the Board. Our Nominating & Governance Committee would then make a recommendation to the Board on whether to accept or reject the tendered resignation, or whether other action should be taken. Within ninety (90) days after the date of the certification of the election results, our Board will act on any such tendered resignation and publicly disclose (in a press release, a filing with the SEC or other broadly disseminated means of communication) its decision regarding the tendered resignation and the rationale behind the decision.

Information About The Nominees And Continuing Directors

Our Board and its Nominating & Governance Committee believe that all of the directors and nominees are highly qualified and have demonstrated leadership skills and have experience and judgment in areas that are relevant to our business. We believe that their ability to challenge and stimulate management and their dedication to the affairs of the Company collectively serve the interests of the Company and its stockholders.

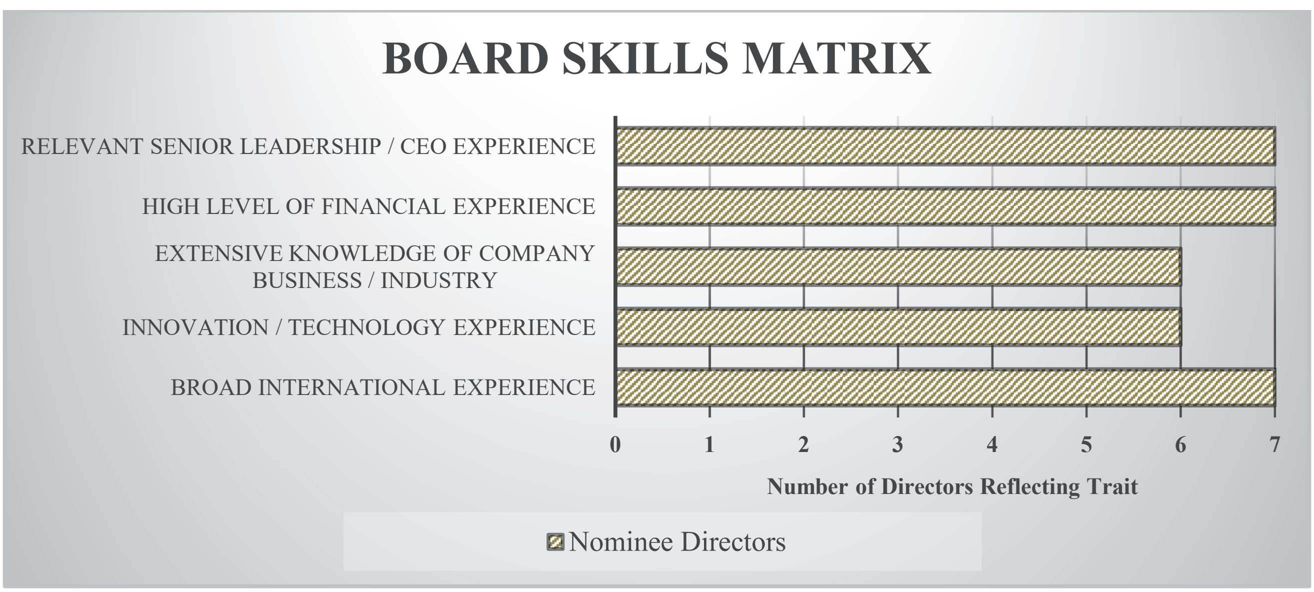
The seven (7) nominees for director are set forth below. All information is as of the record date.

Name	Position	Board Tenure(1)
Nominee Directors:		
Leo Berlinghieri	Former Chief Executive Officer and President, MKS Instruments, Inc.	13.5 years
Michael P. Plisinski	Chief Executive Officer, Onto Innovation Inc.	6.4 years
David B. Miller	Former President, DuPont Electronics & Communications	6.7 years
Karen M. Rogge	President RYN Group LLC, and Former Senior Vice President and CFO Extreme Networks	0.5 years
Christopher A. Seams	Former CEO, Deca Technologies	6.6 years
May Su	President of Kateeva, Inc.	<0.1 years
Christine A. Tsingos	Former Executive Vice President and CFO, Bio-Rad Laboratories	7.9 years

(1) Board Tenure includes time served on the Rudolph Board of Directors or the Nanometrics Board, as applicable, prior to the Merger Date.

Except as discussed below, each nominee has been engaged in the principal occupation set forth above during the past five (5) years. There are no family relationships between any directors or executive officers of the Company. The Nominating & Governance Committee considered the professional experience, skills and backgrounds of the nominees and recommended the nominees to the full Board.

The following reflects additional information regarding the background and qualifications of our director nominees, including the experience and skills that support the Board's determination that each director nominee should serve on our Board.



The nominee directors for 2022 voluntarily self-identified with regard to the following diversity characteristics:

- Gender Self-Identification: 57% Male / 43% Female
- Race/Ethnicity Identification: 86% White / 14% Asian
- LGBTQ+ Identification: None

NOMINEES FOR DIRECTOR

Leo Berlinghieri

Director Since:	September 2008
Age:	68
Independent Status:	Independent Director
Board Committee(s):	Nominating & Governance (Chair), Compensation
Other Boards Served:	Unipower, LLC (2017-2019) MKS Instruments, Inc. (2005-2013) Massachusetts High Technology Council, Inc. (2006-2013)

From July 2005 to December 2013, Mr. Berlinghieri served as Chief Executive Officer and President of MKS Instruments, Inc., a critical subsystem and instrument provider to the semiconductor industry. From April 2004 to July 2005, Mr. Berlinghieri served as President and Chief Operating Officer and prior to that served as Vice President and Chief Operating Officer from July 2003 to April 2004 for MKS Instruments, Inc.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Served for over eight (8) years as Chief Executive Officer and President of MKS Instruments, Inc. Additional prior experience as Vice President and Chief Operating Officer of the company, among other senior management roles.

High Level of Financial Experience

- Substantial financial experience gained in roles as Chief Executive Officer, President and Vice President and Chief Operating Officer with MKS Instruments, Inc.

Broad International Exposure

- Gained extensive international experience in various roles with MKS Instruments, Inc., including Chief Executive Officer, Chief Operating Officer and Vice President of Global Sales and Service.

Extensive Knowledge of Company Business/Industry

- Over thirty-three (33) years of experience in the semiconductor industry, including eight (8) years at the helm of MKS Instruments, Inc., a public corporation. Also served on the SEMI North America Advisory Board (NAAB) including as its chairman in 2009.

Innovation/Technology Experience

- Broad array of technological experience with MKS Instruments, Inc., including roles in manufacturing, customer support, and sales in addition to his roles as Chief Executive Officer and Chief Operating Officer.

David B. Miller

Director Since:	July 2015
Age:	65
Independent Status:	Independent Director
Board Committee(s):	Compensation, Nominating & Governance
Other Boards Served:	President, University of Virginia School of Engineering & Applied Science Foundation (since 2011) Merrimac Industries, Inc. (2002-2008) SEMI International (2011-2015) North Carolina Chamber of Commerce (2010-2015)

Mr. Miller served as the Rudolph non-executive Chairman from August 2018 through the Merger Date. From June 1981 to November 2015, Mr. Miller served in various positions, most recently as President, with DuPont Electronics &

Communications, an electronic materials company. Mr. Miller holds a Bachelor of Science degree. in Electrical Engineering from the University of Virginia.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Served as President of DuPont Electronics & Communications.

High Level of Financial Experience

- Substantial financial experience gained in roles with DuPont Electronics & Communications including as President of the company. Oversight of complex financial transactions, profit and loss responsibility and investor relations during prior operations and leadership roles with this company.

Broad International Exposure

- Served as President of DuPont Electronics & Communications, a global electronic materials company. Served on several joint venture boards in the U.S. and Asia while with DuPont Electronics & Communications as well as on the board of SEMI International. Resided in Tokyo, Japan for three (3) years.

Extensive Knowledge of Company Business/Industry

- Forty (40) years of experience within the electronics industry including six (6) years at the helm of DuPont Electronics & Communications, which in addition to other markets, served the semiconductor industry.

Innovation/Technology Experience

- Significant experience and leadership roles with DuPont Electronics & Communications, overseeing the company's technology advancement, breadth of process expertise and ongoing innovation.

Michael P. Plisinski

Director Since:	November 2015
Age:	52
Independent Status:	Non-Independent Director
Board Committee(s):	None
Other Boards Served:	Cognizer.AI (since August 2020)

Mr. Plisinski has served as the Company's Chief Executive Officer since the Merger Date and was previously Chief Executive Officer of Rudolph from November 2015 through the Merger Date. Prior to his appointment as Rudolph's CEO, Mr. Plisinski served as Rudolph's Executive Vice President and Chief Operating Officer from October 2014 to November 2015 and as Vice President and General Manager, Data Analysis and Review Business Unit from February 2006, when Rudolph merged with August Technology Corporation ("August Technology"), a provider of process control equipment for thin film measurement and macro defect inspection, until October 2014. From February 2004 to February 2006, Mr. Plisinski served as August Technology's Vice President of Engineering and, from July 2003 to February 2004, as its Director of Strategic Marketing for review and analysis products. Mr. Plisinski joined August Technology as part of the acquisition of Counterpoint Solutions, a supplier of optical review and automated metrology equipment to the semiconductor industry, where he was both sole founder and President from June 1999 to July 2003. Mr. Plisinski has a Bachelor of Science degree in Computer Science from the University of Massachusetts and has completed the Advanced Management Program from Harvard Business School.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Serving as Chief Executive Officer of Onto Innovation with prior experience as Chief Executive Officer of Rudolph, Chief Operating Officer and Vice President of Rudolph, General Manager of the Rudolph's Data Analysis and Review Business Unit, among other senior management positions.

High Level of Financial Experience

- Substantial financial experience gained in roles as Chief Executive Officer of the Company and Rudolph and Chief Operating Officer and Vice President, General Manager of the Data Analysis and Review Business Unit of Rudolph.

Broad International Exposure

- Extensive experience working with the Asian and European customers of the Company through the various roles held with Rudolph, August Technology and the Company.

Extensive Knowledge of Company Business/Industry

- Over eighteen (18) years of dedicated experience with the Company, Rudolph and August Technology and an additional four (4) years as founder of an optical review and automated metrology start-up company, each serving the semiconductor industry.

Innovation/Technology Experience

- Technological and innovative experience includes leadership roles in both engineering and software development while with Rudolph and August Technology. Prior entrepreneurial experience in the founding of optical review and automated metrology equipment company Counterpoint Solutions.

Karen M. Rogge

Director Since:	September 2021
Age:	67
Independent Status:	Independent Director
Board Committee(s):	Audit
Other Boards Served:	Rambus Inc. (since April 2021)
	GigCapital6 Inc. (since December 2021)
	Kemet Corporation (2018-2020)
	AeroCentury Corp. (2017-2018)

Ms. Rogge is president of the RYN Group LLC, a management consulting business, which she founded in 2010. She served as the Interim Vice President and Chief Financial Officer of Applied Micro Circuits Corporation, a semiconductor company, from 2015 to 2016. Previously, Ms. Rogge served as the Senior Vice President and Chief Financial Officer of Extreme Networks, a computer network company, from 2007 to 2009. Earlier in her career, she held executive financial and operations management positions at Hewlett Packard Company and Seagate Technology. Ms. Rogge holds an MBA degree from Santa Clara University, and a Bachelor of Science degree in business administration from California State University, Fresno. She maintains an NACD Board Leadership Fellow credential and has attended the Stanford Directors College.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Served in Vice Presidential and Chief Financial Officer roles for both Applied Micro Circuits Corporation and Extreme Networks with additional prior senior leadership experience with Hewlett Packard Company and Seagate Technology.

High Level of Financial Experience

- Substantial financial experience gained in roles as Chief Financial Officer of Applied Micro Circuits Corporation and Extreme Networks as well as with executive financial and operations roles held with Hewlett Packard Company and Seagate Technology.

Broad International Exposure

- Gained international experience as Chief Financial Officer of Applied Micro Circuits Corporation and Extreme Networks, two multinational companies, as well as through other executive financial and operations management positions at Hewlett Packard Company and Seagate Technology.

Innovation/Technology Experience

- Broad array of technological exposure, interaction and understanding through executive financial and operations management roles with multiple companies in the technology and semiconductor spaces.

Christopher A. Seams

Director Since:	August 2015
Age:	59
Independent Status:	Independent Director
Board Committee(s):	Audit, Nominating & Governance
Other Boards Served:	Xperi Holding Corporation (since June 2020)
	Xperi Corporation (2013-2020)
	Tessera Technologies, Inc. (2013-2016)

Mr. Seams served as Chief Executive Officer of Deca Technologies, a wafer level electronic interconnect solutions provider to the semiconductor industry, from June 2013 to August 2016. Prior to Deca Technologies, Mr. Seams served as Executive Vice President of sales and marketing at Cypress Semiconductor, a semiconductor design and manufacturing company, and held various technical and operational management positions in its manufacturing, development and operations. Prior to joining Cypress in 1990, Mr. Seams worked in process development for Advanced Micro Devices and Philips Research Laboratories. Mr. Seams earned his Bachelor of Science degree in electrical engineering from Texas A&M University and his master's degree in electrical and computer engineering from the University of Texas at Austin. Mr. Seams has a Professional Certificate in Advanced Computer Security from Stanford University and is a senior member of the Institute of Electrical and Electronics Engineers. Mr. Seams is a member of the American College of Corporate Directors as well as a member and Certified Director of the National Association of Corporate Directors.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Served as Chief Executive Officer of Deca Technologies as well as in additional senior leadership roles within the semiconductor industry including with Cypress Semiconductor.

High Level of Financial Experience

- Substantial financial experience gained in roles as Chief Executive Officer of Deca Technologies as well as with executive roles held in the semiconductor industry.

Broad International Exposure

- Extensive international experience as Chief Executive Officer of Deca Technologies, Executive Vice President of sales and marketing at Cypress Semiconductor as well as through other management roles with both Cypress and other semiconductor companies with which he worked.

Extensive Knowledge of Company Business/Industry

- Over thirty (30) years of dedicated experience within the semiconductor industry.

Innovation/Technology Experience

- Technological and innovative experience gained through an array of technical and operational management positions in manufacturing, development and operations for Cypress Semiconductor as well as in process development for Advanced Micro Devices and Philips Research Laboratories.

May Su

Director Since:	March 2022
Age:	64
Independent Status:	Independent Director
Board Committee(s):	Compensation
Other Boards Served:	Kateeva, Inc. (since March 2020)

Ms. Su is Chief Executive Officer of Kateeva, Inc., a position she has held since March 2020. Kateeva, Inc. is a company that builds inkjet deposition equipment solutions. Prior to becoming Chief Executive Officer, Ms. Su served as Kateeva's Chief Marketing Officer, starting in January 2018 and added the role of Senior Vice President of Sales in May 2019. Before joining Kateeva Ms. Su was an independent consultant from 2016 to 2018. Prior to this, from 2009 to 2016 Ms. Su served in an array of senior management roles including Vice President, Strategic Marketing and Vice President Strategic OEM Sales for Brooks Automation, Inc., a provider of automation, vacuum and instrumentation equipment for multiple markets, including semiconductor manufacturing, technology device manufacturing and life sciences, and Vice President & General Manager for Crossing Automation, a manufacturer of fab and tool automation products. Prior to joining Brooks Automation in 2009, Ms. Su was President of U.S. & European Field Operations for Nova Measuring Instrument, Inc., a provider of metrology devices for advanced process control used in semiconductor manufacturing as well as additional senior management roles with Aviza Technology, Inc., New-Wave Research, KLA-Tencor Corporation and Lam Research Corporation. Ms. Su holds a Bachelor of Science degree in mechanical engineering from Cornell University, a master's in mechanical engineering from University of California-Berkeley, and an MBA from Santa Clara University, Leavey School of Business.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Currently serving as Chief Executive Officer of Kateeva, Inc. and has held additional senior leadership roles with Brooks Automation, Inc., Nova Measuring Instrument, Inc., Aviza Technology, Inc., New-Wave Research, KLA-Tencor Corporation and Lam Research Corporation.

High Level of Financial Experience

- Substantial financial experience gained in roles as Chief Executive Officer of Kateeva, Inc., as well as with other executive and general manager roles held in the semiconductor industry.

Broad International Exposure

- Extensive international experience as Chief Executive Officer of Kateeva, Inc. and through her other management roles including, but not limited to President of U.S. and European Field Operations for Nova Measuring Instruments and Strategic Sales Manager of Asia Operations for Lam Research.

Extensive Knowledge of Company Business/Industry

- Over 40 years of experience within the semiconductor capital equipment industry arising from her general management and sales roles with companies such as Nova Measuring Instruments, Lam Research, KLA-Tencor, and Brooks Automation.

Innovation/Technology Experience

- Began her career in design engineering and project management roles at KLA Instruments and Lam Research and expanded her technological experience through an array of senior executive roles in Marketing, Sales and Business Development with KLA Tencor Corporation, Brooks Automation, Nova Measuring Instruments, New-Wave Research, Aviza Technology and Kateeva, Inc.

Christine A. Tsingos

Director Since:	May 2014
Age:	63
Independent Status:	Independent Director
Board Committee(s):	Audit (Chair), Compensation
Other Boards Served:	Envista Holdings Corporation (since September 2019)
	Varex Imaging Corporation (since February 2017)
	Codex DNA (since May 2021)

Ms. Tsingos served as the Executive Vice President and Chief Financial Officer of Bio-Rad Laboratories, a manufacturer and distributor of life science research and clinical diagnostics products, from December 2002 through May 2019. Prior to Bio-Rad, Ms. Tsingos held executive positions at Autodesk, The Cooper Companies, and Attest Systems. Ms. Tsingos earned her Bachelor of Arts degree in International Studies from the American University in Washington, D.C. and an M.B.A in International Business from the George Washington University. In 2010, Ms. Tsingos was awarded the prestigious Bay Area CFO of the Year.

Specific Qualifications, Attributes, Skills and Experience

Relevant Senior Leadership / CEO Experience

- Served as Executive Vice President and Chief Financial Officer of Bio-Rad Laboratories.

High Level of Financial Experience

- Over thirty (30) years of financial and operational experience with a series of companies including sixteen (16) years of service as Chief Financial Officer of Bio-Rad Laboratories.

Broad International Exposure

- Comprehensive international experience through service as Chief Financial Officer of Bio-Rad Laboratories.

Innovation/Technology Experience

- Significant experience and knowledge of both the Company and the semiconductor industry derived from eight (8) years of dedicated service on the Nanometrics and Company Board of Directors.

