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2002 NANOMETRICS ANNUAL REPORT
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AN INNOVATIVE APPROACH TO BUSINESS AND TECHNOLOGY

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FINANCIAL

TO OUR SHAREHOLDERS:

During 2002, the semiconductor and semiconductor equipment industries continued to endure the worst downturn in their history. Nanometrics is committed to emerging stronger from the downturn by investing in our long-term goals: expanding the range of our technology solutions through a deep commitment to R&D investments and using an innovative approach to technology and market development.

Nanometrics maintains a strong financial position to sustain investment in new products. We showed our largest percentage increase in R&D expenditures, which represented 39.6% of total net revenues.

This year, Nanometrics penetrated new markets and introduced innovative products and technology. Our ability to sustain a presence in diversified markets demonstrates an important component of our creative business strategy.

In June, Nanometrics entered a new market with the launch of its 300mm defect inspection technology. In November, Nanometrics launched its laser profiler system for control of the copper chemical mechanical planarization process.

Four other products were introduced in 2002 that increased Nanometrics' presence in its current markets. Nanometrics introduced its next-generation stage technology platform that will support its 300mm metrology products for years to come. Nanometrics unveiled the industry's first in-vacuum stage technology for its Integrated Metrology® products. The company also introduced a wireless network configuration

version of its NanoNet™ technology, which is a proprietary software networking technology for more efficient use of standalone and Integrated Metrology tools. In addition, Nanometrics launched 300mm wafer stress and wafer bow measurement technology as an added feature of its NanoSpec® thin-film analysis systems.

To summarize, in 2002, Nanometrics added an amazing number of new metrology systems to its portfolio of products for on-the-fly wafer defect inspection, improved control of copper films, faster and higher precision wafer positioning stages, first-time in-vacuum measurements, proprietary software for improved process control and products for minimizing wafer warping and improving manufacturing control.

Nanometrics is committed to both standalone and Integrated Metrology systems to ensure that every customer's needs are met. Our R&D investments indicate that we are poised to take advantage of industry growth.

An increasingly balanced position between standalone metrology and Integrated Metrology demonstrates our customer strategy. The convergence of challenging new technologies, such as copper and low-K, combined with lowered production capacity, have pushed standalone tools into the metrology spotlight once again. We expect that Integrated Metrology will be a major source of revenue growth during the next capacity ramp.



Along with the rest of the high-tech community of capital equipment suppliers, Nanometrics saw its annual revenue decline as a result of reduced orders. Yet Nanometrics was able to show increasing revenues throughout the year as some customers continued to invest, and Nanometrics continued to reinvest in products and technology.

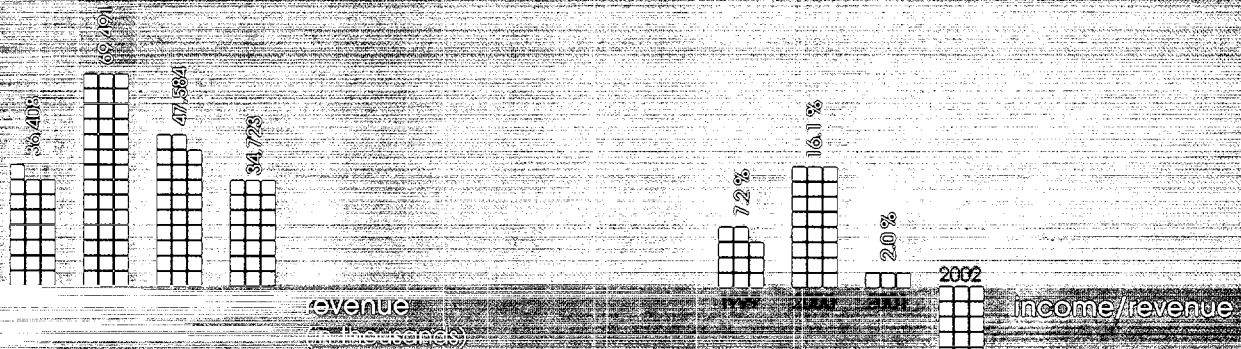
FINANCIAL RESULTS: For the year ended December 31, 2002, Nanometrics' revenues decreased 27% to \$34.7 million compared to revenues of \$47.6 million in 2001. The net loss for the year ended December 31, 2002 was \$8.3 million or a loss of \$0.70 per diluted share, compared to a net income of \$960,000 or income of \$0.08 per diluted share in 2001. Investment in R&D increased from \$10.8 million in 2001 to \$13.8 million in 2002. The Company's financial position continues to be strong with cash and equivalents and short-term investments of \$36.9 million and working capital of \$74.8 million.

Sincerely,



JOHN D. HEATON
CEO

VINCENT J. COATES
CHAIRMAN



INVESTING IN THE FUTURE BY BUILDING A STRONG FOUNDATION TODAY

Nanometrics has capitalized on the industry downturn by building technological depth and broadening its portfolio through investments in R&D and an assertive intellectual property program, including the development of various patents. As a result, Nanometrics is well positioned with advanced products that offer cost-efficiency and process control for next-generation, sub-100nm processes that the industry will need when the market turns around.

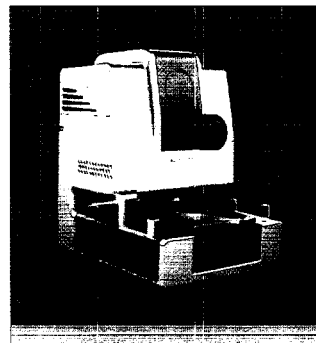
Today, the company boasts the industry's largest portfolio of in-production process module integrations. Nanometrics also has the largest technology portfolio – including DUV-Vis reflectometry, optical CD, defect inspection, wafer stress measurement and profilometry products – compared to any other Integrated Metrology supplier.

Nanometrics offers a broad range of core process control technologies for processing needs and process control solutions. Nanometrics has designated this as InTool™ Integrated Metrology.



Nanometrics offers the technology necessary to solve the industry's most critical problems and is committed to improving profitability based on its entire toolset.

The company holds 19 patents in the United States and has 36 patent applications pending, 16 of which were filed during 2002.

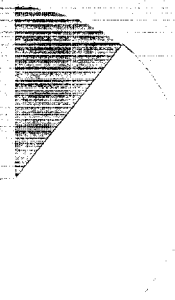


NANOSPEC 9010DUV

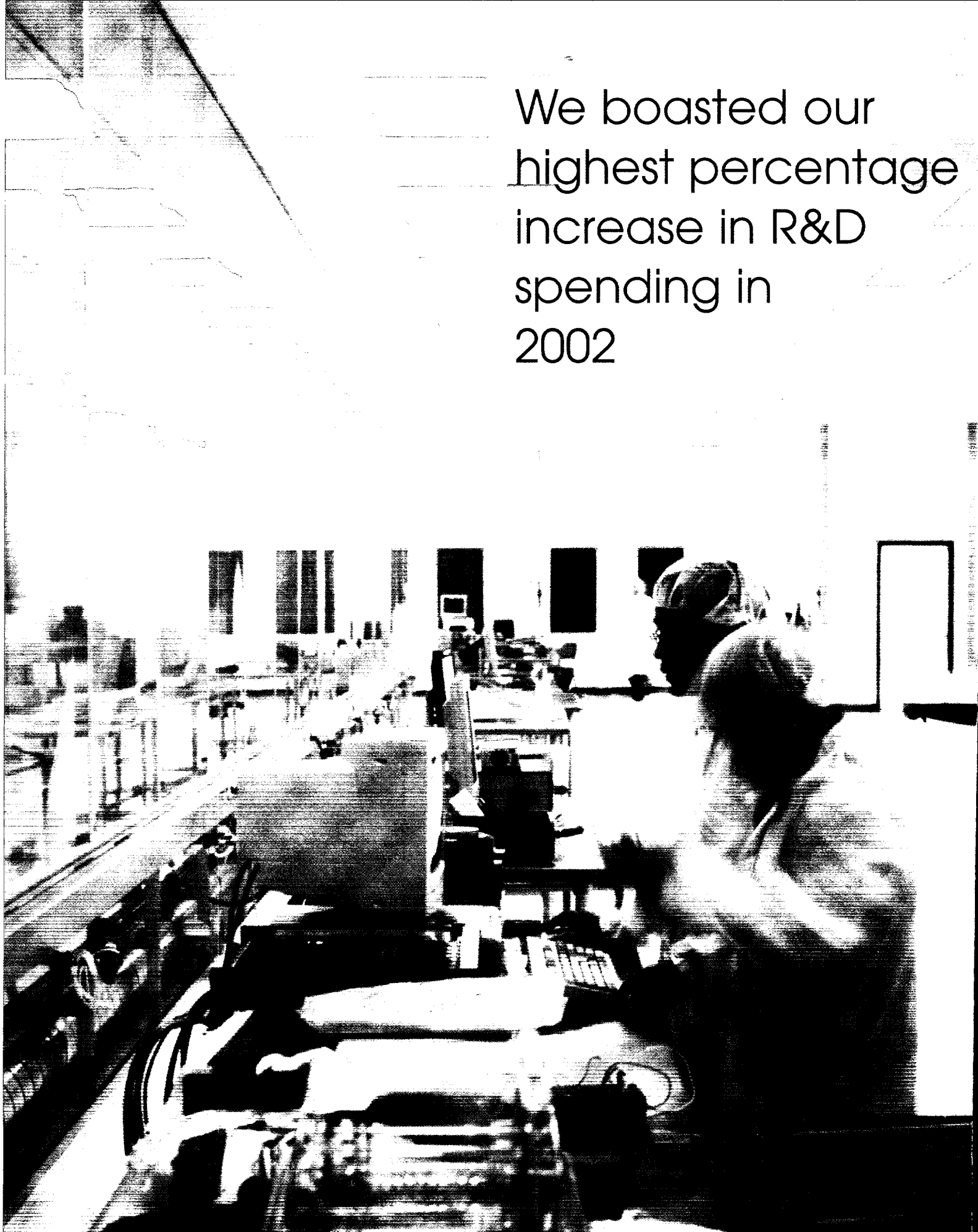
INTOOL SERIES
INTEGRATED FILM
ANALYSIS SYSTEM

revenue by region

■	U.S.A.	31.0%
■	Japan	23.9%
■	Taiwan	22.7%
■	Korea	10.5%
■	Germany	1.1%
■	Rest of World	10.8%



We boasted our
highest percentage
increase in R&D
spending in
2002



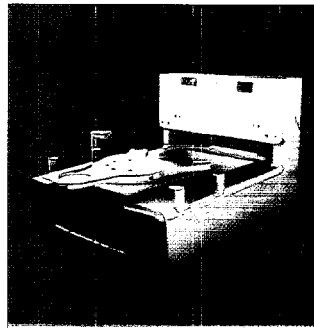
BALANCED FOCUS: STANDALONE AND INTEGRATED METROLOGY

Nanometrics is the only company successfully selling complete metrology solutions using standalone and Integrated Metrology for advanced process control.

Integrated Metrology supported by standalone metrology is one of the best methods available to lower manufacturing costs by improving yields. Customer adoption of these complete metrology solutions has already begun. In addition to a large installed base of standalone systems, Nanometrics has an installed base of nearly 300 Integrated Metrology systems worldwide.

Nanometrics expects that standalone systems will remain as the primary metrology market through 2005. To address this issue, Nanometrics is adding new capabilities to both its standalone and Integrated Metrology.

Semiconductor manufacturers continue to seek ways to reduce manufacturing cost and improve device performance. Metrology is proving to be an integral solution as the industry moves towards the convergence of 300mm, copper and low- κ technologies. Integrated Metrology pushes the envelope because it improves overall equipment efficiency to raise productivity at reduced cost and with better device performance.



INTool™ 9010

INTool SERIES
INTEGRATED
WAFER STAGE



FINISHED GOODS

During 2002,
we entered the
defect inspection
and copper
metrology
markets

COMMITTED TO OUR CUSTOMERS THROUGH A GROWING PORTFOLIO

During 2002, Nanometrics entered the defect inspection and copper metrology markets with the introduction of several new systems. The company also introduced a broader range of technologies for the markets where it is already an established leader.

Nanometrics continues to demonstrate its innovation through technology advancements and creative market strategy. The design consistency of Nanometrics' technology enables customers to obtain the most reliable and consistent products available.