The Board unanimously recommends voting
“FOR” all of the nominees set forth above.

Compensation Of Directors

Directors who are employees of the Company receive no compensation for their services as members of the Board. Director compensation for non-employee members of the Board is a mix of cash and equity-based compensation, which is largely comprised of the equity component to align the interests of our directors with the Company's long-term performance and stockholder interests. The components of the compensation for 2021 Board service of directors who are not employees of the Company are as follows:

Board Compensation Element	Amount/Value
Annual Retainer	$70,000 (1)
Annual Equity Grant (in RSUs)	$150,000 (2)
Committee Chair Stipend	
Audit	$20,000 (1)
Compensation	$15,000 (1)
Nominating & Governance	$10,000 (1)
Committee Member Stipend	
Audit	$10,000 (1)
Compensation	$7,500 (1)
Nominating & Governance	$5,000 (1)
Board Chair Stipend	$50,000 (1)
Initial Equity Grant (in RSUs)	$150,000 (3)

(1) Paid subsequent to the director election results at the Annual Meeting of Stockholders.

(2) Awarded at the second quarter Board meeting in a number of shares calculated by dividing the listed amount by the closing stock price per share of Company Common Stock on the date of grant.

(3) Awarded as of the first Board meeting following election or appointment and calculated in the same manner as the annual equity grant above but prorated by the number of quarters between such first meeting and the date on which the next annual equity grant is scheduled to be awarded.

Any initial equity grants and/or annual equity grants typically vest on the first anniversary of the grant date. Equity awards granted to directors are granted under and subject to the terms of the Onto Innovation Inc. 2020 Stock Plan (the "2020 Stock Plan").

For the fiscal year ended January 1, 2022, the directors, excluding the directors who are employees, received total compensation indicated in the table below. There were no option awards, non-equity incentive plan compensation, or pension and nonqualified deferred compensation earnings granted to such directors. They did not earn any type of compensation during the year other than what is disclosed in the following table:

Name	Fees Earned or Paid in Cash	Stock Awards [1]	All Other Compensation	Total
Jeffrey A. Aukerman[2]	$0	$0	$0	$0
Leo Berlinghieri	$87,500	$153,625	$0	$241,125
Edward J. Brown, Jr.	$95,000	$153,625	$0	$248,625
Vita A. Cassese[2]	$0	$0	$0	$0
David B. Miller	$82,500	$153,625	$0	$236,125
Bruce C. Rhine	$85,000	$153,625	$0	$238,625
Karen M. Rogge[3]	$40,000	$76,891	$0	$116,891
Christopher A. Seams	$135,000	$153,625	$0	$288,625
May Su[4]	N/A	N/A	N/A	N/A
Christine A. Tsingos	$97,500	$153,625	$0	$251,125

(1) Represents the grant date fair value for each share-based compensation award granted during the year, calculated in accordance with FASB ASC Topic 718. The assumptions used in determining the grant date fair value of these awards are set forth in Note 11 to our consolidated financial statements, which are included in our Annual Report on Form 10-K for the fiscal year ended January 1, 2022 filed with the SEC. As of January 1, 2022, our directors had the following stock awards outstanding: Mr. Berlinghieri – 2,500 RSUs; Mr. Brown, Jr. – 2,500 RSUs; Mr. Miller – 2,500 RSUs; Mr. Rhine – 2,500 RSUs; Ms. Rogge – 850 RSUs; Mr. Seams – 2,500 RSUs; and Ms. Tsingos – 2,500 RSUs.

(2) Mr. Aukerman and Ms. Cassese did not stand for re-election to the Board on May 11, 2021.

(3) Ms. Rogge joined the Board in September 2021. Her fees and stock awards were pro-rated in accordance with the Company's director compensation policy.

(4) Ms. Su did not join the Board until March 2022.

Stock Ownership/Retention Guidelines For Directors

The Company has established guidelines related to stock ownership and retention for its non-employee directors. Currently, the guidelines require that each non-employee director of the Company own shares of Company Common Stock valued at a minimum of three (3) times the amount of the director's annual cash retainer. For a new director, the stock holding requirement is to be attained within five (5) years of his or her initial election or appointment to the Board.

Compliance with the Company's stock ownership and retention guidelines is reviewed annually by the Compensation Committee. As of their last review on January 24, 2022, the Compensation Committee determined that all executive officers and directors who were with the Company and acting in their executive officer/director capacities for periods in excess of one (1) year were in compliance with the ownership requirements.

PROPOSAL 2

ADVISORY VOTE ON EXECUTIVE OFFICER COMPENSATION

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act, enables our stockholders to vote to approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement in accordance with SEC rules. Consistent with the recommendation of the Board and the preference of our stockholders as reflected in the non-binding advisory vote on the frequency of future advisory votes on named executive officer compensation held at the Nanometrics 2017 Annual Meeting of Stockholders, the Company currently holds an annual “say on pay” vote. In accordance with this policy, this year we are requesting our stockholders to approve an advisory resolution on the Company’s executive officer compensation as reported in this Proxy Statement, and as required by Section 14A(a)(1) of the Exchange Act.

Our executive officer compensation arrangements are designed to enhance stockholder value on an annual and long-term basis. These arrangements are consistent with our compensation philosophy and pay-for-performance principles and, as such, have been designed to provide competitive compensation packages that enable the Company to attract and retain talented executive officer officers, motivate executive officers to achieve the Company’s short- and long-term business strategies and objectives, align the interests of executive officers with those of stockholders, and are consistent with current market practices and good corporate governance principles. Please read the Compensation Discussion and Analysis beginning on page 34 of this proxy statement and the tabular and additional narrative disclosures on executive officer compensation beginning on page 55 of this proxy statement for additional details about our executive officer compensation arrangements, including information about the fiscal year 2021 compensation of our named executive officers.

We are asking our stockholders to indicate their support for our compensation arrangements as described in this proxy statement.

For the reasons discussed above, the Board recommends that stockholders vote in favor of the following resolution:

> “**RESOLVED,** that the Company’s stockholders APPROVE, on an advisory basis, the compensation paid to the Company’s named executive officers, as disclosed in the proxy statement for this meeting pursuant to Item 402 of Regulation S-K, including the Compensation Discussion and Analysis, compensation tables and narrative discussion and other related tables and disclosures.”

Because your vote is advisory, it will not be binding upon or overrule any decisions of the Board, nor will it create any additional fiduciary duty on the part of the Board. This advisory vote is not intended to address any specific item of compensation, but rather the overall compensation of our named executive officers and our compensation philosophy, policies and practices described in this proxy statement, and does not seek to have the Board or Compensation Committee take any specific action. However, the Board and the Compensation Committee value the views expressed by our stockholders in their vote on this proposal and will take into account the outcome of the vote when considering executive officer compensation matters in the future.

Vote Required

The affirmative vote, in person or by proxy, of a majority of the shares present or represented at the meeting and entitled to vote will be required to approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in this proxy statement.

The Board recommends a vote “FOR” the approval of the compensation of the named executive officers as disclosed in this proxy statement pursuant to Item 402 of Regulation S-K as required by Section 14A(a)(1) of the Exchange Act.

PROPOSAL 3

RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Although ratification by stockholders is not required by law, the Board is submitting the Audit Committee's selection of Ernst & Young LLP ("EY") as the Company's independent registered public accounting firm for fiscal year 2022 for ratification as a matter of good corporate governance and recommends that the stockholders vote for ratification of such appointment. In the event of a negative vote on such ratification, the Board will reconsider its selection. Even if the selection is ratified, the Audit Committee may appoint a new independent registered public accounting firm at any time during the year if the Audit Committee believes that such a change would be in the best interests of the Company and its stockholders. EY has indicated that representatives of EY, the independent registered public accounting firm presented herein, will be in attendance at the Annual Meeting. Such representatives will have the opportunity to make a statement, if they desire to do so, and to respond to appropriate questions.

Independent Registered Public Accounting Firm Selection Process

EY served as the independent registered public accounting of firm for Rudolph (the accounting acquirer in the merger with Nanometrics) since 2008 and has been the Company's independent registered public accounting firm since the Merger Date, serving in this role during fiscal 2021. During this time, the firm has demonstrated:

- A high degree of independence and professionalism in their audit engagement with the Company;
- A solid record of partner and professional staff continuity;
- A knowledge of current and emerging accounting and auditing issues affecting the Company;
- A deep and ongoing understanding of the Company's business model and industry; and
- A readiness to assist the Company and its audit committee in keeping up to date with the latest accounting and auditing pronouncements and their application to the Company's business.

In making its selection of an independent registered public accounting firm, the Audit Committee assesses, among other factors:

- The performance of the independent registered public accounting firm in the prior year;
- The anticipated needs of the Company and ability of the accounting firm to address them in the coming year;
- The proposed fees for the coming year; and
- The potential impact of changing auditors for the coming year.

Ultimately, the selection of the independent registered public accounting firm is made with the best interest of the Company and its stockholders in mind.

Factors Used To Assess Independent Registered Public Accounting Firm Quality

Members of the Audit Committee have experience in dealing with audits of other public companies as well as experience with other accounting firms. After the Merger Date, the Audit Committee's basis for the selection of EY as the Company's independent registered public accounting firm included, among other considerations, familiarity with Rudolph's accounting practices as the accounting acquirer in the 2019 Merger, EY's breadth of services and international footprint as well as expense considerations. On an ongoing basis, EY has been responsive, reliable and professional in their dealings with the Audit Committee and has appropriately assisted the Audit Committee in its oversight of the Company's financial processes and financial statements. In addition, EY makes available to the Company specialists within their firm to assist in the audit when consultation on specific and unique issues arise. These processes appear to be effective in assisting EY with their audit engagement.

As a part of the Audit Committee's review of EY's qualifications, EY provides the Company with the firm-wide comments from the Public Company Accounting Oversight Board (PCAOB) regarding PCAOB's examinations of EY for the prior year. EY also updates the Company with the quality improvements that the firm has made as a result of the PCAOB comments as well as other changes to their quality and risk assessment processes.

Audit Committee's Involvement In The Lead Partner Selection

In accordance with SEC and PCAOB independence guidelines, EY employs a regular schedule of rotation of the both the lead engagement partner ("Lead Partner") and the supporting audit staff. Such a regularly scheduled rotation provides for sufficient overlap of the new Lead Partner with the outgoing Lead Partner. This process allows for the members of the Audit Committee and the Company management to become familiar with the new Lead Partner and new staff and to introduce them to the Company's business. Prior to the new Lead Partner's full engagement, the Audit Committee and Company management meet with EY to review and offer feedback on the industry experience, financial acumen and anticipated fit of the new Lead Partner with the Company.

Audit Committee Pre-Approval Of Audit And Permissible Non-Audit Services Of Independent Registered Public Accounting Firm

Pursuant to our Audit Committee charter, our Audit Committee must pre-approve all audit and permissible non-audit services provided by the Company's independent registered public accounting firm. These services may include audit services, audit-related services, tax and other services. Pre-approval is generally provided for up to one (1) year, and any pre-approval is detailed as to the particular service or category of services and is generally subject to a specific budget. The independent registered public accounting firm and management are required to periodically report to the Audit Committee regarding the extent of services provided by the independent registered public accounting firm in accordance with this pre-approval and the fees for the services performed to date. The Audit Committee may also pre-approve particular services on a case-by-case basis. During 2021, all services provided by EY to the Company were pre-approved by the Audit Committee in accordance with this policy, and the Audit Committee has concluded that the provision of these services is compatible with the accountants' independence.

Audit and Non-Audit Fees

The following table sets forth the fees billed for the fiscal year ended January 1, 2022 and the fiscal year ended December 26, 2020 by EY, the Company's independent registered public accounting firm.

Fees	2021	2020
Audit	$1,816,000	$1,908,000
Audit Related	$42,000	$39,000
Tax	—	$44,000
All Other	$5,200	$62,000
Total	**$1,863,200**	**$2,053,000**

Audit Fees

Audit fees for the fiscal year ended January 1, 2022 were for the audit of the Company's annual financial statements including management's assessment of internal control over financial reporting, the review of the Company's quarterly financial statements and statutory and regulatory audits, consents, and other services. These fees may include services that are normally provided by the independent registered public accounting firm in connection with regulatory filings or engagements including any comfort letters and consents for financings and filings made with the SEC.

Audit fees for the fiscal year ended December 26, 2020 were for the audit of the Company's annual financial statements including management's assessment of internal control over financial reporting, the review of the Company's quarterly financial statements and statutory and regulatory audits, consents and other services. These fees may include services that are normally provided by the independent registered public accounting firm in connection with regulatory filings or engagements including any comfort letters and consents for financings and filings made with the SEC.

Audit Related Fees

Audit related fees for the fiscal years ended January 1, 2022 and December 26, 2020 were for assurance and related services reasonably related to the performance of the audit or review of the Company's annual financial statements that are not reported under "Audit Fees," and consisted primarily of fees for employee benefit plan audits.

Tax Fees

Tax fees may include fees for tax compliance, tax planning and tax advice. Tax fees for the fiscal year ended December 26, 2020 were for tax advice.

All Other Fees

All other fees would consist of fees for products and services other than the services described above. For the fiscal year ended January 1, 2022, all other fees included payments for an accounting and auditing information tool.

For the fiscal year ended December 26, 2020, all other fees included payments for an assessment of key segregation of duties related considerations and risks in the SAP environment after the hyper care period post implementation, as well as payments for an accounting and auditing information tool.

Negotiation of the annual independent registered public accounting firm fees is the responsibility of the Audit Committee with the support of the Company's CFO. All of the EY fees listed in the chart above for fiscal years 2020 and 2021 were pre-approved by the Audit Committee of the Company, which concluded that the provision of such services by EY was compatible with the maintenance of that firm's independence in the conduct of its audit functions.

Vote Required

The affirmative vote, in person or by proxy, of a majority of the shares present or represented at the meeting and entitled to vote will be required to ratify the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the year ending December 31, 2022.

The Company's Board unanimously recommends voting "FOR" the ratification of the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the year ending December 31, 2022.

AUDIT COMMITTEE REPORT

The following is the Audit Committee's report submitted to the Board for the fiscal year ended January 1, 2022.

As noted in the Audit Committee's charter, management is responsible for the Company's internal controls and the financial reporting process. The independent registered public accounting firm is responsible for performing an independent audit of the Company's consolidated financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States) and for issuing a report thereon. Additionally, the independent registered public accounting firm is responsible for performing an independent audit of the Company's internal control over financial reporting and for issuing a report thereon. The Committee's responsibility is to monitor and oversee these processes.

In this context, the Audit Committee of the Board has:

- reviewed and discussed with management and with Ernst & Young LLP, the Company's independent registered public accounting firm, together and separately, the Company's audited consolidated financial statements contained in its Annual Report on Form 10-K for the fiscal year ended January 1, 2022;
- discussed with Ernst & Young LLP the matters required to be discussed by Statement on Auditing Standards No. 1301, Communications with Audit Committees;
- received the written disclosures and the letter from Ernst & Young LLP required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent registered public accounting firm's communications with the Audit Committee concerning independence, and has discussed with Ernst & Young LLP its independence; and
- discussed and reviewed with the Company's manager - internal audit ("Mgr-IA") and Ernst & Young LLP, with and without management present, the Company's work in complying with the requirements of Section 404 under the Sarbanes-Oxley Act of 2002 regarding internal control over financial reporting. In connection therewith, the Audit Committee also discussed with the Mgr-IA, with and without other members of management present, management's assessment of the effectiveness of internal control over financial reporting as of January 1, 2022. The Audit Committee also discussed Ernst & Young LLP's audit report on internal controls over financial reporting as of January 1, 2022 with management and Ernst & Young LLP.

Based on the foregoing review and discussions, the Audit Committee recommended to the Board that the audited financial statements be included in the Company's Annual Report on Form 10-K for the fiscal year ended January 1, 2022.

THE AUDIT COMMITTEE

Christine A. Tsingos (Chairperson)
Edward J. Brown, Jr.
Bruce C. Rhine
Karen M. Rogge
Christopher A. Seams

EXECUTIVE OFFICER COMPENSATION

COMPENSATION DISCUSSION AND ANALYSIS

Introduction

This Compensation Discussion and Analysis describes our compensation philosophy, process, plans and practices for our executive officers and contains a discussion of the material elements of compensation awarded to, earned by, or paid to the Company's "Named Executive Officers" or "NEOs." The Company's NEOs for 2021 are:

Onto Innovation's Named Executive Officers (NEOs)	
NEO Name	**Position**
Michael P. Plisinski	CEO
Steven R. Roth	Sr. Vice President & CFO
Rollin Kocher(1)	Former Sr. Vice President, Customer Success
Kevin Heidrich(2)	Former Sr. Vice President, Marketing & Corporate Development
Robert A. Koch(2)	Former Vice President & General Counsel
Yoon Ah E. Oh	Vice President & General Counsel

(1) Employment with Company ended prior to January 1, 2022
(2) Employment with the Company ended subsequent to January 1, 2022

EXECUTIVE SUMMARY

Our Business

We are a global leader in process control, combining global scale with an expanded portfolio of leading-edge technologies that include unpatterned wafer quality, 3D metrology spanning the chip from nanometer-scale transistors to micron-level die-interconnects, macro defect inspection of wafers and packages, metal interconnect composition, factory analytics, and lithography for advanced semiconductor packaging. We also provide services relating to the maintenance and repair of our products, installation services and training. Semiconductor capital equipment is our primary served market.

Historical Background Note

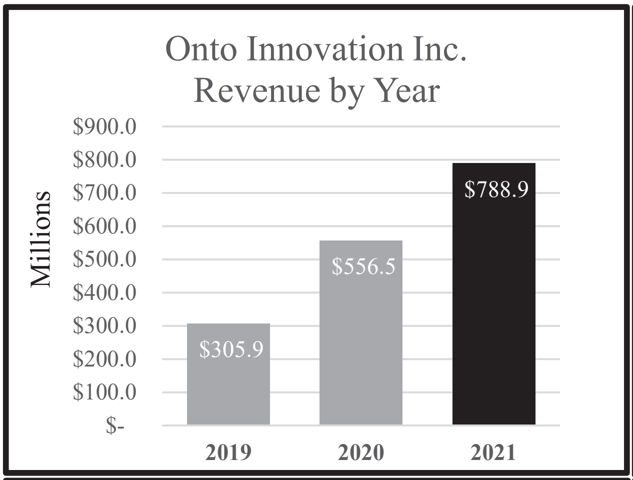
On October 25, 2019, Nanometrics Incorporated and Rudolph Technologies, Inc. merged to form Onto Innovation Inc. Onto Innovation accounted for the 2019 Merger as a reverse acquisition using the acquisition method of accounting in accordance with generally accepted accounting principles, with Rudolph being treated as the acquiring entity for accounting purposes. Because Rudolph is treated as the accounting acquirer in the 2019 Merger, the financial statements filed with the SEC in Onto Innovation's Form 10-K include the financial results of Rudolph for all periods presented and the financial results of the former Nanometrics for the periods on or after the Merger Date. Based on the foregoing, Onto Innovation reported revenue of $305.9 million as of year-end 2019 as reflected in the charts below.