The company believes that it holds the number one market share in three arenas: CVD, CMP dry-in/dry-out and etch. In the overall CMP market, Nanometrics believes that it holds the number two position. Nanometrics' customer base includes industry leaders around the world:

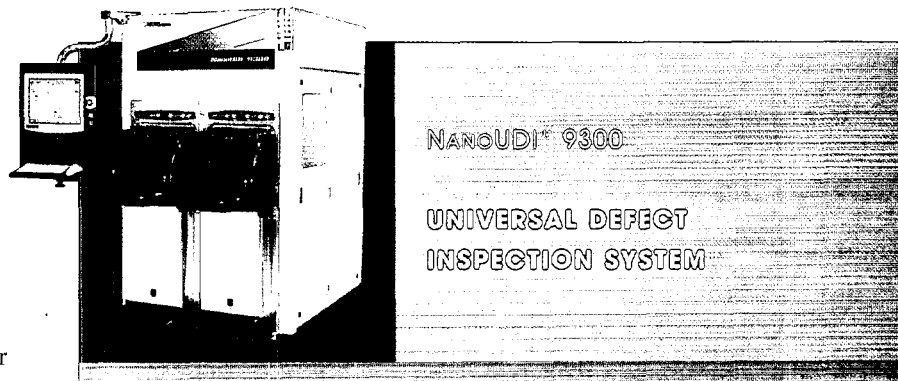
Applied Materials
AU Optronics
Hynix
Micron
Read-Rite

Samsung
SMIC
TEL
Toppoly
TSMC

New product introductions for this year:

- The NanoUDI™ (universal defect inspection) technology was designed to meet the emerging yield management requirements as the industry transitions to 300mm wafer processing. The NanoUDI 9300 is the first in the product series, and features a unique edge-gripping wafer handling system that enables inspection of both the front and back-side of the wafer without wafer surface contact. An advanced combination of high efficiency illumination for inspection, high-resolution optics for macro-defect detection and sophisticated image processing ensures the detection of "killer" defects.
- The NanoCLP™ 9010 copper laser profiler is Nanometrics' total solution for copper CMP metrology. The Integrated Metrology module was developed to control both copper and tungsten CMP processes by predicting excessive metal loss and high probability of residuals. This compact, fast and precise tool characterizes the entire low-κ/copper process when combined with other Integrated Metrology modules.
- A next generation, 300mm, stage technology platform designed to support Nanometrics' advanced metrology platforms for years to come, the new atmospheric stage technology is compatible with Nanometrics' next-generation measurement and inspection technologies

- The industry's first in-vacuum technology was wafer stage technology designed specifically for the Integrated Metrology market. This stage platform is compatible with all of Nanometrics' metrology technologies and can be integrated on both 300mm and 200mm cluster tools. This technology gives Nanometrics access to a large retrofit market from the installed base of 200mm cluster tools. The stage technology enables metrology measurements without breaking vacuum, which is important for critical dimension measurement and ultra-thin film thickness control.
- A wireless network configuration version of Nanometrics' NanoNet technology. The system integrates seamlessly into existing fab networks as a wireless overlay or standalone wireless network for NanoNet, a proprietary software networking technology for integrated and standalone metrology systems.



- Wafer stress management option on NanoSpec thin-film analysis systems. The system provides a cost effective approach to wafer bow and stress measurement by eliminating the need to purchase a second metrology tool. By adding the stress measurement capability to film measurement systems, the need for separate tools is eliminated, thereby lowering capital expense and freeing valuable fab space.

Nanometrics' global locations continued to distinguish themselves with the introduction of new technology in 2002.

- Nanometrics Japan launched a new flat panel display product design for next generation substrate sizes.
- Nanometrics Korea unveiled a new 300mm aerial imaging overlay product design that is built on the company standard 9300 platform.



Our automated
manufacturing cell
can make the key

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 December 31, 2002

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. 0-13470

NANOMETRICS INCORPORATED

(Exact name of registrant as specified in its charter)

California
(State or other jurisdiction of incorporation or organization)

94-2276314
(I.R.S. Employer Identification No.)

1550 Buckeye Drive, Milpitas, California
(Address of principal executive offices)

95035
(Zip Code)

Registrant's telephone number, including area code: (408) 435-9600

Securities registered pursuant to Section 12(b) of the Act:

None

Securities registered pursuant to Section 12(g) of the Act:

Common Stock, no par value

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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

The aggregate market value of the voting stock held by non-affiliates of the registrant, based upon the closing price of Common Stock on February 25, 2003, as reported by Nasdaq, was approximately \$16,150,446. Shares of voting stock held by each officer and director and by each person who owns 5% or more of the outstanding voting stock have been excluded because such persons may be deemed to be "affiliates" as that term is defined under the rules and regulations of the Securities Exchange Act of 1934, as amended. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act).

YES NO

As of June 28, 2002, the aggregate market value of the Common Stock of the registrant held by non-affiliates was approximately \$73,877,364.

As of February 25, 2003, 12,006,641 shares of the registrant's Common Stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Certain portions of the registrant's definitive proxy statement, to be filed with the Securities and Exchange Commission pursuant to Regulation 14A of the Securities Exchange Act of 1934 in connection with the registrant's annual meeting of shareholders to be held on May 14, 2003, are incorporated by reference in Part III of this Form 10-K.

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NANOMETRICS INCORPORATED

FORM 10-K

YEAR ENDED DECEMBER 31, 2002

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PART I

ITEM 1. BUSINESS

This Business section and other parts of this Annual Report on Form 10-K contain forward-looking statements that involve risks and uncertainties. Forward-looking statements include information concerning our future results of operations. Our actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed below and in "Management's Discussion and Analysis of Financial Condition and Results of Operations." The forward-looking statements contained herein are made as of the date hereof, and we assume no obligation to update such forward-looking statements or to update reasons actual results could differ materially from those anticipated in such forward-looking statements. When we use words such as "believe," "expect," "anticipate" or similar expressions, we are making forward-looking statements.

Overview

We are a leader in the design, manufacture, marketing and support of thin film, critical dimension, surface defect inspection and overlay metrology systems for the semiconductor, flat panel display and magnetic recording head industries. Our systems precisely measure a wide range of film types deposited on substrates during manufacturing in order to control manufacturing processes and increase production yields. Our non-contact, non-destructive metrology systems use a broad spectrum of wavelengths, high-sensitivity optics, proprietary software and patented technology to measure the thickness, critical dimensions, surface defects, optical constants and uniformity of films and structures deposited on silicon and other substrates. In addition, we have microscope and software-based technology for measuring the relative alignment (overlay) of adjacent thin film layers – a critical parameter in device production.

We have made several strategic changes in our business over the past few years that have enabled us to further participate in these industries. These changes include:

- Becoming an original equipment manufacturer, or OEM, of metrology systems that are integrated into various types of semiconductor processing equipment;
- The development of new products that can be used for 300 millimeter wafers and chemical mechanical planarization;
- An increased emphasis on product development, manufacturing and direct sales in Japan and Korea;
- A shift to direct sales from third-party representatives in Asia and the United States;
- A decision to outsource certain system components such as robotics, enabling us to leverage our technical resources;
- The development of a vertical integration strategy for our integrated metrology product line; and
- The development of new technologies for advanced lithography.

Demand for our products is driven by the increasing use of thin film technology by manufacturers of electronic products and, more recently, by the increased adoption of both integrated metrology and Advanced Process Control (APC) by semiconductor manufacturers. With feature sizes shrinking below 100 nanometers, well below the wavelength of light, the need for very tight process tolerances as well as productivity improvements in semiconductor fabrication, or fabs, are driving the need for integrated metrology and APC. We have become a leader in innovating and designing an optical critical dimension (OCD) measurement system. Our integrated OCD solution is increasingly being viewed not only as an enabling technology for APC, but also as a solution for critical dimension measurement in a market segment previously dominated by e-beam based scanning electron microscope (SEM) systems that are now reaching their sensitivity limit for these smaller circuit dimensions. The compact size and speed of this new OCD technology enables the measurement system to be fully integrated into the process tool, thus providing a complete, feed forward and feedback APC solution for wafer-to-wafer closed loop control. In addition, new process technologies such as copper interconnects require that new measurement technologies be developed in order to keep pace with these latest metrology demands. Our integrated Copper Laser Profiler (CLP) represents a unique approach to the problem of determining the amount of copper material removed during the Chemical Mechanical Planarization (CMP) process. The very small footprint and throughput of this new CLP system was achieved with the development of several new enabling technologies for integrated metrology, including an edge-gripping wafer handling stage with integral pre-aligner. A version of this stage was also developed for operation within a process tool's vacuum chamber, eliminating the need to expose the wafer's sensitive films to ambient air. This improves the throughput of the tool during measurement and eliminates the potential damage due to excessive wafer handling as well as exposure to outside sources of contamination. We also announced a new Universal Defect Inspection (UDI) system. The NanoUDI 9300, is a fully-automated 300 millimeter tool for defect and contamination detection on a wide variety of films and surfaces. The system combines high efficiency illumination and high resolution optics with sophisticated image processing to detect and classify particles and defects in the sub-micron range.

Many types of thin films are used in the manufacture of several products, including semiconductors, flat panel displays and magnetic recording heads, as well as integrated fiber optics, conventional and advanced optics, high density optical and magnetic disks and lasers. These products require the precise electronic, optical, magnetic and surface finish properties enabled by thin film technology. The growth in the sale and use of these products and the need for tighter process control and improved productivity has created demand for our standalone and integrated metrology systems.

We offer a complete line of systems to address the metrology requirements of our customers. Each of our systems is equipped with computerized mapping capability for measurement, visualization and control of film uniformity, layer-to-layer circuit alignment and critical dimensions. Our metrology systems can be categorized as follows:

- Stand-alone, fully automated systems for high-volume manufacturing operations;
- Integrated systems for integration into semiconductor processing equipment that provide almost immediate measurements and feedback to improve process control and increase throughput; and
- Tabletop systems used to provide manual or semi-automatic measurements for engineering and low-volume production environments.

In addition, we provide systems that are used to measure the overlay accuracy of successive layers of semiconductor patterns on wafers in the photolithography process. The accurate alignment, or overlay, of successive film layers, relative to each other, across the wafer is critical for device performance and favorable production yields.

We have been a pioneer in the field of thin film measurement and have been instrumental in the development of many innovations for over two decades. We have been selling metrology systems since 1977 and have an extensive installed base with industry leading customers worldwide, including Applied Materials Inc., Samsung, Hynix Semiconductor Inc., IBM, Intel Corporation, Micron Technology, Inc., TSMC Ltd. and Hitachi Ltd.

Industry Characteristics

Growth

Moore's Law which, simply stated, predicts a doubling of integrated circuit performance with a 50% reduction in manufacturing costs every 18 months, is an important factor in determining factory investment in the semiconductor industry. Two other important industry drivers are: (i) as users of semiconductor chips demand increasingly higher performance, chip designs become increasingly complex, requiring more complicated manufacturing processes and (ii) the requirement for continually decreasing chip costs. The semiconductor equipment industry has experienced cyclical growth with a compounded annual growth rate of approximately 15-17% over the past 20 years. Recently, the semiconductor industry has experienced a cyclical downturn, which began in the fourth quarter of 2000 and has continued through 2001 and 2002. However, the metrology market is expected to grow more rapidly than the overall semiconductor equipment market. We believe that the convergence of 300 millimeter, copper conductors and fast, sub-100 nanometer architecture, will drive the demand for new metrology solutions, in which Nanometrics specializes.

In the past, demand for Internet access, personal computers, telecommunications, and new consumer electronic products and services has fueled growth of the semiconductor, data storage and flat panel display industries. New communications technologies and Internet applications will likely remain as the primary drivers in the near-term for the semiconductor industry. We believe that consumer desire for high performance electronics drives technology advancement in semiconductor design and manufacturing and, in turn, promotes the purchasing of capital equipment featuring the latest advances in technology. The two significant factors affecting demand for our measurement systems are: (i) new construction or refurbishment of manufacturing facilities, which, in turn, depends on the current and anticipated market demand for semiconductors, disk drives, flat panel displays, and products that use such components, and (ii) the increasing complexity of the manufacturing process as a result of the demand for higher performance semiconductors, magnetic recording heads and flat panel displays.

Semiconductor Manufacturing Process

Semiconductors are fabricated by a series of process steps on a wafer substrate made of silicon or other material. Our thin film, critical dimension, and overlay metrology and defect inspection systems can be used at many points during the fabrication process to monitor and measure circuit dimensions, layer-to-layer registration, film uniformity as well as material properties in order to maximize the yield of acceptable semiconductors. Each wafer typically goes through a series of 100 to 500 process and metrology steps in generally repetitive cycles.

The four primary wafer film processing steps are:

- Deposition;
- Chemical Mechanical Planarization, known in our industry as CMP;
- Photolithography imaging and overlay; and
- Etching of circuit elements.

Deposition. Deposition refers to placing layers of insulating or conducting materials on a wafer surface in thin films that make up the circuit elements of semiconductor devices. The four most common methods of deposition are chemical vapor deposition (CVD), physical vapor deposition (PVD), diffusion and oxidation. The control of uniformity and thickness during deposition of these films is critical to the performance of the semiconductor circuit.

Chemical Mechanical Planarization. CMP flattens, or planarizes, the topography of the film surface to permit the multiple patterns of small features on the resulting smoothed surface by the photolithography process. The CMP process is a combination of chemical etching and mechanical polishing and commonly uses an abrasive liquid and polishing pad. Semiconductor manufacturers need metrology systems to control the CMP process by measuring the thin film layer to determine precisely when the appropriate thickness has been correctly polished and achieved.