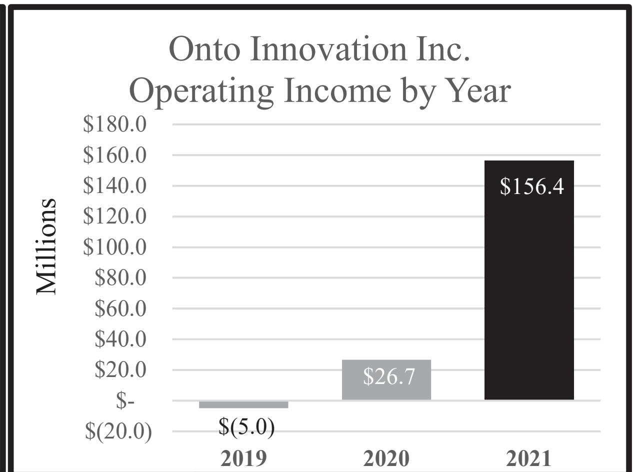
2021 Financial Highlights

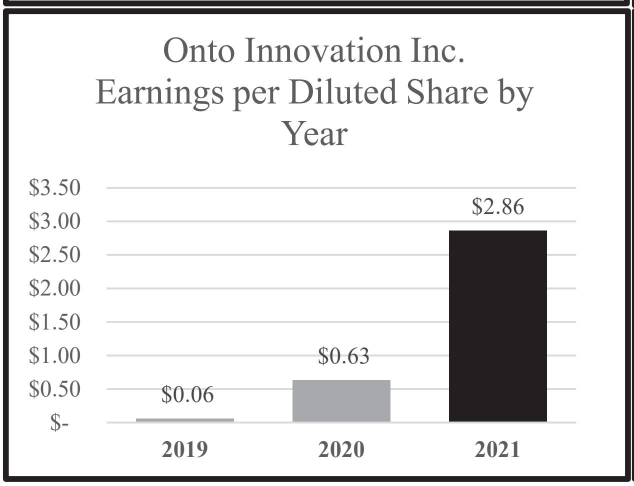
In 2021, the Company realized record financial results in an array of critical metrics. These include, but are not limited to:

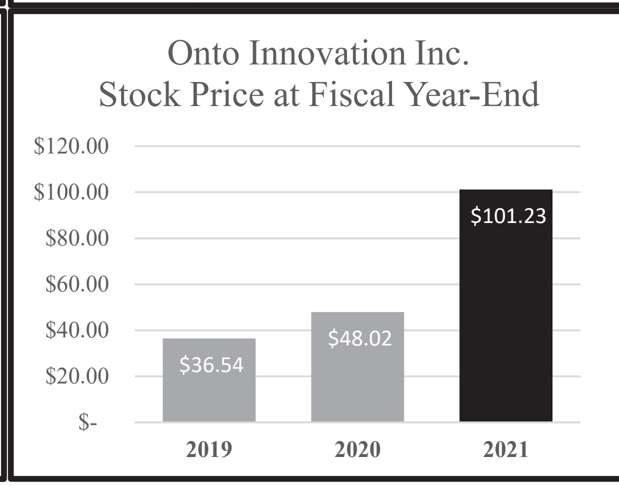
- Record full year revenue of $788.9 million reflecting growth of over 41% year-over-year.
- Full year GAAP net income increased 350% and non-GAAP net income doubled year-over-year.
- Record cash flow from operations for 2021 totaled $175 million, or 22% of revenue.

The following reflects some of our financial accomplishments in fiscal 2021 as compared to fiscal 2020 and 2019:









Results Of The 2021 Stockholder Vote On Executive Officer Compensation

In 2021, stockholders were provided with the opportunity to cast an advisory (non-binding) vote (a "say-on-pay" proposal) on the compensation of our NEOs for fiscal 2020. Our stockholders approved this say-on-pay proposal, with 98.4% of votes cast voting in favor of our executive compensation program. Our Compensation Committee and Board recognize the fundamental interest our stockholders have in the compensation of our executive officers. Noting the strong support for our 2020 compensation program, the Compensation Committee maintained a consistent general approach to our executive officer compensation program in 2021.

The Compensation Committee will continue to consider input from our stockholders as reflected in the outcome of our annual say-on-pay vote when making executive compensation program decisions.

COMPENSATION PROGRAM OBJECTIVES, DESIGN AND PRACTICES

Our Compensation Philosophy And Principles

Rewarding continuous improvement in financial and operating results and the creation of stockholder value are key attributes of our compensation philosophy, which serves as the framework for the Company's executive officer compensation program. The Compensation Committee acts on behalf of the Board and, by extension, on behalf of our stockholders, to establish, implement and continually monitor adherence to our compensation philosophy. Accordingly, the Compensation Committee has developed a set of core objectives and principles that it has used to develop the executive officer compensation program. The specific objectives of our executive officer compensation program are to:

- Attract, retain, and motivate executive officer talent;
- Align compensation with Company and individual performance; and
- Foster an ownership mentality that aligns our executive officers' interests with stockholder interests.

Consistent with the foregoing, the Compensation Committee believes that the most effective executive officer compensation program is one that is designed to reward the achievement of specific strategic and operating goals of the Company on both an annual and a long-term basis, and which aligns our executive officers' interests with those of our stockholders. The Compensation Committee evaluates both performance and compensation to ensure that the Company maintains its ability to attract and retain superior employees in key positions. Based on that evaluation, the Compensation Committee designs the compensation provided to key employees to remain competitive with the compensation paid to similarly situated executive officers at peer group companies. The Compensation Committee believes executive officer compensation packages provided by the Company to its executive officers, including the NEOs, should include base salary, annual cash incentive opportunities, and stock-based compensation, including equity incentive opportunities that reward performance as measured against pre-established goals.

The following principles support the objectives and design of the compensation program:

- The compensation program is designed to be fair and competitive, from an internal and external perspective, taking into account the role, unique qualifications and distinct responsibilities of each executive officer;
- A substantial portion of an executive officer's compensation is designed to be at risk and linked to the achievement of both corporate and individual financial, management or other performance goals and changes in stockholder value;
- A retirement provision has been implemented which is designed to provide financial stability following employment but will not be the focal point of why executive officers choose to work for the Company; and
- All compensation program elements taken as a whole are designed to help focus executive officers to achieve the Company's financial and strategic goals while supporting our culture and core values.

To underscore the importance of "pay-for-performance" in our compensation philosophy and our Company's culture, the Compensation Committee has developed incentive arrangements based on performance standards which the Compensation Committee believes, at target achievement, will incentivize our executive officers to meet or exceed industry performance. The incentive component of the Company's executive officer compensation program, also referred to as the "Tier I Incentive Compensation Plan" or the "Tier I Plan," rewards executive officers for achieving specific corporate, business unit and individual goals as well as strategic and operational measures depending on the executive officer involved.

Our long-term incentive program includes grants of performance-based stock units ("PSUs") which are earned based on the achievement of total shareholder return ("TSR") performance relative to the top 30 companies in the Philadelphia Stock Exchange Semiconductor Index over a two and three-year performance period. Our long-term incentive program also includes service-based RSUs, which vest in equal annual increments over time. All grants are currently made under Company's 2020 Stock Plan and shares earned and vested are subject to the Company's stock ownership and retention guidelines.

The Company strives to promote an ownership mentality among its key leadership, in part through the guidelines described below under the heading "Stock Ownership/Retention Guidelines." To that end, the CEO is required to maintain ownership of the Company's Common Stock equal in value to at least three (3) times the CEO's year-end base salary. As for the other NEOs, the stock ownership requirement reflects a minimum share ownership equal to the NEO's current year-end base salary. In further support of this approach, our Board established an anti-margining and anti-hedging policy to ensure that personal interests relating to the stock holdings of officers and directors do not conflict with their duties to the Company.

NEO Compensation Elements

Our executive officer compensation program is generally comprised of three parts, each intended to address different objectives: base salary, annual cash performance incentives, and long-term equity incentives, which generally are in the form of both performance-based vesting and service-based vesting RSU grants.

The table below highlights the foregoing key elements of our executive officer compensation structure for 2021.

NEO Compensation Elements		
Element	**Form**	**Description**
Base Salary	**Fixed Cash Compensation**	Competitive cash compensation that takes into consideration the scope and complexity of the role, individual qualifications, experience, and internal value to the Company.
Annual Cash Incentive Plan	**Annual Performance-Based Cash Compensation**	Annual cash incentive contingent on meeting performance criteria related to corporate, business unit/department, and individual performance objectives.
Long-Term Equity Incentive Program	**Performance- and Time-Based Restricted Stock Units**	A set percentage of PSUs that are earned based on TSR performance relative to a designated peer group, with remaining percentage of the RSUs vesting incrementally over a fixed period.

The Compensation Committee aligns the Company's Tier I Incentive Compensation Plan, which encompasses our annual cash incentive plan and long-term incentive equity program, with the Company's performance relative to pre-established performance goals based on the Company's stated financial objectives, historical performance, and anticipated market and economic conditions for the performance period.

In adopting this design, the Compensation Committee considered a number of parameters, including the advice of its independent compensation consultant, comparable practices within the industry and the desire to achieve the goals underlying the compensation program. The Compensation Committee believes that as a result of this program the Company has been able to attract, retain and motivate executive officers and reward the achievement of strategic, operational and financial goals, thereby enhancing stockholder value.

Our Compensation Practices

The Compensation Committee has adopted the following practices and policies with respect to the Company's executive officer compensation program:

What We Do	
Committee Independence	The Compensation Committee consists of independent directors and reserves time at each meeting to meet in executive session without management present.
Independent Compensation Consultant	The Compensation Committee has engaged its own independent compensation consultant and annually assesses the consultant's performance, independence, and whether any potential conflicts of interest exist.
Independent Legal Advisor	The Compensation Committee may engage its own independent legal advisor specializing in corporate compensation issues, as necessary.
CEO Goal Setting and Performance Evaluation	The Compensation Committee, with the input of the full Board, engages in formal goal setting and performance evaluation processes with the CEO.
Peer Group	The Compensation Committee has established formal criteria for the selection of peer groups used as a competitive reference point with respect to executive officer and director compensation, program design and practices, and financial and stock performance.
Stock Ownership Guidelines	The Company maintains rigorous stock ownership guidelines, which apply to executive officers and directors, and serve as a risk-mitigating feature within our compensation structure.
Double Trigger Change-in-Control	Employment agreements have been entered into with senior executive officers, including the CEO, that contain change-in-control severance protection. Executive officers are entitled to severance in the event of both a change-in-control of the Company and a qualifying termination of employment ("double trigger").
Clawback Policy	The Company has adopted a policy that provides for the recovery or adjustment of amounts previously awarded or paid to an executive officer in the event that financial results or other performance measures on which the award or payment were determined are restated or adjusted.
What We Do Not Do	
Hedging and Margining	The Company's insider trading policy prohibits our directors, officers and employees from entering into hedging transactions related to our Common Stock. Additionally, under the Company's anti-margining policy, non-employee directors and executive officers are prohibited from margining, or making any offer to margin, any of the Company's securities as collateral to purchase the Company's securities or the securities of any other issuer.
Tax Gross-Ups on Perquisites or Severance	The Company does not provide any tax gross-up payments to cover personal income taxes on perquisites or severance benefits related to a change-in-control.

Role Of The Compensation Consultant

During 2021, the Compensation Committee engaged Compensia, an independent executive officer compensation consulting firm, to provide advice on the Company's executive officer compensation arrangements. Compensia does not provide any services other than those related to compensation consulting and does not provide any services to Company management. The Compensation Committee determined that Compensia is independent within the meaning of the Compensation Committee Charter and the NYSE Listing Rules, and the work performed by Compensia does not raise any conflicts of interest.

Compensia had advised the Compensation Committee of Nanometrics for several years prior to the 2019 Merger and is very familiar with the industry and geographies in which the Company operates. For 2021, the Compensation Committee requested that Compensia:

- evaluate the efficacy of the Company's existing compensation strategy and practices in supporting and reinforcing the Company's long-term strategic goals;
- assist in refining the Company's compensation strategy and further implementing the executive officer compensation program to execute that strategy; and
- provide market information to assist the Compensation Committee in establishing 2021 executive officer compensation.

Similarly, for 2022, the Compensation Committee also engaged Compensia to provide further advice and insight on the Company's executive officer compensation arrangements consistent with the program that was established for 2021.

Role Of Executive Officers In Establishing Compensation

With regard to compensation for executive officers other than the CEO, the Compensation Committee seeks input from the CEO with the support of the human resources department. Each year, the CEO is responsible for establishing proposed personal and corporate objectives for the Company's other executive officers, including the other NEOs. These objectives, subject to the approval of the Compensation Committee, are reviewed and agreed upon by the CEO with the executive officer. In addition, as part of the annual performance review of the Company's executive officers, the CEO assesses the performance of his or her direct reports and recommends any merit increase to be proposed for each individual. These recommendations are compiled by the CEO into executive officer compensation plans which include any proposed merit increases, each executive officer's personal and corporate objectives, proposed annual incentive award opportunities (expressed as a percentage of their base salary) and equity grant proposals, and are submitted to the Compensation Committee for review and consideration for approval. At the Compensation Committee meeting during which the executive officer compensation plans are reviewed, the CEO attends the initial session to present the proposed plans and to answer questions. Thereafter, the Compensation Committee meets without the CEO present to review, discuss and approve all executive officer compensation plans, subject to any modifications made by the Compensation Committee.

Role Of The Compensation Committee

The Compensation Committee is charged with making all determinations regarding executive officer compensation. On an annual basis, the Compensation Committee evaluates the CEO's performance in light of the goals and objectives established for measuring his or her performance at the beginning of the previous fiscal year. The results of this evaluation guide the Compensation Committee in setting the CEO's salary, cash incentive award opportunity and equity compensation. The CEO does not participate in the Compensation Committee's or Board's deliberations regarding his or her compensation.

During 2021, the Compensation Committee of the Company met five (5) times. In 2021, the Compensation Committee met regularly in executive session, without the presence of the CEO or any other Company executive officers, to review the relevant compensation matters.

In early 2021, the Company's CEO met with the Compensation Committee to present the proposed compensation plans for each of the Company's executive officers as well as the proposed incentive award opportunities under the Company's Tier I Incentive Compensation Plan. As a result of this and the Compensation Committee's own deliberations, the Compensation Committee took a number of actions in 2021. These included reviewing and recommending for approval by the independent members of the Board:

- the annual compensation of the Company's CEO for 2021;
- the annual compensation for each of the Company's other executive officers for 2021;

- the Tier I Incentive Compensation Plan and cash incentive programs for non-executive officers for 2021; and
- the service-based and performance-based equity incentive awards and related performance targets for the Company's executive officers for 2021.

In reviewing and setting the annual compensation for each executive officer, the Compensation Committee considered the amounts payable under each of the elements of their respective compensation plans, including base salary, annual cash incentive awards, and equity grants. The Compensation Committee took into consideration both the Company's internal pay equity as well as the competitive environment within which the Company operates. In each instance, the Compensation Committee determined that the 2021 base salary and annual and long-term incentive award opportunities for the individual executive officers supported our compensation objectives and were both competitive and reasonable in the context of the Company's competitive market.

In late 2021, the Compensation Committee reviewed the Company's annual and long-term incentive programs. At that time, measures were again selected that were determined to be consistent with advancing the interests of the Company's stockholders and aligning and supporting the Company's business strategy.

Based on this review, in early 2022, the Compensation Committee met and took a number of actions. These included, in compliance with the Compensation Committee charter, the review and approval of:

- the annual compensation of the Company's CEO for 2022;
- the annual compensation for each of our other executive officers for 2022;
- the Tier I Incentive Compensation Plan; and
- the service-based and performance-based equity incentive awards and related performance targets for the Company's executive officers for 2022.

In addition, the Compensation Committee also reviewed and recommended for approval by the independent members of the Board:

- the Company Compensation Plan for 2022 for all non-executive employees, including (i) adjustments to base compensation and profit-sharing, bonus and other cash incentive plans, and (ii) the 2022 equity award budget; and
- the annual compensation program for non-employee directors for 2022.

Peer Companies

In order to meet its objective of maintaining competitive executive compensation packages, the Compensation Committee has engaged independent compensation consultants to advise on the development and evaluation of the Company's compensation programs. For 2021 and 2022, the Compensation Committee engaged Compensia to provide peer group data and perform an assessment of compensation levels provided to executive officers. In addition, the Compensation Committee obtains and evaluates market compensation information using third-party and internal resources. The Compensation Committee reviews data related to compensation levels and programs of other similar companies prior to making its decisions, but only considers such information in a general manner in order to obtain a better understanding of the current compensation practices within our industry.

In the Compensation Committee's review of executive compensation for the 2021 fiscal year, the Compensation Committee considered publicly available market data from peer company proxy disclosures and industry compensation surveys for companies that typically include similarly sized semiconductor and semiconductor capital equipment or similar firms for each Company executive officer in a like or similar role.

In late 2020, for compensation decisions for the Company's 2021 fiscal year, Compensia recommended and the Compensation Committee approved the Company's compensation peer group which took into consideration the following factors:

- Semiconductor capital equipment and other electronics and hardware technology companies;
- Revenue between approximately 0.5x and 2x the Company's revenue run-rate; and
- Market cap between approximately 0.5x and 2x the Company's average market cap.

The Company's compensation peer group for the 2021 review (which was used to make decisions regarding 2021 compensation) consisted of the following companies:

Companies Included In The Company's Compensation Peer Group For 2021		
Advanced Energy Industries Inc.	Ichor Holdings Ltd.	Novanta Inc.
Ambarella International LP	Inphi Corporation	Photronics, Inc.
Axcelis Technologies Inc.	Knowles Electronics, LLC	Power Integrations, Inc.
Azenta, Inc. (while doing business as Brooks Automation, Inc.)	Lattice Semiconductor Corporation	Rambus Incorporated
Cohu, Inc.	MACOM Technology Solutions Holdings, Inc.	Ultra Clean Holdings, Inc.
FormFactor, Inc.	MaxLinear, Inc.	Veeco Instruments, Inc.