Photolithography. Photolithography is the process step that projects the patterns of the circuits on the chip. A wafer is pre-coated with photoresist, a light sensitive film, that must have an accurate thickness and uniformity for exposure. Photolithography involves the projection of integrated circuit patterns onto the photoresist after which, the photoresist is developed, leaving unexposed areas available for etching. In order to precisely control the photolithography process, it is necessary to verify reflectivity, film thickness, critical dimensions and overlay registration.

Etch. Etch is a dry or wet process for selectively removing unwanted areas that have been deposited on the surface of a wafer. A film of photoresist protects material that needs to be left untouched by the etch to make up the circuits. Thin film metrology systems are required to verify precision of material removal and critical dimension achievement.

Before and after deposition, CMP, photolithography and etch, the wafer surface is measured to determine the quality of the film or pattern and to find defects. Measurements taken to ensure process uniformity include thickness, width, height, roughness and other characteristics. Process control helps avoid costly rework or misprocessing and results in higher yields for semiconductor manufacturers.

These processing steps are typically repeated multiple times during the fabrication process, with alternating layers of insulating and conducting films. Depending on the specific design of a given integrated circuit, a variety of film types and thicknesses and a number of layers can be used to achieve desired electronic performance characteristics. The semiconductors are then tested, separated into individual circuits, assembled and packaged into an integrated circuit.

Flat Panel Display and Magnetic Recording Head Manufacturing Processes

Flat panel displays and magnetic recording heads are manufactured in clean rooms using thin film processes that are similar to those used in semiconductor manufacturing. Most flat panel displays are constructed on large glass substrates that range in size up to 1,100 millimeters. Multiple magnetic recording heads are manufactured on substrates that are typically made of an aluminum oxide-titanium carbide alloy, two to three millimeters thick and approximately 150 millimeters across.

Increased Use of Metrology in Manufacturing

Continually rising wafers costs are forcing semiconductor manufacturers to re-evaluate their manufacturing strategies at all levels, from individual process steps to fabwide process optimization. Many major semiconductor manufacturers are adopting feed-forward and feedback of film thickness and critical dimensions or CDs based on real-time data from metrology systems. Major benefits of these new metrology strategies are higher manufacturing efficiencies from reduced rework, reduced headcount to perform at the same quality level and increased device performance. Additional benefits include device speed matching and more precise control of the overall manufacturing process.

Drive Toward Integrated Metrology

For many years, semiconductor manufacturers have sought to improve fab efficiency by choosing systems that integrate more than one process step into a single tool. Integrated solutions increase productivity with higher throughput, smaller overall footprint, reduced wafer handling and faster process development. This trend began in the mid-1980s, as leading manufacturers introduced a "cluster process tool" architecture that combined multiple processes in separate chambers around a central wafer handling platform. More recently, CMP systems have begun to integrate cleaning technology into a single system in order to achieve these benefits.

Today, the same focus on increased productivity is driving the adoption of integrated metrology for many processes, such as CMP, CVD, lithography and etch. Until recently, semiconductor manufacturers were required to physically transport wafers from a process tool to a separate metrology system in order to make critical measurements such as film thickness and uniformity. Manufacturers of process equipment are increasingly seeking to offer their customers integrated metrology in their tools to lower costs and improve overall fab efficiency. These tools can have one or two metrology chambers that are integrated onto a process system, which utilize the common automation platform, so that measurements can be taken without removing the wafers from the tool. Integrated metrology provides semiconductor manufacturers with several benefits, including a reduction in the number of test wafers, increased overall process throughput, faster detection of process excursions and faults, reduced wafer handling, faster process development and ultimately an improvement in overall equipment effectiveness.

Nanometrics Solution

We offer a complete line of metrology systems to address the broad range of metrology requirements of our customers. Our metrology systems can be categorized as:

- **Stand-alone, fully automated systems used for the characterization and measurement of thin films in high-volume manufacturing operations.** We offer a broad line of fully automated thin film thickness, critical dimension, defect inspection and overlay measurement systems. These systems remove the dependence on human operators by incorporating reliable wafer handling robots and are designed to meet the speed, measurement, performance and reliability requirements that are essential for today's semiconductor, flat panel display and magnetic recording head manufacturing facilities. Each of these measurement systems are non-contact and use non-destructive techniques to analyze and measure films. Our fully automated metrology product line also includes systems that are used to measure the critical dimensions and overlay registration accuracy of successive layers of semiconductor patterns on wafers in the photolithography process.
- **Integrated systems used to measure in-process wafers automatically and quickly without having to leave the enclosed wafer processing system.** In 1998, we introduced our high-speed integrated metrology system. Our integrated metrology systems are compact and monitor a multitude of small test points on the wafer using sophisticated pattern recognition. Our integrated systems can be attached to film deposition, CMP, CVD, lithography, etch and other process tools to provide rapid monitoring of films on each wafer immediately before or after processing. Integrated systems can offer customers significantly increased operating efficiency and equipment utilization, lower manufacturing costs and higher throughput. We are currently shipping integrated systems to Applied Materials for installation on their CMP, CVD and etch tools.
- **Tabletop systems used to manually or semi-automatically measure thin films in engineering and low-volume production environments.** We have been a pioneer in and believe that we are the leading supplier of tabletop thin film thickness measurement systems, which are mainly used in low-volume production environments and failure analysis and engineering labs. Our tabletop models have unique capabilities and several available configurations, depending on wafer handling, range of films to be measured, uniformity mapping and other customer needs.

Each of our measurement systems is equipped with computerized readout capability for measurement, visualization and control of film uniformity and thickness, critical dimensions and overlay. In addition, we have developed new automated systems and tabletop products for emerging technologies using larger substrates such as 300 millimeter wafers and larger flat panel displays. We were one of the first companies to ship fully automated thin film thickness measurement systems for 300 millimeter wafers. We have also introduced new technology for the precise thin film measurements that are dictated by sub-0.13 micron design rules and have developed products with mini-environments that meet the latest standards for clean, particle-free manufacturing.

Strategy

Our strategy is to offer and support, on a worldwide basis, technologically advanced metrology solutions that meet the changing manufacturing requirements of the semiconductor, flat panel display and magnetic recording head industries, as well as other industries that use metrology systems. Key elements of our strategy include:

Continuing to Offer Advanced Integrated Metrology Systems. We were one of the first suppliers to offer products that integrated process metrology systems into wafer processing equipment. We supply integrated metrology systems for Applied Materials' Mirra Mesa™ and 300mm Reflexion™ CMP systems and the Producer QA and SE™ CVD systems. Recently we introduced a revolutionary optical critical dimension (OCD) metrology system that is incorporated in the Applied Materials' Transforma™ 300mm etch system for controlling critical dimensions. The integrated metrology sales group was established to focus on sales of integrated metrology products to both OEMs and end-users. The integrated metrology sales group works together with our traditional sales channels of representatives and direct employees.

Maintaining Technology Leadership. We are committed to developing advanced metrology systems that meet the requirements of advanced semiconductor, magnetic head and flat panel display manufacturing technology. We have an extensive base of proprietary technology and expertise in optics, software and systems integration. We have chosen to reduce our dependence on outside suppliers by taking control of the manufacturing of the critical components of our metrology systems. Key enabling technologies, such as our recently developed edge-gripping atmospheric and vacuum wafer handling stages allow us to provide unique products with exceptionally high quality and low manufacturing costs to our OEM customers. We have supplemented our capabilities by establishing strategic relationships to leverage our technical resources and strengthen our product offerings. One such relationship is with J.A. Woollam Company, a leading designer of spectroscopic ellipsometer systems.

Broadening Our Technology Portfolio. We continue to add a wide range of new measurement technologies to our expanding base of intellectual property. The recently introduced copper metal profiler for CMP process control combines optical profilometry with our highly successful reflectometry technology to monitor metal removal during the chemical mechanical planarization process. This metrology is a key requirement for the copper damascene process, which replaces the current subtractive aluminum process on newer semiconductor devices. We also entered the particle and defect inspection market with the introduction of our Universal Defect Inspection (UDI) technology. This technology has applications not only for inspection of semiconductor wafers but also for flat panel displays for the purpose of detecting killer defects early in the process before they cause catastrophic yield loss.

Leveraging Existing Customer and Industry Relationships. We expect to continue to strengthen our existing customer relationships and foster working partnerships by providing technologically superior systems and high levels of customer support. Our strong industry relationships have allowed close customer collaboration that facilitates our ability to introduce new products and applications that meet customer needs. We believe that our large customer base will continue to be an important source of new product development ideas. Our large customer base also provides us with the opportunity for increased sales of additional metrology systems to our current customers.

Providing Worldwide Distribution and Support. We believe that a direct sales and support capability is essential for developing and maintaining close customer relationships and for rapidly responding to changing customer requirements. Because a majority of our sales come from sources outside of the United States, we have expanded our direct sales force in Europe, South Korea, Taiwan and China, and will continue to expand into additional territories as customer requirements dictate. We use selected sales representatives and distributors in other countries in Southeast Asia and the Middle East. We intend to continue developing our distribution network by expanding our existing offices, opening new offices and forming additional distribution relationships. We believe that growing our international distribution network will enhance our competitive position.

Addressing Multiple Markets. There are broad applications of our technology beyond the semiconductor industry. We offer a comprehensive family of metrology systems that accurately measure thin films, critical dimensions and overlay registration used in the semiconductor manufacturing process. Newer products inspect for particles and defects and monitor critical metal loss during the copper removal process. We intend to continue developing and marketing products to address metrology requirements in the manufacture of flat panel displays, magnetic recording heads and any other industries that might apply our technology in the future. We believe that our diversification through multiple industry applications of our technology increases the total available market for our products and reduces, to an extent, our exposure to the cyclicity of any particular market.

Products

We have been a pioneer in the field of thin film metrology and have been instrumental in the development of many innovations over the past 25 years. Our thin film thickness measurement systems use microscope-based, non-contact spectroscopic reflectometry (SR). Some of our systems provide complementary spectroscopic ellipsometry (SE) to measure the thickness and optical characteristics of films on a variety of substrates. In addition, we have both integrated and standalone optical critical metrology systems to measure critical dimensions of patterns on semiconductor wafers. We also manufacture a line of optical overlay registration systems that are used to determine the alignment accuracy of successive layers of semiconductor patterns on wafers in the photolithography process. Our products can be divided into three groups: automated systems, integrated systems and tabletop systems.

System	Market	Substrate Size	Applications	Technology
Automated				
8000X	Semiconductor, Magnetic Head	75-200mm 200/300mm	CVD, CMP, Etch, Litho, Film Thickness	SR, SE
8300X	Semiconductor, Magnetic Head	200mm 300mm	CVD, CMP, Etch, Litho, Film Thickness	SR, SE
9100	Semiconductor, Magnetic Head	75-200mm	CVD, CMP, Etch, Litho, Film Thickness	SR, SE
9200	Semiconductor	150mm 200mm	CVD, CMP, Etch, Litho, Film Thickness	SR
9300	Semiconductor	200mm 300mm	CVD, CMP, Etch, Litho, Film Thickness	SR, SE, OCD, UDI, CLP
5500/6500	Flat Panel Display	550mm x 650mm, 960mm x 1100mm	Film Thickness	SR
7210	Semiconductor	200mm	Overlay	Imaging
Integrated				
9000	Semiconductor	200mm	CVD, CMP, Film Thickness	SR
9000i	Semiconductor	200mm 300mm	CVD, CMP, Etch, Film Thickness, CD	SR, OCD
9000b	Semiconductor	300mm	CVD, CMP, Etch, Film Thickness	SR
9010	Semiconductor	300mm	CMP, Film Thickness	SR, CLP
9020	Semiconductor	200mm	Etch, Vacuum CD	OCD
Table Top				
3000	Semiconductor, Magnetic Head	75mm 150mm	Film Thickness	SR
6100	Semiconductor	75mm 150mm 200mm	Film Thickness	SR

We introduced a number of new standalone and integrated products to the market in 2002. These products include the following which are detailed in the sections below:

- NanoUDI 9300 standalone wafer particle and defect inspection system
- 9010 integrated metrology platform for atmospheric metrology
- 9020 integrated metrology platform for in-vacuum metrology
- NanoCLP 9010 optical laser profiler for copper metal loss measurement

In addition, we introduced a wireless network configuration of our NanoNet technology, as well as a wafer stress management option on our NanoSpec thin-film analysis systems. Our subsidiaries in Japan and Korea also unveiled a new flat panel display product design, as well as a 300 millimeter aerial imaging overlay product design.

Automated Systems

Our stand-alone, fully automated metrology systems are employed in high-volume production environments. These systems incorporate automated material handling interface options for a variety of fab automation environments and implement multiple measurement technologies for a broad range of substrate sizes. Our automated systems range in price from approximately \$200,000 to \$900,000, depending on substrate sizes, measurement technologies, material handling interfaces and software options.