The pay practices of the foregoing Company peer group were analyzed for base salary and annual and long-term incentives. Periodically, peer groups are used to evaluate other programs such as executive officer retirement, perquisites and severance policies. Our peer group data is supplemented by broader technology industry data from compensation surveys to further facilitate the evaluation of compensation levels and design. Compensation levels are generally developed at the low (25^{th} percentile), middle (50^{th} percentile) and high (75^{th} percentile) end of the market for each pay element (base salary and short-term and long-term incentives) and for total compensation.

While the Compensation Committee considers market data for each pay element and in total, the Compensation Committee does not specifically target any particular market compensation level. Instead, the Compensation Committee uses its discretion in setting the compensation levels as appropriate.

Consistent with the foregoing approach, in late 2021, Compensia re-assessed the peer group criteria and recommended consideration of the following factors:

- Semiconductor capital equipment and other electronics and hardware technology companies;
- Revenue between approximately 0.5x and 2x the Company's revenue run-rate; and
- Market cap between approximately 0.3x and 3x the Company's average market cap.

As a result, Compensia recommended and the Compensation Committee approved minor adjustments to the Company's compensation peer group. Compensia proposed the removal of Inphi Corporation and the addition of Semtech and Silicon Laboratories. The Compensation Committee reviewed these adjustments and approved the compensation peer group for the 2022 fiscal year, which consists of the following companies:

Companies Included In The Company's Compensation Peer Group For 2022		
Advanced Energy Industries Inc.	Knowles Electronics, LLC	Rambus Incorporated
Ambarella International LP	Lattice Semiconductor Corporation	Semtech
Axcelis Technologies Inc.	MACOM Technology Solutions Holdings, Inc.	Silicon Laboratories
Azenta, Inc. (while doing business as Brooks Automation, Inc.)	MaxLinear, Inc.	Ultra Clean Holdings, Inc.
Cohu, Inc.	Novanta Inc.	Veeco Instruments, Inc.
FormFactor, Inc.	Photronics, Inc.	
Ichor Holdings Ltd.	Power Integrations, Inc.	

ELEMENTS OF THE COMPANY'S 2021 AND 2022 COMPENSATION PLANS

Compensation Program Design

The Company's executive officer compensation packages for the 2021 fiscal year were generally comprised of three parts, each intended to address different objectives: base salary, annual cash performance incentive awards, and long-term incentives that generally are in the form of both performance-based stock units ("PSUs") and service-vesting restricted stock units ("RSUs"). Executive officers are also entitled to participate in benefit programs available to all Company employees, such as the Onto Innovation Inc. 2020 Employee Stock Plan ("ESPP"), our 401(k) plan, including matching contributions, as well as health and welfare benefits. This design was adopted for executive officers by the Compensation Committee taking into consideration a number of parameters including the independent compensation consultant's advice, comparable practices within the industry and the desire to achieve the goals underlying the compensation program. The Compensation Committee believes that as a result of this program the Company can attract, retain, and motivate employees and reward the achievement of strategic operational and financial goals, thereby enhancing stockholder value. The Compensation Committee and Board further believe that each of the elements as well as the entire compensation package for Company executive officers is appropriate for the Company given its performance, industry, current challenges and environment.

In developing this program, the Compensation Committee considered the three primary components, individually and in the aggregate, to assess their competitiveness and effectiveness in achieving the desired intent of the compensation program. The Compensation Committee chose these components because it believed that each supports the realization of one or more of the Company's compensation objectives, and that together they would be effective in achieving the overall objectives. Additionally, these components are commonly used for executive officers at companies within the Company's peer group and, therefore, the Compensation Committee found them to be appropriate in its talent retention strategy. The Compensation Committee's determination varied for each executive officer depending on a number of factors, including but not limited to, the scope of his or her responsibilities, leadership skills and values, and individual performance. The Compensation Committee did not apply formulas or assign specific mathematical weights to any of these factors, but rather exercised its business judgment and discretion to make a subjective determination after considering all of these measures collectively.

For 2022, the compensation program provided to the Company's executive officers retains the same structure and elements as the 2021 program based on the foregoing rationale.

Annually, the Compensation Committee will review the elements of the compensation package as well as the overall package afforded to the executive officers. At such time, the Compensation Committee, in its discretion, can approve adjustments to the elements of the program. This review would typically be performed coincident with the evaluation of the individual executive officer's performance in relation to their Tier I Incentive Compensation Plan goals, salary adjustment and equity grants, if any, as discussed below.

Based on the objectives discussed in the foregoing section, the Compensation Committee seeks to structure the equity and cash incentive compensation program to motivate executive officers to achieve the business goals set by the Company and reward the executive officers for achieving such goals, which we believe aligns the financial incentives of our executive officers with the interests of our stockholders. The Compensation Committee primarily uses salary and other executive officer benefits as a means for providing base compensation to executive officers commensurate with their knowledge and experience and for fulfilling their basic job responsibilities.

In establishing these components of the executive officer compensation package, it is the Compensation Committee's intention to set total executive officer compensation at a sufficient level to attract and retain a strong motivated leadership team, while remaining reasonable and in line with stockholder perception of overall fairness of executive officer compensation.

Base salaries serve as the foundation of the compensation programs detailed herein. The Compensation Committee derives other executive compensation elements, including annual cash incentives and long-term equity incentives by weighing them against base salary. Base salary levels for executive officers of the Company are generally established at or near the start of each year. The Company's annual cash incentive bonuses are administered through its Tier I Incentive Compensation Plan. The plan provides guidelines for the calculation of annual cash incentive-based compensation, subject to the Compensation Committee's oversight and the Company's and executive's achievement of corporate and individual goals. Generally, at its first meeting each year, the Compensation Committee determines final bonuses for executive officers earned in the preceding year based on each individual's performance and the performance of the Company through its audited financial statements, and also reviews the incentive program to be established for the current year and approves the group of executives eligible to participate in the Tier I Incentive Compensation Plan for that year.

All full-time and part-time employees, including the Company's executive officers, are eligible participants in the 2020 Stock Plan. The Compensation Committee believes that through the Company's broad-based equity compensation plan, the economic interests of all employees, including the executive officers, are more closely aligned with those of our stockholders. It is also believed that this approach will allow the Company to use equity as an incentive in a balanced manner that supports the recruitment and retention of top talent.

The Compensation Committee generally approves the grant of equity awards at its first regularly scheduled meeting or upon completion of the Compensation Committee's review process. The Compensation Committee does not generally grant equity awards at other times during the year, other than in the case of a new hire, promotion or other exceptional circumstances.

Impact Of Performance On Compensation

The performance of the Company and of the executive officer has a direct impact on the compensation received by such executive officer from the Company. On an annual basis, the CEO reviews the performance and compensation for the Company's executive officers to determine any potential salary adjustment for each individual. This assessment takes into consideration a number of factors, including the Company's profitability; the performance of applicable business units; the executive officer's individual performance and measurable contribution to the Company's success; and pay levels of similar positions with comparable companies in the industry and within similar technology industries.

In addition, both Company and individual performance are assessed by the CEO when proposing to the Compensation Committee any annual cash incentive payout to the NEOs (other than the CEO) under the annual cash incentive component of their Tier I Incentive Compensation Plan. The Tier I Plan includes various incentive level opportunities based on the executive officer's accountability and impact on Company operations, with target award opportunities that are established as a percentage of base salary. For our NEOs, 2021 and 2022 target annual cash bonus opportunities were set as follows:

	Target Annual Cash Incentive Percentage	
Name	**2022**	**2021**
Michael P. Plisinski	100%	100%
Steven R. Roth	65%	65%
Rollin Kocher	N/A(1)	60%
Kevin Heidrich	N/A(1)	50%
Robert A. Koch	N/A(1)	40%
Yoon Ah Oh	50%	N/A(2)

(1) Departed the Company prior to the establishment of the 2022 Annual Cash Incentives
(2) Joined the Company after the establishment of the 2021 Annual Cash Incentives

Under the annual cash incentive component of our Tier I Incentive Compensation Plan, payout is based upon achievement of corporate and personal objectives with no payout unless the Company meets the threshold level of at least one of the Board approved corporate financial targets established as part of the plan. Personal objectives are awarded only upon clear achievement of the associated goal. Failure to meet the personal objectives thereby has a negative impact on the ultimate bonus payout.

In addition to a review of the prior year's objectives, the CEO recommends to the Compensation Committee individual performance goals for the executive officers (including the NEOs, other than the CEO) for the current year, which are combined with the corporate targets into an annual cash incentive opportunity proposal. The personal targets that are established are designed to result in additional incremental value to the Company if they are achieved. These personal performance targets in 2021 included goals related to additional corporate financial measures, operational measures and activities, quality, product development measures or marketing initiatives and personnel development, depending on the executive officer involved. The target level of the corporate component to the bonus goals was set based on the Company's financial budget established by the Board at the beginning of the year. The determination of these goals is made annually to meet the changing nature of the Company's business.

Upon completion of the prior year's results and prior to implementation of the current year's proposed Tier I Incentive Compensation Plan, the results for each participating executive officer are submitted to, and reviewed by, the Compensation Committee, which considers the CEO's recommendations for executive officers other than the CEO and determines the final bonus earned by each executive officer based on Company and individual performance. The Compensation Committee then establishes the Company and individual metrics applicable to the current year's Tier I Incentive Compensation Plan. Thereafter, the Compensation Committee approves the achieved incentive payment, if any, and the new plan for the current year. If, during the year, there are changes to the Tier I Incentive Compensation Plan that are proposed, such changes are presented to the Compensation Committee for its consideration. The Compensation Committee may exercise discretion in adjusting and approving an individual's award under the Tier I Incentive Compensation Plan based upon its review.

An executive officer’s role, responsibilities, individual performance and contribution to the Company are factors considered in determining the size of any discretionary equity grant that may be awarded as a long-term incentive to the individual.

Based upon the foregoing, the compensation that an executive officer may realize in the course of a year can be impacted by the positive or negative performance of such individual as well as Company performance. We intend for an individual’s compensation under the Tier I Incentive Compensation Plan to be proportionate to the Company’s and his or her performance against established goals. Similarly, equity awards that are performance-based are intended to be proportionate to the Company’s performance under goals established for the Company. This review and evaluation are more subjective when applied to salary adjustments. In this case, an executive officer’s performance is evaluated by taking into consideration the executive officer’s contribution to the Company, the significance of the individual’s achievements in relation to the overall corporate goals and mission, and the executive officer’s effectiveness in his or her role within the Company and then weighed against the performance of other executive officers. Industry norms and reference to comparative company data are considered to the extent appropriate. Thus, there is no precise, objective formula that is applied in determining salary adjustments.

Compensation Plan Design And Decisions For 2021 And 2022

For 2021, the Compensation Committee conducted a review of the compensation program and determined that the 2021 Tier I Compensation Plan would retain the same basic elements as the prior year’s plan as these elements aligned the Company’s program with its current business strategy and included the pay for performance aspect of its executive compensation program. Taking into account the Company’s 2020 financial performance and outlook for 2021, each executive officer’s performance and responsibilities, and current market compensation rates for each executive officer position, among other criteria, the Compensation Committee recommended, and the Board approved, the updated program and compensation plan structure for the executive officers in 2021 as detailed below.

For 2022, the Compensation Committee determined that the 2022 Tier I Compensation Plan would retain the basic elements reflected in the 2021 plan. Considering the Company’s 2021 performance and the Company’s outlook for 2022, each executive officer’s performance and responsibilities, and current market compensation rates for each executive officer position, among other criteria, the Compensation Committee recommended, and the Board approved the program and compensation plan structure for our executive officers in 2022 also as detailed below.

Base Salary

The Company provides executive officers and other employees with base salary to compensate them for services rendered during the fiscal year. Base salaries for executive officers are established considering a number of factors, including the following:

- Individual performance;
- The executive officer’s unique qualifications;
- The executive officer’s role and responsibilities;
- The executive officer’s measurable contribution to the Company’s profitability and success; and
- The base salary levels of similar positions with comparable companies in the industry.

The Compensation Committee supports the compensation philosophy of moderation for elements such as base salary and other executive officer benefits. As noted above under “Impact of Performance on Compensation,” base salary decisions are made as part of the Company’s formal annual review process and are influenced by the performance of the Company and the individual.

Salary levels are considered annually as part of the performance review process as well as upon a promotion or other change in job responsibility. The Compensation Committee reviews and determines salaries after reviewing salary data supplied by the compensation consultant, including data regarding the peer comparison group, as well as consideration of the compensation for the executive officers on a company-wide basis, based on their relative duties and responsibilities and the recommendations of the CEO (other than with respect to his or her compensation) as it relates to the executive officers who report to the CEO. The Compensation Committee also considers comparisons of peer group compensation to peer group performance as provided by the independent compensation consultant. The Compensation Committee did not apply formulas or assign specific mathematical weights to any of these factors, but rather exercised its business judgment and discretion to make a subjective determination regarding each executive officer's base salary for 2021 and 2022, as applicable, after considering all of these measures collectively.

The CEO's recommendations for salary adjustments (other than his or her own) are reviewed, modified and approved as deemed appropriate by the Compensation Committee.

Base Salary For 2021

For 2021, the Compensation Committee approved a 3% increase to the CEO's base salary and increases of 3% to the base salaries of each of our other NEOs, all of which took effect in February 2021.

Base Salary For 2022

For 2022, the Compensation Committee approved a 3% increase to the CEO's base salary and increases of 3% to the base salaries of the other NEOs continuing with the Company, all of which took effect in February 2022.

Annual Cash Incentive Compensation

The Compensation Committee views cash bonuses as part of its performance-based compensation program designed to align the recipient's interests with the Company's annual goals and objectives and its stockholders' interests. An executive officer's annual cash incentive award under the Tier I Compensation Plan generally depends on the financial performance of the Company relative to profit, revenue and other financial targets. The CEO and executive officers reporting to the CEO, including all of our NEOs, participate in the Tier I Plan, which is designed to generate additional incentive for maximizing the employee's performance in realizing the corporate strategic and financial goals and mission. The Compensation Committee may, but is not required to, establish a Tier I Plan for any given year.

Upon completion of the year, the individual's and the Company's results with respect to the performance targets are then assessed and presented to the Compensation Committee. The Compensation Committee reviews the proposed payouts and suggests changes to the extent it deems such action necessary. Tier I Plan awards are paid out following completion of the annual audit by the Company's independent registered public accounting firm. This generally occurs in the first quarter of each year.

Annual Cash Incentive Plan For 2021

For 2021, the Compensation Committee adopted an annual cash incentive plan as part of the Tier I Plan that is structured such that each NEO's potential cash award was subject to the achievement of 2021 corporate financial objectives consistent with the Board approved annual operating plan for 2021. These corporate financial objectives are established at levels in excess of the overall industry projections in order that the Company drive to outperform the industry.

The annual cash incentive portion of the Tier I Plan has up to three (3) components: Corporate Goals, Business Unit Goals (if applicable) and personal performance goals.

- The Corporate Goals of the Tier I Plan relate to corporate revenue and corporate non-GAAP operating income. For NEOs who are not aligned with a particular business unit, 70% of their cash bonus potential is based on Corporate Goals while NEOs who are aligned with a particular business unit, 30% of their cash bonus potential is based on Corporate Goals. The performance ranges for each metric included a payout level for threshold performance at 50% of target and an established target level to achieve the maximum payout by exceeding the corporate performance objectives for each of the corporate financial metrics. The cash bonus payout was contingent on meeting at least one of the 2021 corporate revenue or corporate non-GAAP operating income goals. Should the Company not have reached the threshold level for either the 2021 corporate revenue or corporate non-GAAP operating income goal, then no payout under the plan would have been made to the CEO or the executive officers.
- For those NEOs who were associated with a particular Company business unit or department, 40% of their cash bonus potential was allocated to business unit/department financial performance goals. In 2021, these goals were the achievement of fiscal 2021 business unit revenue and non-GAAP operating income objectives ("Business Unit Goals"). Earning of the potential cash award apportioned to the Business Unit Goals began upon achieving 80% of the business unit revenue target and/or 70% of the business unit non-GAAP operating income target.
- The final component of the Tier I Plan was the inclusion of personal performance goals that are specific to the CEO and the individual NEOs, which accounts for 30% of the cash bonus potential for all Tier I Plans. The CEO and NEO personal performance goals in 2021 included targets related to additional corporate financial measures, operational measures and activities, quality, product development measures or marketing initiatives and personnel development,

depending on the executive officer involved. Cash bonuses arising from the personal performance goals were drafted to be awarded on an "each or nothing" basis.

Provided that either of the Corporate Goal thresholds was met, the cash bonus potential of the Tier I Plan could be realized. The annual cash incentive component of the Tier I Plan was designed and administered as follows:

- Cash bonuses arising from the Corporate Goals and the Business Unit Goals are awarded starting at a 50% level at the respective goal threshold and increasing linearly up to the Tier I Plan target amounts.
- If the Tier I Plan target is exceeded in either or both Corporate Goal categories, then the cash payout increases as follows:
  - Corporate Revenue: From 100% to 120% of target, additional cash compensation is earned linearly up to 200% of this target.
  - Non-GAAP Operating Income: From 100% to 130% of target, additional cash compensation is earned linearly up to 200% of this target.
- Upon achieving either of the Corporate Goals, the Business Unit Goals, if applicable, and personal performance goals could be earned in full.
- Additional cash payout is realized if either of the Business Unit Goals is exceeded, similar to the Corporate goal parameters above.

The following table reflects the structure of the annual cash incentive components of the Tier I Plan.

Tier I Incentive Compensation Plan - Annual Cash Incentive Provisions	2021
Payout if both financial metric thresholds are not reached	0%
Corporate revenue threshold	80% of corporate revenue target
Corporate non-GAAP operating income threshold	70% of corporate non-GAAP operating income target
Payout upon attaining corporate financial metrics' threshold levels	50%
Payout upon attaining corporate financial metrics' target goals	100%
Payout upon attaining corporate financial metrics' maximum goals	200%
Corporate revenue metric upside performance range	100%-120% of corporate revenue target
Corporate non-GAAP operating income metric upside performance range	100%-130% of corporate non-GAAP operating income target
Business unit/department goal payout	Variable
Personal goal payout	Fixed

The following table reflects the Corporate targets, actual results and percent payouts for fiscal 2021 under the Tier I Plan for the CEO and those other NEOs participating in the Tier I Plan at the time of the incentive award.