NanoSpec 8000X

The NanoSpec 8000X stand-alone, automated thin film measurement system is capable of handling wafers ranging in size from 75 to 200 millimeters in diameter. The 8000X is the basic system configuration, while the 8000XSE includes a spectroscopic ellipsometer for ultra-thin and multiple film stack measurement applications. Other 8000X options include a standard mechanical interface with mini-environment enclosures for use in ultra-clean manufacturing facilities. The 8000X can also be configured to handle the substrates that are used in the magnetic recording head industry.

NanoSpec 8300X

The NanoSpec 8300X stand-alone, automated thin film measurement system is capable of handling both 200 and 300 millimeter diameter wafers. The 8300X is the basic system configuration and can be equipped with the spectroscopic ellipsometer for expanded measurement applications. This system can also include a mini-environment enclosure and wafer load ports compatible with industry standards. The 8300X received a Photonics Circle of Excellence Award for innovation and achievement in photonic technology.

NanoSpec 9100

The NanoSpec 9100 stand-alone, automated thin film measurement system is capable of handling wafers ranging in size from 75 to 200 millimeters in diameter. The 9100 can be configured with a deep ultraviolet (DUV) to near infrared (NIR) spectroscopic ellipsometer for ultrathin, multiple film stack and DUV lithography measurement applications. Other 9100 options include a standard mechanical interface with mini-environment enclosures for use in ultra-clean manufacturing facilities. The system also features a Windows NT software platform that conforms to the newly established SEMI user interface standard. The 9100 can also be configured to handle the substrates that are used in the magnetic recording head industry. We developed the 9100 using technologies from the integrated film thickness systems to allow easy transfer of measurement recipes between the integrated and stand-alone film metrology systems.

NanoSpec 9200

The NanoSpec 9200 stand-alone, automated thin film measurement system is capable of handling wafers of 150 and 200 millimeters in diameter. We developed this system using technologies from the NanoSpec 9000 integrated film thickness system to be compact and to provide high wafer throughput.

9300 Standalone Automation Platforms

The 9300 stand-alone wafer automation platform serves as a common, universal building block and forms the basis for several fully automated metrology systems.

NanoSpec 9300

The NanoSpec 9300 stand-alone, automated thin film measurement system is capable of handling both 200 and 300 millimeter diameter wafers. The 9300 can be configured with a DUV to NIR spectroscopic ellipsometer for ultrathin, multiple film stack and DUV lithography measurement applications. This system can also include a mini-environment enclosure and wafer load ports compatible with industry standards. The 9300 conforms to the new industry standards for 300 millimeter wafer handling automation and features a Windows NT software platform that conforms to the newly established SEMI user interface standard. We developed the 9300 using technologies from the integrated film thickness systems to allow easy transfer of measurement recipes between the integrated and stand-alone film metrology systems.

NanoUDI 9300

The NanoUDI 9300 stand-alone, high throughput, full-wafer defect inspection system detects and measures particles and defects as small as 0.1 microns on 300 millimeter diameter semiconductor wafers. The system was first introduced at SEMICON West in July 2002 and is built on the common 9300 wafer automation platform that includes the new industry standards for 300 millimeter wafer handling. The system also features a Windows NT software platform that conforms to the newly established SEMI user interface standard.

NanoOCD 9300

The NanoOCD 9300 stand-alone, automated metrology system is an optical critical dimension measurement system that provides direct recipe transfer to our integrated metrology and standalone systems. This system can also include a mini-environment enclosure and wafer load ports compatible with industry standards. The NanoOCD 9300 also conforms to the new industry standards for 300 millimeter wafer handling automation and features a Windows NT software platform that conforms to the newly established SEMI user interface standard. We developed the NanoOCD 9300 using the same measurement technology from the integrated OCD system to allow direct transfer of measurement recipes between the integrated and stand-alone OCD metrology systems.

NanoSpec 5500 and 6500

The NanoSpec 5500 and 6500 measure most optically transparent films used in the manufacture of flat panel displays. The Model 5500 is fully automated and handles large glass substrates up to 550 by 650 millimeters. This model also is capable of measuring precisely at any site on the substrate and generating film thickness maps, which show uniformity across the panel. The 6500 is an advanced version of the 5500 with many proprietary software and hardware enhancements and is capable of handling substrates up to 960 by 1100 millimeters.

Metra 7000 and NanoOCS 7200 Series

In 1998, we completed an acquisition of the Metra product line from Optical Specialties. The Metra is a stand-alone system used to measure the overlay accuracy of successive layers of semiconductor patterns on wafers in the photolithography process. We shipped our first automated overlay registration system, the Metra 7000, in June 1998. The recently introduced NanoOCS 7200 provides enhanced measurement performance and higher wafer throughput.

Integrated Systems

Our integrated metrology systems are installed inside wafer processing equipment to provide near real-time measurements for improving process control and increasing throughput. Our integrated systems are available for wafer sizes up to 300 millimeters and offer deep ultraviolet, commonly referred to as DUV measurement technology, in addition to spectroscopic reflectometry and optical critical dimension measurement technologies. Depending on features and technologies, our integrated metrology systems range in price from approximately \$80,000 to \$300,000.

NanoSpec 9000

The NanoSpec 9000 is an ultra-compact measurement system designed for integration into semiconductor wafer processing equipment. The system can be used in several wafer film process steps, including metal deposition, CMP, CVD, photolithography and etch. In its basic configuration, the NanoSpec 9000 is equipped with visible wavelength spectroscopic reflectometry. The 9000 received a Photonics Circle of Excellence Award for innovation and achievement in photonic technology.

NanoSpec 9000i

The NanoSpec 9000i is a 300mm version of the highly successful NanoSpec 9000. This metrology platform can be integrated into multiple wafer film process steps including metal deposition, CMP, CVD, photolithography and etch. The 9000i is also equipped with visible wavelength spectroscopic reflectometry and can be extended into deep UV wavelengths. The 9000i will also support the newly developed optical critical dimension (OCD) technology for the measurement of critical dimensions on semiconductor wafers. The system is designed for integration into semiconductor wafer processing equipment and is used in several critical processing steps including photolithography and etch.

NanoSpec 9000b

The NanoSpec 9000b is a BOLTS compatible, 300 millimeter based system that incorporates all the features of the 9000. This system is interchangeable with industry conforming load ports for simplified mechanical integration.