Tier I Incentive Compensation Plan - Corporate Target Categories	2021 Target	2021 Actual	2021 Payout Percentage
Corporate Revenue	$652.7M	$788.9M	200%
Non-GAAP Operating Income	$161.0M	$218.4M	200%

None of the NEOs in 2021 included a Business Unit Goal component as part of their Tier I Plan.

Personal goal achievement for the CEO and those other NEOs participating in the Tier I Plan at the time of the incentive award ranged from 50% to 100% of personal goals achieved in 2021.

Actual amounts paid to the CEO and the other NEOs under their respective annual cash incentive plans are reported below in the Non-Equity Incentive Plan Compensation column of the Summary Compensation Table.

Annual Cash Incentive Plan For 2022

For 2022, the Compensation Committee has adopted the same Tier I Plan structure as implemented in 2021 and described above. Corporate and business unit financial goals were established consistent with the Board approved annual operating plan for 2022. In addition, personal performance goals specific to the CEO and individual NEOs have been included for 2022 which include targets related to additional corporate financial measures, operational measures and activities, and personnel development depending on the executive officer involved.

Long-Term Equity Incentive Plan

Our equity compensation plans are an essential tool to link the long-term interests of the Company's stockholders and our employees, particularly our executive officers, and serve to motivate executive officers to make decisions that will, in the long run, optimize returns to our stockholders. Equity compensation plans also enable us to provide an opportunity for increased equity ownership by executive officers, thereby strengthening the correlation between the incentives of our executive officers and the interests of our stockholders and maintain competitive levels of total compensation.

Employees and members of management, including the Company's NEOs, generally receive annual equity grants issued under the Company's 2020 Stock Plan at or about the time of their performance reviews each year. The Company's long-term incentive compensation program seeks to align the executive officers' interests with the Company's stockholders by rewarding successes in stockholder returns. Additionally, the Compensation Committee desires to foster an ownership mentality among executive officers by providing stock-based incentives as a portion of compensation.

For the Company's long-term incentive compensation program, the Compensation Committee grants performance-based and service-based RSUs.

The number of Grants awarded to each executive officer is determined on a discretionary rather than formula basis by the Compensation Committee.

Long-Term Equity Incentive Program For 2021

The long-term equity incentive program is divided into two components: PSU grants and service-based RSU grants. The Compensation Committee determined for 2021 that the portion of our NEOs' long-term incentive awards granted in the form of PSUs and service-vesting RSUs would be split at 50% each.

In 2021, the Compensation Committee granted equity awards to our NEOs with the dollar value allocated to each NEO. The structure of the long-term equity incentive component was determined by the CEO (except in connection with his own grants) and the Compensation Committee through the consideration of a number of subjective factors, including the executive officer's position and responsibilities at the Company, the executive officer's individual performance, the number of grants held (if any) and other factors that they may deem relevant. The 2021 performance-based long-term equity incentive of our NEO compensation program is based on the metric of TSR. The following parameters are included in the design of the long-term equity incentive program in 2021:

Performance-Based Stock Units: For 2021, fifty percent (50%) of each NEO's equity grant is comprised of PSUs. The relative TSR plan design includes the following features:

- Fifty percent (50%) of the PSU grant will be assessed at each of two (2) performance periods; at two years and at three years from the grant date (2021 through 2023 and 2024, for awards granted in early 2021).
- Performance will be assessed using TSR, which measures growth in stock price, plus any dividends paid, during the performance period.
- TSR performance will be compared to the Philadelphia Semiconductor Index (SOX).
- The performance and standards to earn the PSU equity awards in 2021 are as follows:

TSR Performance Relative to Peers	PSUs Earned as % of Target
Below 25th Percentile	0%
25th Percentile	50%
55th Percentile	100%
80th Percentile and above	200%

- The PSU award payout will be calculated on a straight-line basis between the 25th & 55th and the 55th & 80th percentile levels referenced above.

- A negative TSR cap has been instituted which limits any PSUs earned to target level if the Company's TSR is negative over the performance period and our TSR ranks above the target performance level.
- Earned PSUs are not subject to additional service-based vesting conditions.

Service-Vesting Restricted Stock Units: For 2021, fifty percent (50%) of each NEO's equity grant is comprised of service-based RSUs. The time required for the RSUs to fully vest is three (3) years from the date of grant. As a result, each service-based RSU award is subject solely to service-based vesting in equal annual increments over the three (3) year vesting period.

The following table reflects the components of the long-term equity incentive program.

Long- Term Equity Incentive Compensation Program Provisions	2021
Performance-based / Service-based grant breakout	50%-50%
Service-based grant vesting period	33.3% annually over 3 years
Performance-based grant evaluation period	50% of grant at 2 and 3 years
Performance-based grant metric(s)	TSR
Performance-based grant vesting period	100% upon earning
Performance threshold for earning grant	25th TSR percentile
Percent of grant earned at threshold	50%
Measure at which 100% of grant is earned	55th TSR percentile
Maximum grant upside	200%
Measure at which maximum upside of grant is earned	80th TSR percentile

In February 2022, the first tranche of PSUs awarded in 2020 vested. The Company's TSR performance based on the twenty (20) day average market value prior to the vesting date was determined and ranked against the participating companies in the SOX. The Company's TSR at this assessment period was 137.8% which placed the Company at the 90th TSR percentile in the SOX. Therefore, the PSUs earned as a percent of the target number awarded was 200%.

Actual number of PSUs and RSUs granted to the NEOs in 2021 and the related value are reported below in the Grants Of Plan-Based Awards In 2021 table.

Long-Term Equity Incentive Program For 2022

For 2022, the Compensation Committee has adopted the same structure for the long-term equity incentive program as outlined above. No changes were effectuated in the PSU grant/service-based RSU grant split, earning thresholds or TSR comparison group from what was implemented in 2021. With regard to the PSU grant, fifty percent (50%) of the PSU grant performance will be assessed at each of two (2) performance periods; at two years and at three years from the grant date (2022 through 2024 and 2025, for awards granted in early 2022).

Personal Benefits And Perquisites

Benefits

All employees of the Company, including its executive officers, are eligible to participate in the following benefit plans and programs:

- Health and dental insurance;
- Elective vision care program;
- Life insurance and accidental death and dismemberment coverage;
- 401(k) plan;
- Short- and long-term disability insurance with supplemental income continuation;
- Health care and dependent care flexible spending account programs;
- Employee assistance program (EAP);

- Employee stock purchase plan;
- Employee referral bonus program;
- IP recognition awards;
- Length of service awards; and
- Matching of charitable donations through the Company-sponsored charitable foundation.

The Company, in its discretion, may offer to reimburse the expenses that an employee incurs as a result of the Company requiring the individual to relocate their primary residence for employment purposes. The Compensation Committee believes that these benefits are consistent with industry practice and are important in recruiting and retaining qualified employees.

Limited Perquisites

The Company does not offer extensive perquisites to our executive officers. For 2021 and 2022, the Compensation Committee reviewed the potential perquisites to be offered by the Company to the executive officers and determined that such perquisites would be limited to Company-paid tax preparation services and Company-paid membership in one (1) airline executive club. Executive officers are also eligible to participate in the Company's Charitable Match Program, under which the Company will match, dollar for dollar, up to $1,000 in donations to eligible nonprofit organizations. The Compensation Committee believes that these benefits are reasonable and consistent with the Company's overall compensation program and enable the Company to attract and retain superior employees for key positions.

Retirement Provision For Equity Awards

As part of its review of the overall compensation program for all Company employees, including the NEOs, the Compensation Committee determined that the implementation of a retirement provision related to equity awards would continue to incentivize individuals as they near the end of their employment with the Company. The default under the 2020 Stock Plan is that upon retirement of an employee any equity grants that had not vested would be forfeited. Thus, any incentive realized through the service-vesting schedule for Company equity grants was diminished. As a result, the Compensation Committee assessed retirement provision alternatives and recommended to the Board, and the Board approved, the following retirement provision:

- An employee is "retirement eligible" if they achieve a combination of age plus years of service with the Company totaling 70, with a base minimum age of 58 years old and a minimum service requirement of five years.
- Retirement under the provision then would occur when an employee has become retirement eligible and has formally notified the Company of his/her intention to retire from the employ of the Company on a date certain and does so retire or as otherwise approved by the Compensation Committee.
- Upon such retirement by the employee, any equity awards granted by the Company shall vest based on:
  - The vesting schedule established for service-based equity awards; or
  - The actual performance results for performance-based equity awards.

Employee Stock Purchase Plan

The Company (as successor to Nanometrics) has maintained an Employee Stock Purchase Plan since 1986. The Company's 2020 Employee Stock Purchase Plan was approved by stockholders in 2020 and is currently administered by the Compensation Committee.

Under the terms of our current Employee Stock Purchase Plan, eligible employees may elect to have up to fifteen percent (15%) of eligible compensation deducted from their base salary and applied to the purchase of shares of Company Common Stock. The price the employee pays for each share of stock is eighty-five percent (85%) of the fair market value of the Company Common Stock at the end of the applicable six-month purchase period. The Employee Stock Purchase Plan qualifies as a non-compensatory plan under Code Section 423.

The Company does not offer a non-qualified deferred compensation plan.

CORPORATE AND GOVERNANCE POLICIES

Employment And Change-In-Control Agreements

While the Company utilizes employment agreements on a limited basis, we currently maintain employment agreements or arrangements with each of our NEOs.

In 2000, Rudolph entered into a management agreement with Mr. Roth, effective as of July 24, 2000, which was assumed by the Company in connection with the 2019 Merger. Mr. Roth previously had employment agreements with Rudolph when it was a private entity, and, at the time of Rudolph's initial public offering, his agreement was revised to reflect terms believed to be appropriate for such officer's service in his capacity with a publicly held corporation.

Upon the appointment of Mr. Plisinski to the position of CEO of Rudolph, he entered into a new employment agreement with Rudolph, which was assumed by the Company in connection with the 2019 Merger. This agreement superseded the executive officer employment agreement that Mr. Plisinski had entered into with August Technology Corporation, which was assumed by Rudolph upon its merger with August Technology in 2006.

Mr. Plisinski's employment agreement provides for a term of two (2) years with automatic renewals for additional two-year terms, and Mr. Roth's agreement provides for a term of one (1) year with automatic renewals for additional one-year terms unless the Company or the applicable executive officer delivers a notice of non-renewal to the other party. Mr. Plisinski's agreement prohibits him from competing with the Company in any way or soliciting its employees during his term of employment and for two (2) years after termination of his employment. Mr. Roth's agreement prohibits him from competing with the Company in any way or soliciting its employees during his term of employment and for one (1) year after termination of his employment.

Certain of our executive officers are also entitled to payments upon a qualifying termination of employment following a Change-in-Control event. The Compensation Committee believes that providing severance in a Change-in-Control situation is beneficial to stockholders so that executive officers may remain objectively neutral when evaluating a transaction that may be beneficial to stockholders yet could negatively impact the continued employment of the executive officer.

The Nanometrics Compensation Committee authorized Nanometrics to enter into a Change-in-Control Agreement with Mr. Heidrich in May 2015 and with Mr. Kocher in November 2016. Further, Mr. Plisinski's and Mr. Roth's employment agreements also contain Change-in-Control provisions.

See "Potential Payments Upon Termination of Employment or Change-in-Control" below for a description of these arrangements and potential payments that the NEOs would have been entitled to receive upon applicable hypothetical termination scenarios as of January 1, 2022.

Other Elements Of Post-Termination Compensation

The Company does not have a practice of providing retirement benefits, including any supplemental executive officer retirement plans (SERP), to its executive officers, other than through its 401(k) plan and the retirement provision for equity grants awarded by the Company. The Company retains the discretion to utilize the offer of severance and/or change-in-control protection as an incentive in its hiring and retention of executive officers.

Non-Solicitation And Non-Competition Policy

The Company maintains a policy of entering into an agreement with each of its new executive officers, which contains both non-solicitation and non-competition provisions. The non-solicitation provisions apply for one (1) year after termination of the individual's employment while the non-competition provisions are in effect during the individual's employment and generally for one (1) year thereafter, except for Mr. Plisinski, whose non-solicitation and non-competition provisions are in place during and extend for two (2) years after the end of his employment with the Company. Each of the Company's executive officers had previously entered into these covenants on the foregoing terms with either Nanometrics or Rudolph and these agreements were assumed by the Company in connection with the 2019 Merger or entered into such an agreement upon commencing employment with the Company. In all cases, these covenants have been implemented to protect the confidential information, goodwill and other assets of the Company. For those individuals with employment agreements, should a breach of the non-solicitation or non-competition terms of their agreements occur, this could give rise to the Company declaring a breach under the agreement and terminating all severance payments thereunder.

General Termination Benefits

Upon termination of an executive officer's employment with the Company, the individual is entitled to receive his or her base salary earned through the termination date, along with a payout for all accrued but unused vacation time earned though such date. Thereafter, further cash compensation to the executive officer is discontinued, except to the extent that severance or change-in-control payments are required to be made in accordance with individual or Company severance protection arrangements. Certain executive officers with the Company who have entered into employment agreements are entitled to elect to continue group health or other group benefits as allowed by COBRA with continued Company co-payments for agreed post-termination periods. The Company retains the right to offer severance and/or payment of COBRA benefits to any individual who is terminated from the Company at its discretion.

Stock Ownership/Retention Guidelines

The Company has established guidelines related to stock ownership and retention for its executive officers and its non-employee directors to further align the interest of the executive officers and non-employee directors with the interests of stockholders, to have a stake in the long-term financial future of the Company and to further promote the Company's commitment to sound corporate governance while allowing them to prudently manage their personal financial affairs.

To that end, the Board established the Company's stock ownership policy such that the stock ownership and retention levels currently in effect are the following:

Company Role	Company Common Stock Holding Requirement	Effective Date
Non-Employee Directors	3x value of the annual Board retainer	Within 5 years of initial election to Board
CEO	3x value of CEO's base annual salary	Within 5 years of hire/promotion
Executive Officers Subject to Section 16 Reporting Requirements	1x value of executive officer's base annual salary	Within 5 years of hire/promotion

In assessing compliance with the foregoing guidelines, the Company takes into consideration only the ownership of Common Stock in the Company and unexercised stock options that are vested and "in-the-money". As a result, unearned PSUs, unvested service-based RSUs and unvested stock options do not qualify as shares for purposes of compliance with the Company's stock ownership and retention guidelines.

Participants are expected to achieve their ownership guideline target within five (5) years of becoming subject to the policy. Existing participants were subject to this policy as of the date of the policy and any new participants will be subject to the policy on their hire, promotion, election or appointment date, as applicable.

Compliance with the Company's stock ownership and retention guidelines is reviewed annually by the Compensation Committee. As of its last review on January 24, 2022, the Compensation Committee determined that all executive officers and directors who were with the Company and acting in their executive officer/director capacities for periods in excess of one (1) year were in compliance with the ownership requirements. Should any individual in the future not own the minimum number of required shares after notice by the Compensation Committee, additional action, including possible removal from the executive officer role or a determination to not nominate the director for election, would be considered by the Board.

The Compensation Committee has scheduled its review of the Company's stock ownership and retention guidelines for its January 2023 meeting and at this annual review will evaluate the appropriateness of the foregoing stock ownership levels for 2023 based in part on the average closing price of a share of the Company's stock during the thirty (30) consecutive trading days ending on and including the last day of the most recently completed fiscal year, as well as other considerations such as market conditions and comparable practices within the industry.

Prohibition On Hedging And Margining Of Company Stock

In order to ensure that our executive officers, including our NEOs, and our directors bear the full risk of the Company's stock ownership, our insider trading policy prohibits directors and executive officers of the Company from engaging in hedging transactions related to our Common Stock. Additionally, under the Company's anti-margining policy, non-employee directors and executive officers are prohibited from margining, or making any offer to margin, any of the Company's securities as collateral to purchase the Company's securities or the securities of any other issuer, provided that non-employee directors may pledge their securities when obligated to do so to realize the consummation of potential mergers, acquisitions and similar transactions with which the Company may be involved from time to time.

Adjustments Or Recovery Of Prior Compensation

The Company adopted a policy which provides for the recovery or adjustment of amounts previously awarded or paid to a NEO in the event that financial results or other performance measures on which an award or payment was determined are materially restated or adjusted. In addition, if the Company is required to restate its financial results due to material noncompliance with any financial reporting requirements as a result of misconduct, the Sarbanes-Oxley Act of 2002 requires the CEO and CFO to disgorge:

- Any bonus or other incentive-based or equity-based compensation received from the Company during the 12-month period following the first public issuance of the non-compliant financial reporting document; and
- Any profits realized from the sale of Company stock during that 12-month period.

In addition, Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act requires the SEC to direct the national securities exchanges to prohibit the listing of any security of an issuer that does not develop and implement a clawback policy. The SEC has not finalized its rules related to these clawback policies. Once the final rules are in place, the Company will adjust its policy, as necessary, to comply with SEC regulations.

Compensation Program Risk Assessment

As part of the engagement with the Compensation Committee's compensation consultant, in association with the development of and advice concerning our executive officer compensation program and practices, Compensia takes into consideration whether possible compensation design features may have the potential to incentivize the NEOs to take risks that are reasonably likely to have a material adverse effect on the Company. As part of the Compensation Committee's compensation risk assessment, potential risks and risk mitigating features are addressed in the following areas: compensation philosophy and pay mix; performance measures used in incentive plans; goal setting and payout leverage and caps; calculation and verification of performance outcomes for incentive payments; and other features. Based on this framework and the input from Compensia, the Compensation Committee evaluated our current compensation policies, practices and programs and believes they do not create risks that are reasonably likely to have a material adverse effect on the Company.

IRS Limits On Deductibility Of Compensation

Prior to the 2018 tax year, Section 162(m) of the Internal Revenue Code of 1986, as amended ("IRC"), limited the tax deductibility of annual compensation paid to any publicly held corporation's CEO and three other highest compensated officers excluding the CFO, to the extent that the officer's compensation (other than qualified performance-based compensation) exceeded $1 million. Although the Compensation Committee considers deductibility issues when approving executive officer compensation elements, the Compensation Committee believes that the other compensation objectives, such as attracting, retaining and providing appropriate incentives to executive officers, are important and can supersede the goal of maintaining deductibility. Consequently, the Compensation Committee generally makes compensation decisions without regard to deductibility, as the Compensation Committee believes it has appropriately structured its compensation programs to provide incentives to our executive officers to increase Company return and stockholder value. Subsequent changes in the tax laws eliminated the "performance-based" exception, and the limitation on deductibility was expanded to include all named executive officers. As a result, the Company does not deduct compensation paid to our NEOs in excess of $1 million.

CONCLUSION

In reviewing its compensation programs, the Company has concluded that each element of compensation as well as the total compensation opportunities for its NEOs and its other executive officers are reasonable, appropriate and in the interests of the Company and its stockholders. The Company believes that this compensation program appropriately satisfies the Company's goals of establishing a compensation package that attracts and retains a strong motivated leadership team, aligns the financial incentives of the executive officers with the interests of the stockholders, and rewards the achievement of specific annual, long-term and strategic goals of the Company. The Company believes that the compensation program which has been established and is reflected herein has enabled it to recruit and secure a talented and motivated leadership team by which the Company drives toward the ultimate objective of improving stockholder value.

COMPENSATION COMMITTEE REPORT ON EXECUTIVE OFFICER COMPENSATION

We, the Compensation Committee of the Board, have reviewed and discussed the Compensation Discussion and Analysis ("CD&A") within the Executive Officer Compensation section of this proxy statement with the management of the Company. Based on such review and discussions, we have recommended to the Board that the CD&A be included as part of this proxy statement.

THE COMPENSATION COMMITTEE

Edward J. Brown, Jr. (Chairman)
Leo Berlinghieri
David B. Miller
May Su
Christine A. Tsingos

Summary Compensation Table

The following table summarizes the compensation earned by our NEOs in the fiscal years noted.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)(1)	Non-Equity Incentive Plan Compensation ($)(2)	All Other Compensation ($)(3)	Total ($)
Michael P. Plisinski (4) *Chief Executive Officer*	2021	$639,353	—	$3,487,747	$995,529	$11,681	$5,134,310
	2020	$592,089	—	$2,672,777	$489,408	$9,414	$3,763,688
	2019	$83,192	—	—	$540,750	$1,752,211	$2,376,153
Steven R. Roth (5) *Senior Vice President, Finance & Administration and Chief Financial Officer*	2021	$433,095	—	$755,707	$462,843	$11,844	$1,663,489
	2020	$400,975	—	$545,698	$215,489	$9,414	$1,171,576
	2019	$55,953	—	—	$218,216	$606,995	$881,164
Kevin Heidrich *Senior Vice President, Marketing & Corporate Development Leadership*	2021	$329,700	$750	$348,772	$246,659	$8,202	$934,083
	2020	$305,173	—	$334,082	$127,583	$2,631	$769,468
	2019	$299,615	—	$292,872	$125,000	$3,800	$721,287
Rollin Kocher *Former Senior Vice President, Field Operations*	2021	$251,034	—	$674,312	—	$7,300	$932,646
	2020	$330,327	—	$584,664	$171,793	$2,841	$1,089,625
	2019	$324,712	—	$492,022	$162,500	$5,000	$984,234
Robert A. Koch *Former Vice President & General Counsel*	2021	$334,015	—	$290,711	$219,666	$9,782	$854,174
	2020	$312,224	—	$278,416	$108,544	$8,102	$707,286
Yoon Ah E. Oh (6) *Vice President & General Counsel*	2021	$60,577	$250,000	$600,008	$54,610	$115	$965,310

(1) Amounts reflect the grant date fair value for each share-based compensation award granted to the NEOs during the covered year, calculated in accordance with FASB ASC Topic 718. The assumptions used in determining the grant date fair values of awards are set forth in Note 2 to our consolidated financial statements, which are included in our Annual Report on Form 10-K filed with the SEC on February 25, 2022. For 2021, the amount reported for each NEO includes the grant date fair value attributable to the 2021 awards of (i) time-based RSUs and (ii) PSUs, assuming that the performance conditions were satisfied at target at the time of grant. The grant date fair value attributable to the 2021 PSUs assuming maximum performance achievement is as follows: Mr. Plisinski, $3,975,427; Mr. Roth, $861,388; Mr. Heidrich, $397,477; Mr. Kocher, $768,542; and Mr. Koch, $331,366. The actual amounts earned will be determined following the end of the two (2) year performance period (February 8, 2021 – February 8, 2023) and the three (3) year performance period (February 8, 2021 – February 8, 2024).

(2) The amounts for a given year represent the amount earned in respect of that year under the Company's annual cash performance incentive plan, as applicable, notwithstanding the year in which it was paid. See "Compensation Discussion and Analysis – Annual Cash Incentive Compensation" for further information.

(3) Refer to the All Other Compensation table for more detailed information about the 2021 compensation reported in this column. The amounts for Mr. Plisinski and Mr. Roth for 2019 reflect the value of equity awards that vested upon the change-in-control on the Merger Date.

(4) The total compensation earned by Mr. Plisinski during 2019 while serving as Rudolph's CEO, when added to the amount reported in the Summary Compensation Table, results in total compensation for the full calendar year of $3,391,035. This adjustment reflects (i) Mr. Plisinski's salary increase ($455,741), (ii) the grant date fair value of a time-based equity award Mr. Plisinski received from Rudolph prior to the 2019 Merger ($550,021), (iii) 401(k) matching contributions earned prior to the 2019 Merger ($8,400) and (iv) insurance coverage paid by Rudolph prior to the 2019 Merger ($720).

(5) The total compensation earned by Mr. Roth during 2019 while serving as Rudolph's CFO, when added to the amount reported in the Summary Compensation Table, results in total compensation for the full calendar year of $1,391,819. This adjustment reflects (i) Mr. Roth's salary increase ($306,518), (ii) the grant date fair value of a time-based equity award Mr. Roth received from Rudolph prior to the 2019 Merger ($195,017), (iii) 401(k) matching contributions earned prior to the 2019 Merger ($8,400) and (iv) insurance coverage paid by Rudolph prior to the 2019 Merger ($720).

(6) Ms. Oh joined the Company as Vice President & General Counsel effective October 25, 2021.

All Other Compensation

Name	Year	Matching Contribution to 401(k) ($)	Insurance ($)[1]	Perquisites and Other Personal Benefits ($)[2]	Severance Compensation ($)	Total ($)
Michael P. Plisinski	2021	$10,991	$690	—	—	$11,681
Steven R. Roth	2021	$11,154	$690	—	—	$11,844
Kevin Heidrich	2021	$7,512	$690	—	—	$8,202
Rollin Kocher	2021	$6,782	$518	—	—	$7,300
Robert A. Koch	2021	$9,092	$690	—	—	$9,782
Yoon Ah E. Oh	2021	—	$115	—	—	$115

(1) Insurance is the premium associated with coverage under the group term life insurance and accidental death and dismemberment insurance plans. Coverage is equal to the lesser of two (2) times salary or $500,000.

(2) Value of aggregate perquisites and benefits for each NEO is less than $10,000, and therefore, perquisites for these individuals are not required to be disclosed in accordance with SEC rules.

Grants Of Plan-Based Awards In 2021

The following table sets forth information with respect to non-equity and equity incentive plan awards that were granted during 2021 to the NEOs. No stock option awards were granted to any NEO in 2021.

		Estimated Future Payouts Under Non-Equity Incentive Plan Awards ($) [1]			Estimated Future Payouts Under Equity Incentive Plan Awards (#)[2]			All Other Stock Awards: Number of Shares of Stocks or Units (#) [3]	Grant Date Fair Value of Stock and Option Awards ($)
Name	Grant Date	Threshold	Target	Maximum	Threshold	Target	Maximum		
Michael P. Plisinski	2/8/2021	$108,210	$618,341	$1,051,180					
	2/8/2021				12,417	24,834	49,668		$1,987,713
	2/8/2021							24,835	$1,500,034
Steven R. Roth	2/8/2021	$47,646	$272,260	$462,843					
	2/8/2021				2,691	5,381	10,762		$430,694
	2/8/2021							5,381	$325,012
Kevin Heidrich	2/8/2021	$27,849	$159,135	$270,530					
	2/8/2021				1,242	2,483	4,966		$198,738
	2/8/2021							2,484	$150,034
Rollin Kocher	2/8/2021	$36,203	$206,876	$351,689					
	2/8/2021				2,401	4,801	9,602		$384,271
	2/8/2021							4,802	$290,041
Robert A. Koch	2/8/2021	$22,613	$129,215	$219,666					
	2/8/2021				1,035	2,070	4,140		$165,683
	2/8/2021							2,070	$125,028
Yoon Ah E. Oh	10/25/2021	$30,625	$175,000	$297,500					
	10/25/2021							8,043	$600,008

(1) The amounts reported in these columns represent the annual cash incentive opportunities under the Company's Tier I Incentive Compensation Plan for each of our NEOs for the 2021 performance period. The metrics against which performance was measured under this plan, as well as other details regarding the plan, are discussed above in the Compensation Discussion and Analysis under "Annual Cash Incentive Compensation." The amounts actually earned by our NEOs under the plan are reflected in the "Non-Equity Incentive Plan Compensation" column of the Summary Compensation Table above.

(2) The amounts reported in these columns represent the award opportunities under the Company's PSU program. The metrics against which performance will be measured under this program, as well as other details regarding the plan, are discussed above in the Compensation Discussion and Analysis under the heading "Long-Term Equity Incentive Plan." The performance periods for these awards is two years and three years with the final determinations of the award ultimately earned being made in 2023 and 2024.

(3) The amounts reported in this column represent the awards of RSUs which are subject to service-based vesting conditions, as discussed above in the Compensation Discussion and Analysis under the heading "Long-Term Equity Incentive Plan." These RSUs vest in 33.3% increments on each of the first three (3) anniversaries of the grant date.

Outstanding Equity Awards At 2021 Fiscal Year-End

The following table sets forth information with respect to outstanding equity awards held by the NEOs as of January 1, 2022. No stock option awards were outstanding as of January 1, 2022. Mr. Kocher had no outstanding equity awards as of January 1, 2022.

	Stock Awards				
Name	Grant Date (1)	Number of Shares or Units of Stock That Have Not Vested (#)(2)	Market Value of Units of Stock That Have Not Vested ($)(3)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)(4)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($) (3)
Michael P. Plisinski	2/6/2019	6,561	$664,170		
	2/7/2020	20,806	$2,106,191	31,209	$3,159,287
	2/8/2021	24,835	$2,514,047	24,834	$2,513,946
Steven R. Roth	2/6/2019	2,326	$235,461		
	2/7/2020	4,248	$430,025	6,372	$645,038
	2/8/2021	5,381	$544,719	5,381	$544,719
Kevin Heidrich	3/11/2019	3,368	$340,943		
	2/7/2020	2,600	$263,198	3,901	$394,898
	2/8/2021	2,484	$251,455	2,483	$251,354
Robert A. Koch	2/6/2019	1,092	$110,543		
	2/7/2020	2,167	$219,365	3,251	$329,099
	2/8/2021	2,070	$209,546	2,070	$209,546
Yoon Ah E. Oh	10/25/21	8,043	$814,193		

(1) For a better understanding of this table, we have included an additional column showing the grant date of each stock award.

(2) Amount includes service-based RSU awards vesting 1/3rd per year on the anniversary of the grant date.

(3) Based on the Company's common stock closing price of $101.23 per share on January 1, 2022.

(4) PSU awards are reported in this table at number of target shares. The actual number of shares earned will be determined based on performance achievement measured over two (2)- and three (3)-year performance periods, and any earned shares will vest on the second and third anniversaries, respectively, of the grant date.

Stock Vested In 2021

The following table sets forth information with respect to the value realized by the NEOs upon vesting of PSUs and RSUs during 2021, and such values reflect the total pre-tax value realized by each NEO. There were no stock option exercises by any of the NEOs during 2021.

	Stock Awards	
Name	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting ($)(1)
Michael P. Plisinski	31,628	$1,855,318
Steven R. Roth	9,249	$542,066
Kevin Heidrich	8,871	$555,536
Rollin Kocher	16,014	$1,002,243
Robert A. Koch	4,539	$265,713
Yoon Ah E. Oh	—	—

(1) The aggregate dollar amount realized is based on the fair market value of the shares upon vesting.

Pension And Nonqualified Deferred Compensation

The Company does not have a defined benefit pension program, nor does it offer non-qualified deferred compensation.

Potential Payments Upon Termination Of Employment Or Change-In-Control

This section (including the following tables) summarizes each NEO's estimated payments and other benefits that would be received by the NEO or the NEO's estate if his or her employment had terminated on January 1, 2022, under the hypothetical circumstances set forth below.

Certain of our NEOs would be entitled to certain termination payments upon his or her death or Disability, his or her involuntary termination without Cause, or his or her voluntary termination with Good Reason as described below. Although the definitions of each of these terms is specific to the NEO's employment agreement or change-in-control agreement with the Company, the terms generally have the following meanings:

- "Disability" generally means that the executive officer, due to physical or mental impairment, is unable to perform his or her duties to the Company for a specified period of time.
- "Cause" generally means that the executive officer engaged in a crime, willful gross misconduct or other serious act involving moral turpitude; materially breached an agreement between him or her and the Company; or otherwise materially breached his or her obligations to the Company.
- A voluntary termination for "Good Reason" generally means, depending on the particular executive officer's agreement, that the executive officer's duties, responsibilities or status with the Company or its successor are materially reduced; his or her primary place of work is moved to a location outside a predetermined radius; in particular cases, certain reduction in compensation; or the Company materially breaches the terms of his or her agreement with the Company or any successor fails to assume the executive officer's change-in-control agreement.

In addition to the payments and other benefits described below, under our 2020 Stock Plan, in the event of a change-in-control, unless the Board or Compensation Committee determine that some other treatment is warranted in their discretion, if the acquiror elects not to assume or substitute an equity award, then upon the effective date of the change-in-control all RSUs and PSUs held by any employees of the Company (including NEOs) become fully vested and the performance goals or other vesting conditions for PSUs shall be deemed achieved at 100% of the target levels.

NEO Employment Agreements

Mr. Plisinski

Mr. Plisinski's employment agreement provides for the following:

- In the event of any termination of Mr. Plisinski's employment, he is entitled to payment of all base salary due and owing through the termination date and an amount equal to all earned but unused vacation through the termination date.
- In the event Mr. Plisinski's employment is terminated due to his death, his estate would be entitled to:
  - Payment of his then-current base salary as if his employment had continued for three (3) months following his death;
  - Continued co-payment for a period of six (6) months following his death of amounts due under COBRA for continuation of the Company's group health and other group benefits for his covered dependents, if the covered dependents so elect;
  - Payment of his annual incentive cash bonus based on actual performance achievement, prorated for the time employed preceding his death, to be paid out with the Company's annual incentive plan payouts; and
  - Immediate vesting of stock options and SARs, and immediate vesting of RSU awards granted after his appointment as CEO which by their terms would vest within twelve (12) months after death and, if a performance award, based on actual performance achievement for such performance period completed within twelve (12) months after death.
- In the event Mr. Plisinski's employment is terminated due to his Disability, he would be entitled to:
  - Payment of his then-current base salary through the end of the month of such termination;
  - Continued co-payment for a maximum period of six (6) months following his Disability of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he or his covered dependents, as appropriate, so elects;
  - Payment of his annual incentive cash bonus based on actual performance achievement, prorated for the time employed preceding his termination, to be paid out with the Company's annual incentive plan payouts; and
  - Immediate vesting of stock options and SARs, and immediate vesting of RSU awards granted after his appointment as CEO which by their terms would vest within twelve (12) months after termination for disability and, if a performance award, based on actual performance achievement for such performance period completed within twelve (12) months after termination.
- In the event Mr. Plisinski's employment is terminated by the Company without Cause or Mr. Plisinski terminates his employment for Good Reason, he would be entitled to:
  - Payment of two (2) times his then-current base salary, paid over twenty-four (24) months (i.e., salary continuation for two (2) years);
  - Continued co-payment for a period of up to eighteen (18) months of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he so elects; and
  - Vesting of any equity incentive awards outstanding as of the termination date that, by their terms:

    (1) represent either unvested shares which were earned based on a completed performance period under a performance-based award granted on or after the employment agreement effective date and which as of the termination date are then subject to time-based vesting only, or shares under such an equity incentive award granted on or after the employment agreement effective date which will be earned under a performance-based award based on actual achievement under a performance period which has been completed on or prior to the termination date but as to which performance period the actual number of shares earned against the award performance goals has not yet been determined by the Company; and

    (2) would have become vested based solely on the passage of time within the twelve (12) month period immediately following the termination date had Mr. Plisinski continued in employment with the Company.

- If, within eighteen (18) months following the occurrence of a Change-in-Control[1], Mr. Plisinski's employment is terminated for any reason other than for Cause or Mr. Plisinski terminates his employment for Good Reason, he would be entitled to:
  - Payment of two (2) times the sum of his then-current base salary and target annual cash bonus, paid over twenty-four (24) months;
  - Continued co-payment for a period of up to eighteen (18) months of amounts due under COBRA for continuation of the Company's group health and other group benefits, if he so elects; and
  - Immediate vesting of all unvested stock options, SARs and all unvested and outstanding performance-based (at target) and service-based RSUs and other equity awards.
  - To the extent that Change-in-Control termination payments made to Mr. Plisinski under his agreement are subject to the excise tax imposed by Section 4999 of the IRC, Mr. Plisinski would either have to pay the excise tax or have his benefits reduced so that no portion of his termination payments were subject to the excise tax.
  - In order to receive these termination or Change-in-Control termination payments, Mr. Plisinski would be required to sign a general release of all known and unknown claims that he may have against the Company.
  - As part of his employment agreement, Mr. Plisinski is subject to non-solicitation and non-competition restrictions that limit his ability to compete with the Company during the term of the agreement and for a period of two (2) years following his resignation or termination for any reason.

The following table reflects the potential payments to Mr. Plisinski in the event of his termination or his termination following a Change-in-Control as of January 1, 2022:

Potential Payments To Mr. Plisinski Upon Termination Or Change-In-Control				
	Cash Severance		Value of	
Termination Circumstance as of 1/1/2022	Base Salary	Management Incentive Bonus	Accelerated Unvested Equity	Benefits Continuation
By the Company without Cause	$1,236,682 (2x salary)	$ -	$10,957,641	$44,780
Executive officer resignation for Good Reason	$1,236,682 (2x salary)	$ -	$10,957,641	$44,780
Death	$154,585 (3 mos. salary)	$995,529 (1x bonus)	$10,957,641	$14,927
Disability	$ -	$995,529 (1x bonus)	$10,957,641	$14,927
Within 18 months following Change-in-Control:				
By the Company without Cause	$1,236,682 (2x salary)	$1,991,058 (2x bonus)	$10,957,641	$44,780
By the executive officer with Good Reason	$1,236,682 (2x salary)	$1,991,058 (2x bonus)	$10,957,641	$44,780

[1] For Mr. Plisinski, a "Change-in-Control" would generally be considered to have occurred if:

- a merger or consolidation of the Company or an acquisition by the Company involving the issuance of its securities as consideration for the acquired business results in the stockholders of the Company following such transactions having less than fifty percent (50%) of combined voting power of the surviving entity;
- any person or persons becomes the beneficial owner of thirty percent (30%) or more of our outstanding shares;
- all or substantially all assets of the Company are disposed of pursuant to a plan of liquidation of the Company;
- all or substantially all of our assets are sold; or
- during any twelve (12) month consecutive period the individuals who presently make up our Board or who become members of our Board with the approval of at least a majority of our existing Board cease to constitute at least a majority of the Board; provided any transaction or event described above will not constitute a change-in-control under the agreement unless it qualifies as a "change-in-control" under Section 409A of the IRC.

Mr. Roth

Mr. Roth's employment agreement provides for the following:

- In the event Mr. Roth's employment is terminated as a result of his death or Disability, he or his estate would be entitled to:
  - ◦ Payment of all base salary due and owing through the termination date and amount equal to all earned but unused vacation through the termination date;
  - ◦ Payment of an amount equal to Mr. Roth's bonus as was paid or payable for the most recent completed bonus period; and
  - ◦ Accelerated vesting of all outstanding and unvested stock options, performance-based and service-based RSUs or other equity awards.
- In the event Mr. Roth's employment is terminated without Cause or Mr. Roth terminates his employment for Good Reason, he would be entitled to:
  - ◦ Payment of all base salary due and owing through the termination date and an amount equal to all earned but unused vacation through the termination date;
  - ◦ Payment for over a period of one (1) year of one (1) times Mr. Roth's:
    - * Then-current base salary; and
    - * Bonus as was paid or payable for the most recent completed bonus period;
  - ◦ Accelerated vesting of all unvested stock options and all unvested and outstanding performance-based and service-based RSUs and other equity awards.
- If, within one (1) year following the occurrence of a Change-in-Control[(2)], Mr. Roth's employment is terminated for any reason other than for Cause or Mr. Roth terminates his employment for Good Reason, he would be entitled to:
  - ◦ Payment of all base salary due and owing through the termination date and including an amount equal to all earned but unused vacation through the termination date;
  - ◦ Payment over a period of one (1) year of one (1) times Mr. Roth's:
    - * Then-current base salary; and
    - * Bonus as was paid for the most recent completed bonus period;
  - ◦ Accelerated vesting of all unvested stock options and all unvested and outstanding performance-based and service-based RSUs and other equity awards; and
  - ◦ Maintenance of Mr. Roth's and his dependents' health care benefit coverage to the same extent provided for by and with the same Company/Executive officer payment contribution percentages under Company's group plans at the time of termination. Such coverage shall extend for a term of one (1) year from the Termination Date unless he becomes covered as an insured under another employer's or spousal health care plan.

[(2)] For Mr. Roth, a "Change-in-Control" would generally be considered to have occurred if:

- any person or persons becomes the beneficial owner of twenty-five percent (25) or more of our outstanding voting shares;
- during any two (2) consecutive year period individuals who presently make up our Board or who become members of our Board with the approval of at least two-thirds of our existing Board (other than a new director who assumes office in connection with an actual or threatened election contest) cease to be at least a majority of the Board;
- a merger or consolidation of the Company is consummated with another entity (unless outstanding voting securities of the Company immediately prior to the termination would continue to represent more than fifty-one percent (51%) of the combined voting power of the surviving entity and had the power to elect as least a majority of the board of the surviving entity);
- our stockholders approve a plan of liquidation of the company or an agreement for the sale of all or substantially all of our assets; or
- any other event occurs of a nature that would be required to be reported as a "change-in-control" under Schedule 14A of the Exchange Act, provided any transaction or event described above will not constitute a change-in-control under the agreement unless it qualifies as a "change-in-control" under Section 409A of the IRC.

- To the extent that termination or Change-in-Control payments made to Mr. Roth under his agreement are subject to the excise tax imposed by Section 4999 of the IRC, Mr. Roth would either have to pay the excise tax or have his benefits reduced so that no portion of his termination payments were subject to the excise tax.
- In order to receive these termination or Change-in-Control payments, Mr. Roth would be required to sign a general release of all known and unknown claims that he may have against the Company.
- As part of his employment agreement, Mr. Roth is subject to non-competition and non-solicitation restrictions that limit his ability to compete with the Company during the term of the Agreement and for a period of one (1) year following his resignation or termination for any reason.

The following table reflects the potential payments to Mr. Roth in the event of his termination or his termination following a Change-in-Control as of January 1, 2022:

Potential Payments To Mr. Roth Upon Termination Or Change-In-Control				
	Cash Severance		Value of	
Termination Circumstance as of 1/1/2022	Base Salary	Management Incentive Bonus	Accelerated Unvested Equity	Benefits Continuation
By the Company without Cause	$418,862 (1x salary)	$462,843 (1x bonus)	$2,399,961	$ -
Executive officer resignation for Good Reason	$418,862 (1x salary)	$462,843 (1x bonus)	$2,399,961	$ -
Death	$ -	$462,843 (1x bonus)	$2,399,961	$ -
Disability	$ -	$462,843 (1x bonus)	$2,399,961	$ -
Within 12 months following Change-in-Control:				
By the Company without cause	$418,862 (1x salary)	$462,843 (1x bonus)	$2,399,961	$21,780
By the executive officer with good reason	$418,862 (1x salary)	$462,843 (1x bonus)	$2,399,961	$21,780

Messrs. Kocher and Heidrich

The executive officer general severance and change-in-control agreements for Messrs. Kocher and Heidrich provided for the following:

- In the event Mr. Kocher's or Mr. Heidrich's employment was terminated as a result of a "Covered Termination"[(3)], the executive officer or his estate would have been entitled to:
  - Payment of all base salary due and owing through the termination date, any unreimbursed business expenses and an amount equal to all earned but unused vacation through the termination date;
  - Payment of his then-current base salary for a period of six (6) months (paid over a period of six (6) months); and
  - Provided that the executive officer is eligible and has made the necessary elections for continuation coverage pursuant to COBRA under a health, dental, or vision plan sponsored by the Company, payment of his and his dependent's applicable premiums for such continued benefits. Such coverage shall extend for a term of six (6) months from the termination date.

(3) For Messrs. Kocher and Heidrich, a "Covered Termination" would generally be considered to have occurred in the event of the executive's:

- dismissal or discharge by the Company for reasons other than Cause and other than as a result of death or disability; or
- resignation for Good Reason within ninety (90) days of the occurrence of the Good Reason action, which occurs outside of twelve (12) months of a Change-in-Control event.

- If, within one (1) year following the occurrence of a Change-in-Control[4], Mr. Kocher's or Mr. Heidrich's employment was terminated for any reason other than for Cause or Mr. Kocher or Mr. Heidrich terminates his employment for Good Reason, the executive officer would have been entitled to:
    - Payment of all base salary due and owing through the termination date, any unreimbursed business expenses and an amount equal to all earned but unused vacation through the termination date;
    - Payment in a single lump sum following the effective date for his Release of his:
        - Then-current annual base salary; and
        - 100% of his target annual bonus in effect for the fiscal year in which the termination date occurs;
    - Accelerated vesting of all unvested stock options and all unvested and outstanding performance-based and service-based RSUs and other equity awards; and
    - Provided that executive officer is eligible and has made the necessary elections for continuation coverage pursuant to COBRA under a health, dental, or vision plan sponsored by the Company, payment of his and his dependent's applicable premiums for such continued benefits. Such coverage shall extend for a term of twelve (12) months from the termination date.
- To the extent that Change-in-Control termination payments made to Mr. Kocher and Mr. Heidrich were subject to the excise tax imposed by Section 4999 of the IRC, Mr. Kocher or Mr. Heidrich would either have had to pay the excise tax or have had his benefits reduced so that no portion of his termination payments were subject to the excise tax.
- In order to receive these Change-in-Control termination payments, Mr. Kocher and Mr. Heidrich would have been required to sign a general release of all known and unknown claims that he may have had against the Company.

Both Mr. Kocher and Mr. Heidrich entered into a separate agreement upon employment with the Company that subjects the executive officer to non-competition and non-solicitation restrictions, which limit his ability to compete with the Company during his employment and for a period of one (1) year following his resignation or termination for any reason.

Inasmuch as Mr. Kocher voluntarily resigned from the Company in August 2021, he did not receive any termination payments from the Company.

---

[4] For Messrs. Kocher and Heidrich, a "Change-in-Control" would generally be considered to have occurred upon any of the following:

- any person or persons becomes the beneficial owner of fifty percent (50%) or more of the total voting power represented by the Company's then outstanding voting securities;
- during any two (2) year, any action or event occurs in which less than a majority of the directors who are either (A) directors of the Company as of the date of the executive's agreement, or (B) elected, or nominated for election, to the Board with the affirmative votes of a majority of the incumbent directors at the time of such election or nomination (but does not include an individual whose election or nomination is in connection with an actual or threatened proxy contest relating to the election of directors to the Company);
- the consummation of a merger or consolidation of the Company with any other corporation, other than a merger or consolidation which would result in the outstanding voting securities of the Company immediately prior thereto continuing to represent at least fifty percent (50%) of the outstanding voting securities of the Company or such surviving or resulting entity immediately after such merger or consolidation; or
- the consummation of the sale, lease or other disposition by the Company of all or substantially all the Company's assets.

To the extent required for compliance with Code Section 409A, in no event will a change-in-control be deemed to have occurred if such transaction is not also a "change in the ownership or effective control of" the Company or a "change in the ownership of a substantial portion of the assets of" the Company, as determined under Treasury Regulations Section 1.409A-3(i)(5)

The following table reflects the potential payments to Mr. Heidrich in the event of his termination or his termination following a Change-in-Control as of January 1, 2022:

Potential Payments To Mr. Heidrich Upon Termination Or Change-In-Control				
	Cash Severance		Value of	
Termination Circumstance as of 1/1/2022	Base Salary	Management Incentive Bonus	Accelerated Unvested Equity	Benefits Continuation
By the Company without Cause	$159,135 (6 months' salary)	n/a	n/a	$14,927
Within 12 months following Change-in-Control:				
By the Company without Cause	$318,270 (1x salary)	$159,135 (1x bonus)	$1,501,848	$29,853
By the executive officer with Good Reason	$318,270 (1x salary)	$159,135 (1x bonus)	$1,501,848	$29,853

Mr. Koch

The executive officer change-in-control agreement for Mr. Koch provided for the following:

- In the event Mr. Koch's employment was terminated as a result of his death or "Disability", the executive officer or his estate would have been entitled to:
    - Payment of all base salary due and owing through the termination date and an amount equal to all earned but unused vacation through the termination date; and
    - Accelerated vesting of all unvested stock options and all unvested and outstanding performance-based and service-based RSUs and other equity awards.
- If, within one (1) year following the occurrence of a change-in-control[5], Mr. Koch's employment was terminated for any reason other than for Good Cause or Mr. Koch terminates his employment for Good Reason, the executive officer would have been entitled to:
    - Payment of all base salary due and owing through the termination date and an amount equal to all earned but unused vacation through the termination date;
    - Payment of his then-current base salary for a period of twelve (12) months (paid over a period of twelve (12) months);
    - Accelerated vesting of all unvested stock options and all unvested and outstanding performance-based and service-based RSUs and other equity awards; and
    - Maintenance of his and his dependent's health care benefit coverage to the same extent provided for by and with the same Company/Executive officer payment contribution percentages under Company's group plans at the time of termination. Such coverage shall extend for a term of one (1) year from the termination date unless he becomes covered as an insured under another employer's or spousal health care plan.
- To the extent that change-in-control termination payments made to Mr. Koch were subject to the excise tax imposed by Section 4999 of the IRC, Mr. Koch would either have had to pay the excise tax or have his benefits reduced so that no portion of his termination payments were subject to the excise tax.

---

[5] For Mr. Koch, a "Change-in-Control" would generally be considered to have occurred if:

- any person or persons becomes the beneficial owner of fifty percent (50%) or more of our outstanding voting shares;
- during any twelve (12) month period a majority of the Board is replaced by directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election; or
- there is a change in the ownership of Company assets that occurs with a person or group over a twelve (12) month period if the subject assets have a total gross fair market value equal to or more than forty percent (40%) of the total gross fair market value of all of the assets of Company immediately prior to such acquisition or acquisitions (subject to certain exceptions), provided any transaction or event described above will not constitute a change-in-control under the agreement unless it qualifies as a "change-in-control" under Section 409A of the IRC.

- In order to receive these change-in-control termination payments, Mr. Koch would be required to sign a general release of all known and unknown claims that he may have against the Company.

Mr. Koch entered into a separate agreement upon employment with the Company that subjects him to non-competition and non-solicitation restrictions, which limit his ability to compete with the Company during his employment and for a period of one (1) year following his resignation or termination for any reason.

The following table reflects the potential payments to Mr. Koch in the event of his termination or his termination following a change-in-control as of January 1, 2022:

Potential Payments To Mr. Koch Upon Termination Or Change-In-Control			
Termination Circumstance as of 1/1/2022	**Cash Severance (Base Salary)**	**Value of Accelerated Unvested Equity**	**Benefits Continuation**
Death	$ -	$1,078,100	$ -
Disability	$ -	$1,078,100	$ -
Within 12 months following sale or change-in-control:			
By the Company without cause	$323,038 (1x salary)	$1,078,100	$21,780
By the executive officer with good reason	$323,038 (1x salary)	$1,078,100	$21,780

Ms. Oh

As of January 1, 2022, Ms. Oh had not entered into an executive officer change-in-control agreement with the Company; therefore no payments would have been owed to her upon termination or change-in-control as of January 1, 2022.

Ms. Oh has entered into a separate agreement upon employment with the Company that subjects her to non-competition and non-solicitation restrictions, which limit her ability to compete with the Company during her employment and for a period of one (1) year following her resignation or termination for any reason.

Retention Bonus Agreements

No NEO entered into a Retention Bonus Agreement with the Company.

Executive Officers

Set forth below is certain information regarding the executive officers of the Company and their ages as of March 31, 2022. Information relating to Michael P. Plisinski is set forth above under the caption "PROPOSAL 1 - ELECTION OF DIRECTORS." The individuals listed reflect the Company's officers designated by the Board as "Executive Officers" for the 2022 fiscal year. The Company is unaware of any arrangements or understandings between the executive officers of the Company and other person(s) pursuant to which an executive officer was or is to be selected, except that Mr. Plisinski was appointed as CEO of the Company pursuant to the Merger Agreement for the 2019 Merger.

Named Executive Officers (NEOs)

Steven R. Roth Senior Vice President, Finance and Administration and Chief Financial Officer Age: 61

- Mr. Roth has served the Company in his current role since the Merger Date and previously served in the same role at Rudolph since February 2002.
- Prior Experience:
  - September 1996 to February 2002: Vice President, Finance and Administration and Chief Financial Officer, Rudolph Technologies, Inc.
  - August 1991 to August 1996: Director of Corporate Finance, Bell Communications Research.
- Mr. Roth is a C.P.A. and holds a B.S. in Accounting from Villanova University.
- In July 2021, Mr. Roth notified the Company that he plans to retire sometime in 2022.

Yoon Ah E. Oh Vice President & General Counsel Age: 40

- Ms. Oh has served the Company in her current role since October 2021.
- Prior Experience:
  - June 2020 to September 2021: Associate General Counsel and Corporate Secretary, Analog Devices, Inc., a semiconductor company
  - June 2018 to May 2020: Vice President, Associate General Counsel and Corporate Secretary, Endo International Plc.
  - May 2017 to June 2018: Vice President, Associate General Counsel, Endo International Plc., a specialty pharmaceutical company
  - September 2015 to April 2017: Senior Counsel, Corporate, Endo International Plc.
  - September 2013 to September 2015: Associate, Dechert LLP
  - September 2007 to August 2013: Associate, Cahill Gordon & Reindel LLP
- Ms. Oh holds a B.S. in Political Science from Yale University and earned her J.D. from Harvard Law School. Ms. Oh is admitted to practice in the States of Pennsylvania and New York.

Other Executive Officers

James (Cody) Harlow Chief Operating Officer Age: 49

- Mr. Harlow has served the Company in his current role since October 2021.
- Prior Experience:
  - December 2019 to September 2021: Managing Director, Operations and Supply Chain, Applied Materials, a provider of manufacturing equipment, services and software to the semiconductor, display and related industries
  - December 2017 to December 2019: Senior Director, Operations and Supply Chain, Applied Materials
  - September 2013 to December 2017: Director, Worldwide Operations, Applied Materials
  - March 2013 to September 2013: Chief Operating Officer, Semiconductor Support Services
  - Prior to 2013, Mr. Harlow held an array of manufacturing management roles in 14 years with Applied Materials.
- Mr. Harlow holds a B.S. in Nuclear Engineering Technology from Thomas Edison State University, a M.S. in organizational and human resource development from Abilene Christian University and an M.B.A. from the University of Phoenix. In addition, Mr. Harlow served as a nuclear propulsion supervisor in the U.S. Navy.

Robert Fiordalice Senior Vice President & General Manager, Metrology Business Unit Age: 60

- Mr. Fiordalice has served the Company in his current role since January 2022.
- Prior Experience:
  - October 2019 to January 2022: Vice President & General Manager, Wafer Solutions Business Unit, Onto Innovation Inc.
  - August 2017 to October 2019: General Manager, Materials Characterization Group, Nanometrics
  - October 2013 to July 2017: General Manager, Advanced Packaging, Nanometrics
  - August 2006 to August 2013: Vice President, Account Technology, Intermolecular, Inc.
  - Prior to 2006, Mr. Fiordalice held technology management roles with both KLA Tencor Corporation and Motorola Inc.
- Mr. Fiordalice holds a B.S. in Genetics from University of California at Berkley and a M.S. in Physics from Syracuse University.

Ju Jin, Ph.D. Senior Vice President & General Manager, Inspection Business Unit Age: 57

- Dr. Jin has served the Company in his current role since March 2021.
- Prior Experience:
  - October 2019 to March 2021: Vice President & General Manager, Inspection Business Unit, Onto Innovation Inc.
  - July 2019 to October 2019: Vice President & General Manager, Inspection Business Unit, Rudolph Technologies, Inc.
  - August 2016 to July 2019: Sr. Director of Marketing & Business Development, Orbotech Ltd., a supplier of yield-enhancing and process-enabling solutions for the manufacture of electronics products and a subsidiary of KLA Corporation.
  - April 2009 to August 2016: President and CEO, Applied Electro-Optics Inc.
  - March 2004 to April 2009: Director and General Manager, Accretech USA
- Dr. Jin holds a B.S. from Xian Jiatong University in China, a M.S. from Nagaoka University of Technology in Japan and a Ph.D. from the University of Tokyo in Japan, all in Mechanical Engineering.

Srinivas Vedula, Ph.D. Senior Vice President, Customer Success Group Age: 49

- Dr. Vedula has served the Company in his current role since September 2021.
- Prior Experience:
  - October 2019 to August 2021: Vice President, Business Development, Metrology Business Unit, Onto Innovation Inc.
  - December 2017 to September 2019: Vice President, Global Sales, Nanometrics, Inc.
  - January 2014 to November 2017: General Manager, Advanced Packaging, Nanometrics, Inc.
  - January 2009 to December 2013: Director of Marketing and Applications, KLA Corporation
  - Prior to 2009, Mr. Vedula held additional roles in product marketing and applications engineering over 12 years with KLA Tencor Corporation.
- Dr. Vedula holds a Bachelor of Technology degree from the Indian Institute of Technology in Bombay, India and a Ph.D. from the University of Tennessee, both in Chemical Engineering.

CEO Pay Ratio

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, we have elected to identify our median employee every three years unless a significant change in employee population or employee compensation arrangements has occurred. Because there has been no change in our employee population or employee compensation arrangements in 2021 that we reasonably believe would result in a significant change to our pay ratio disclosure for 2021, we are using the same median employee identified in 2019 to calculate our 2021 CEO pay ratio. For information regarding the process utilized to identify our median employee, please refer to our proxy statement for the 2020 Annual Meeting of Stockholders.

For 2021, our last completed year, we determined that:

- The annual total compensation of the median employee was $142,265;
- The annual total compensation of our CEO, Michael P. Plisinski, as reported in the Summary Compensation Table included in this proxy statement, was $5,134,310; and

The ratio of the annual total compensation of our CEO to the median employee's annual total compensation is 36 to 1.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS

The following table sets forth certain information with respect to beneficial ownership of the Company's Common Stock as of March 14, 2022 (except as otherwise indicated), by (i) each individual or group known by the Company to own beneficially more than five percent (5%) of the Common Stock; (ii) each of the NEOs; (iii) each of the Company's directors and director nominees; and (iv) all directors, director nominees and executive officers as a group. Except as indicated in the footnotes to this table, the persons named in the table have sole voting and investment power with respect to all shares of Common Stock shown as beneficially owned by them, subject to community property laws where applicable.

Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership	Percent of Class(1)
BlackRock, Inc.(2) *55 East 52nd Street, New York, NY 10055*	7,783,210	15.7%
The Vanguard Group(3) *100 Vanguard Boulevard, Malvern, PA 19355*	5,353,152	10.8%
Michael P. Plisinski	196,603	*
Steven R. Roth	31,850	*
Kevin Heidrich(4)	12,451	*
Rollin Kocher(5)	33,896	*
Robert A. Koch(6)	30,360	*
Yoon Ah E. Oh	0	*
Leo Berlinghieri	15,101	*
Edward J. Brown, Jr.	44,739	*
David B. Miller	12,508	*
Bruce C. Rhine	3,500	*
Karen M. Rogge(7)	0	*
Christopher A. Seams	30,529	*
May Su(8)	0	*
Christine A. Tsingos	37,809	*
All directors, director nominees and executive officers as a group (fifteen (15) persons)	395,712(9)	*

* Less than 1%

(1) Applicable percentage ownership is based on 49,437,537 shares of Common Stock outstanding as of March 14, 2022. Beneficial ownership of shares is determined in accordance with the rules of the SEC and generally includes shares as to which a person holds sole or shared voting or investment power. Shares of Common Stock subject to RSUs which will vest within sixty (60) days of March 14, 2022 are deemed to be beneficially owned by the person holding such RSUs for the purpose of computing the percentage ownership of such person but are not treated as outstanding for the purpose of computing the percentage ownership of any other person. Unless otherwise noted, the address for the executive officers and directors named in this table is c/o Onto Innovation Inc., 16 Jonspin Road, Wilmington, Massachusetts 01887.

(2) Information provided herein is based on the Schedule 13G/A that was filed by BlackRock, Inc. on February 27, 2022.

(3) Information provided herein is based on the Schedule 13G/A that was filed by The Vanguard Group on February 10, 2022, which reported that The Vanguard Group had sole voting power over zero shares, shared voting power over 56,390 shares, sole dispositive power over 5,253,555 shares and shared dispositive power over 99,597 shares.

(4) Number of shares held by Mr. Heidrich is based on information known by the Company as of the Exit Form 4 filed on January 21, 2022.

(5) Number of shares held by Mr. Kocher is based on information known by the Company as of the Exit Form 4 filed on September 8, 2021.

(6) Number of shares held by Mr. Koch is based on information known by the Company as of the Exit Form 4 filed on January 5, 2022.

(7) Ms. Rogge did not become a Company director until September 7, 2021.

(8) Ms. Su did not become a Company director until March 21, 2022.

(9) Includes 16,750 shares subject to restricted stock units vesting within 60 days of March 14, 2022 for all directors and executive officers as a group. Excludes shares owned by Messrs. Heidrich, Kocher and Koch.

EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth, as of January 1, 2022, certain information related to our equity compensation plans.

	(a)	(b)	(c)
Plan Category	**Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights** [1]	**Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights**	**Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))**[2]
Equity compensation plans approved by security holders	766,907	$0.04	4,634,654
Equity compensation plans not approved by security holders	n/a	n/a	n/a
Total	766,907	$0.04	4,634,654

(1) Includes 764,691 shares issuable upon vesting of outstanding restricted stock units under the Onto Innovation Inc. 2020 Stock Plan, the Rudolph Technologies, Inc. 2018 Stock Plan and the Nanometrics Incorporated 2005 Equity Incentive Plan.

(2) As of January 1, 2022, 3,376,166 shares were available under the 2020 Stock Plan and 1,258,488 shares were available under the ESPP.

OTHER MATTERS

The Company knows of no other matters to be submitted for consideration at the Annual Meeting. If any other matters properly come before the Annual Meeting, it is the intention of the persons acting as proxies to vote the shares they represent as the Board may recommend.

ADDITIONAL INFORMATION

Stockholders may obtain a copy of the Company's Annual Report on Form 10-K for the fiscal year ended January 1, 2022, including financial statements and schedules included in the Annual Report on Form 10-K, without charge, by visiting the Company's website at https://investors.ontoinnovation.com/ or by writing to:

Michael Sheaffer
Sr. Director, Investor Relations & Market Research
16 Jonspin Road
Wilmington, Massachusetts 01887

Upon written request to the Company, at the above address for Investor Relations, the exhibits set forth on the exhibit index of the Company's Annual Report on Form 10-K will be made available at reasonable charge (which will be limited to our reasonable expenses in furnishing such exhibits).

BY ORDER OF THE BOARD OF DIRECTORS

Yoon Ah E. Oh
Corporate Secretary

Dated: March 31, 2022

innovation™
onto

VOTE

C 1234567890

000004

ENDORSEMENT_LINE______________ SACKPACK_____________

MR A SAMPLE
DESIGNATION (IF ANY)
ADD 1
ADD 2
ADD 3
ADD 4
ADD 5
ADD 6

Online

Go to **www.investorvote.com/ONTO** or scan the QR code — login details are located in the shaded bar below.

Votes submitted electronically must be received by 11:59 PM, (EDT), on May 9, 2022.

Stockholder Meeting Notice

1234 5678 9012 345

Important Notice Regarding the Availability of Proxy Materials for the Onto Innovation Inc. Stockholder Meeting to be Held on May 10, 2022.

Under Securities and Exchange Commission rules, you are receiving this notice that the proxy materials for the annual stockholders' meeting are available on the Internet. Follow the instructions below to view the materials and vote online or request a copy. The items to be voted on and location of the annual meeting are on the reverse side. Your vote is important!

This communication presents only an overview of the more complete proxy materials that are available to you on the Internet. We encourage you to access and review all of the important information contained in the proxy materials before voting. The 2022 proxy statement and 2021 annual report is available to stockholders at:

www.investorvote.com/ONTO

Easy Online Access — View your proxy materials and vote.

Step 1: Go to **www.investorvote.com/ONTO.**
Step 2: Click on the icon on the right to view meeting materials.
Step 3: Return to the investorvote.com window and follow the instructions on the screen to log in.
Step 4: Make your selections as instructed on each screen for your delivery preferences.
Step 5: Vote your shares.

When you go online, you can also help the environment by consenting to receive electronic delivery of future materials.

Obtaining a Copy of the Proxy Materials – If you want to receive a copy of the proxy materials, you must request one. There is no charge to you for requesting a copy. Please make your request as instructed on the reverse side on or before April 29, 2022 to facilitate timely delivery.

2NOT COY

03L49C

Stockholder Meeting Notice

Onto Innovation Inc.'s Annual Meeting of Stockholders will be held on May 10, 2022, at 1550 Buckeye Drive, Milpitas, CA 95035 at 10:00 a.m. PT.

Proposals to be voted on at the meeting are listed below along with the Board of Directors' recommendations.

The Board of Directors recommends a vote FOR all the nominees listed and FOR Proposals 2-3:

1. Election of Directors:
   01 - Christopher A. Seams
   02 - Leo Berlinghieri
   03 - David B. Miller
   04 - Michael P. Plisinski
   05 - Karen M. Rogge
   06 - May Su
   07 - Christine A. Tsingos

2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in the proxy statement.
3. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022.

PLEASE NOTE – YOU CANNOT VOTE BY RETURNING THIS NOTICE. To vote your shares you must go online or request a paper copy of the proxy materials to receive a proxy card. If you wish to attend and vote at the meeting, please bring this notice with you.

Here's how to order a copy of the proxy materials and select delivery preferences:

Current and future delivery requests can be submitted using the options below.

If you request an email copy, you will receive an email with a link to the current meeting materials.

PLEASE NOTE: You must use the number in the shaded bar on the reverse side when requesting a copy of the proxy materials.

- **Internet** – Go to **www.investorvote.com/ONTO.**
- **Phone** – Call us free of charge at 1-866-641-4276.
- **Email** – Send an email to investorvote@computershare.com with "Proxy Materials Onto Innovation Inc." in the subject line. Include your full name and address, plus the number located in the shaded bar on the reverse side, and state that you want a paper copy of the meeting materials.

  To facilitate timely delivery, requests for a paper copy of proxy materials must be received by April 29, 2022.

C123456789

000000000.000000 ext 000000000.000000 ext
000000000.000000 ext 000000000.000000 ext
000000000.000000 ext 000000000.000000 ext

innovation™ onto

VOTE

000004

ENDORSEMENT_LINE______________ SACKPACK_____________

MR A SAMPLE
DESIGNATION (IF ANY)
ADD 1
ADD 2
ADD 3
ADD 4
ADD 5
ADD 6

Your vote matters – here's how to vote!

You may vote online or by phone instead of mailing this card.

Votes submitted electronically must be received by 11:59 PM, EDT, on May 9, 2022.

Online
Go to **www.investorvote.com/ONTO** or scan the QR code — login details are located in the shaded bar below.

Phone
Call toll free 1-800-652-VOTE (8683) within the USA, US territories and Canada

Save paper, time and money! Sign up for electronic delivery at www.investorvote.com/ONTO

Using a **black ink** pen, mark your votes with an **X** as shown in this example. Please do not write outside the designated areas. X

2022 Annual Meeting Proxy Card

1234 5678 9012 345

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

A Proposals — The Board of Directors recommends a vote FOR all the nominees listed and FOR Proposals 2 – 3.

1. Election of Directors:

	For	Against	Abstain		For	Against	Abstain		For	Against	Abstain
01 - Christopher A. Seams	☐	☐	☐	02 - Leo Berlinghieri	☐	☐	☐	03 - David B. Miller	☐	☐	☐
04 - Michael P. Plisinski	☐	☐	☐	05 - Karen M. Rogge	☐	☐	☐	06 - May Su	☐	☐	☐
07 - Christine A. Tsingos	☐	☐	☐								

	For	Against	Abstain		For	Against	Abstain
2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in the proxy statement.	☐	☐	☐	3. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022.	☐	☐	☐

B Authorized Signatures — This section must be completed for your vote to count. Please date and sign below.

Please sign exactly as name(s) appears hereon. Joint owners should each sign. When signing as attorney, executor, administrator, corporate officer, trustee, guardian, or custodian, please give full title.

Date (mm/dd/yyyy) — Please print date below.	Signature 1 — Please keep signature within the box.	Signature 2 — Please keep signature within the box.
/ /		

C 1234567890 J N T
1 U P X 5 3 5 5 5 0

MR A SAMPLE (THIS AREA IS SET UP TO ACCOMMODATE 140 CHARACTERS) MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND MR A SAMPLE AND

03L44C

2022 Annual Meeting Admission Ticket

2022 Annual Meeting of Onto Innovation Inc. Stockholders

May 10, 2022, 10:00 a.m. PT
Onto Innovation Inc.
1550 Buckeye Drive, Milpitas, CA 95035

Upon arrival, please present this admission ticket and photo identification at the registration desk.

Important notice regarding the Internet availability of proxy materials for the Annual Meeting of Stockholders.
The material is available at: https://www.ontoinnovation.com/ar-proxy

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

Onto Innovation Inc.

Notice of 2022 Annual Meeting of Stockholders

Proxy Solicited by Board of Directors for Annual Meeting — May 10, 2022

Leo Berlinghieri and David B. Miller, or either of them, each with the power of substitution, are hereby authorized to represent and vote the shares of the undersigned, with all the powers which the undersigned would possess if personally present, at the Annual Meeting of Stockholders of Onto Innovation Inc. to be held on May 10, 2022 or at any postponement or adjournment thereof.

Shares represented by this proxy will be voted in the manner directed by the stockholder. If no such directions are indicated, the Proxies will have authority to vote FOR the election of the Board of Directors and FOR items 2-3.

In their discretion, the Proxies are authorized to vote upon such other business as may properly come before the meeting.

(Items to be voted appear on reverse side)

C Non-Voting Items

Change of Address — Please print new address below.

Comments — Please print your comments below.

innovation™
onto

VOTE

Using a **black ink** pen, mark your votes with an **X** as shown in this example.
Please do not write outside the designated areas.

X

2022 Annual Meeting Proxy Card

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

A Proposals — The Board of Directors recommends a vote FOR all the nominees listed and FOR Proposals 2 – 3.

1. Election of Directors:

	For	Against	Abstain		For	Against	Abstain		For	Against	Abstain
01 - Christopher A. Seams	☐	☐	☐	02 - Leo Berlinghieri	☐	☐	☐	03 - David B. Miller	☐	☐	☐
04 - Michael P. Plisinski	☐	☐	☐	05 - Karen M. Rogge	☐	☐	☐	06 - May Su	☐	☐	☐
07 - Christine A. Tsingos	☐	☐	☐								

	For	Against	Abstain		For	Against	Abstain
2. To approve, on an advisory (non-binding) basis, the compensation of our named executive officers as disclosed in the proxy statement.	☐	☐	☐	3. To ratify the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022.	☐	☐	☐

B Authorized Signatures — This section must be completed for your vote to count. Please date and sign below.

Please sign exactly as name(s) appears hereon. Joint owners should each sign. When signing as attorney, executor, administrator, corporate officer, trustee, guardian, or custodian, please give full title.

Date (mm/dd/yyyy) — Please print date below.	Signature 1 — Please keep signature within the box.	Signature 2 — Please keep signature within the box.
/ /		

1 U P X 5 3 5 5 5 0

03L45C

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

Onto Innovation Inc.

Notice of 2022 Annual Meeting of Stockholders

Proxy Solicited by Board of Directors for Annual Meeting — May 10, 2022

Leo Berlinghieri and David B. Miller, or either of them, each with the power of substitution, are hereby authorized to represent and vote the shares of the undersigned, with all the powers which the undersigned would possess if personally present, at the Annual Meeting of Stockholders of Onto Innovation Inc. to be held on May 10, 2022 or at any postponement or adjournment thereof.

Shares represented by this proxy will be voted in the manner directed by the stockholder. If no such directions are indicated, the Proxies will have authority to vote FOR the election of the Board of Directors and FOR items 2-3.

In their discretion, the Proxies are authorized to vote upon such other business as may properly come before the meeting.

(Items to be voted appear on reverse side)

Board of Directors

Christopher A. Seams
Chairman of the Board
Former Chief Executive Officer
Deca Technologies

Leo Berlinghieri
Former Chief Executive Officer and President
MKS Instruments, Inc.

Edward J. Brown, Jr.
Former Chief Executive Officer
Cymer Light Source

David B. Miller
Former President
DuPont Electronics & Communications

Michael P. Plisinski
Chief Executive Officer

Bruce C. Rhine
Former Chief Strategy Officer
Nanometrics Incorporated

Karen M. Rogge
Founder and President
RYN Group LLC

May Su
Chief Executive Officer
Kateeva, Inc.

Christine A. Tsingos
Former Executive Vice President and Chief Financial Officer
Bio-Rad Laboratories

Executive Officers

Michael P. Plisinski
Chief Executive Officer

Steven R. Roth
Senior Vice President,
and Chief Financial Officer

James (Cody) Harlow
Chief Operating Officer

Robert Fiordalice
Senior Vice President and General Manager,
Metrology Business Unit

Ju Jin
Senior Vice President and General Manager,
Inspection Business Unit

Srinivas Vedula
Senior Vice President, Customer Success

Yoon Ah Oh
Vice President,
General Counsel and Corporate Secretary

NYSE
ONTO

Onto Innovation Inc.
16 Jonspin Road
Wilmington MA 01887
978.253.6200

ontoinnovation.com