9010 Integrated Metrology Platform

The 9010 integrated metrology platform is an advanced 300 millimeter product that supports multiple measurement technologies. The first product offered in the series is the NanoCLP 9010 is a laser-based, optical profiling and reflectance measurement system that incorporates the newly developed Copper Laser Profiler (CLP) technology for the measurement of copper metal loss during chemical mechanical planarization on semiconductor wafers and is designed for integration into semiconductor wafer processing equipment. The system also incorporates our unique 300 millimeter edge-gripping wafer stage with an integral pre-aligner and was introduced at SEMICON West in July 2002.

9020 Integrated Metrology Platform

The 9020 integrated metrology platform is an advanced, vacuum based metrology product that supports multiple measurement technologies. The product was first announced at SEMICON West in July, 2002 for the NanoOCD 9020, a 200 millimeter-based system that incorporates our newly developed edge-gripping vacuum wafer stage and OCD technology for the measurement of critical dimensions on semiconductor wafers. The system is designed for integration into the vacuum chamber of semiconductor wafer etch processing equipment.

Tabletop Systems

Our tabletop systems are used primarily in low-volume production environments and in engineering labs for which automated handling and high throughput are not required. Our tabletop product line encompasses both manual and semiautomated models and includes systems for both film thickness and critical dimension measurements. Our tabletop system prices range from approximately \$50,000 to \$200,000, depending primarily on the degree of automation and software options purchased.

NanoSpec 3000 and 6100

The NanoSpec tabletop systems provide a broad range of thin film measurement solutions at a lower entry price point. The NanoSpec 3000 is a basic, manual system while the 6100 models feature semiautomatic wafer handling or staging.

Customers

We sell our metrology systems worldwide to many of the major semiconductor, flat panel display and magnetic recording head manufacturers and equipment suppliers, as well as to producers of silicon wafers and photomasks. The majority of our systems are sold to customers located in the United States, Asia and Europe. Three customers, Applied Materials, Hyundai and TSMC, represented 20.5%, 11.8% and 10.0% of our total net revenues in 2000, respectively. One customer, Applied Materials, represented 17.6% of our total net revenues in 2001. Two customers, Applied Materials and TSMC, represented 13.8% and 10.9% of our total net revenues in 2002, respectively.

The following is a list of our top customers, based on revenues, during 2002:

Applied Materials	Micron Technology
TSMC	AU Optronics
Samsung	Toppoly
Hynix Semiconductor	Read-Rite
SMIC	TEL

Sales and Marketing

We believe that the capability for direct sales and support is essential for developing and maintaining close customer relationships and for rapidly responding to changing customer requirements. We provide direct sales and support from our corporate office in California. We also have a direct sales presence in South Korea, Taiwan, China, Europe and Japan. We use selected sales representatives and distributors in the United States and other countries in Asia and the Middle East. We intend to continue to develop our distribution network by expanding our existing offices and opening new offices and forming additional distribution relationships. We believe that growing our international distribution network will enhance our

competitive position. We maintain a direct sales force of highly trained, technically sophisticated sales engineers who are knowledgeable in the use of metrology systems generally and with the features and advantages of our specific products. We believe that our sales and application engineers are skilled in working with our customers to solve complex measurement and process problems.

Sales to customers in foreign countries constituted approximately 60.6%, 64.8% and 69.0% of total net revenues for 2000, 2001 and 2002, respectively. Direct exports of our metrology systems to our foreign customers and shipments to our subsidiaries require general export licenses. See Note 12 of the Notes to Consolidated Financial Statements for information regarding total net revenues and long-lived assets of our foreign operations. See Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations-Risks Related to Our Business for information regarding risks related to our foreign operations.

Sales to customers in Japan were approximately 18.7%, 28.8% and 23.9% of total net revenues for 2000, 2001 and 2002, respectively. Sales to customers in Taiwan were approximately 16.8%, 14.1% and 22.7% of total net revenues for 2000, 2001 and 2002, respectively. Sales to customers in Korea were approximately 19.5%, 9.9% and 10.5% of total net revenues for 2000, 2001 and 2002, respectively.

In order to raise market awareness of our products, we advertise in trade publications, distribute promotional materials, publish technical articles, conduct marketing programs, issue press releases regarding new products, work with a public relations firm and participate in industry trade shows and conferences.

Technology

We believe that our engineering expertise, technology acquisitions, supplier alliances and short-cycle production strategies enable us to develop and offer advanced solutions that address industry trends. By offering common metrology platforms that can be configured with a variety of measurement technologies, our customers can (i) specify high performance systems not offered by other suppliers or (ii) narrowly configure a system for a specific application as a cost saving measure.

Spectroscopic Reflectometry. We pioneered the use of micro-spot spectroscopic reflectometry for semiconductor film metrology in the late 1970s. Spectroscopic reflectometry uses multiple wavelengths (colors) of light to obtain an array of data for analysis of film thickness and other film parameters. Today's semiconductor manufacturers still depend on spectroscopic reflectometry for most film metrology applications. Reflectometry is the measurement of reflected light. For film metrology, a wavelength spectrum in the visible region is commonly used. Light reflected from the surfaces of the film and the substrate is analyzed using computers and measurement algorithms. The analysis yields thickness information and other parameters without contacting or destroying the film.

In the mid-1980s, we introduced a DUV reflectometer for material analysis. In 1991, we were awarded a patent for the determination of absolute reflectance in the ultraviolet region. This technology provides enhanced measurement performance for thinner films and films stacked on top of one another.

Spectroscopic Ellipsometry. Like reflectometry, ellipsometry is a non-contact and non-destructive technique used to analyze and measure films. An ellipsometer analyzes the change in a polarized beam of light after reflection from a film's surface and interface. Our systems are spectroscopic, providing ellipsometric data at many different wavelengths. Spectroscopic ellipsometry provides a wealth of information about a film, yielding very accurate and reliable measurements. In general, ellipsometers are used for thin films and complex film stacks, whereas reflectometers are used for thicker films and stacks.

Optical Critical Dimension Technology. Our OCD technology is a patented critical dimension measurement technology that is used to precisely determine the dimensions on the semiconductor wafer that directly control the resulting performance of the integrated circuit devices. This non-destructive, CD measurement technology is compatible with the current 0.13 micrometer manufacturing technology and is extendible below 0.1 micrometer for future requirements in both photo-lithography and etch applications. OCD combines non-contact optical technology with extremely powerful data analysis software to provide highly accurate measurement results for line width, height and sidewall angles. This technology is available in both standalone and integrated platforms.

Overlay Registration. Overlay registration refers to the relative alignment of two layers in the thin film photolithographic process. Our microscope-based, measurement technology utilizes a high magnification, low distortion imaging system combined with proprietary software algorithms to numerically quantify the alignment.

Optical Profilometry. We recently developed an optical profiler for the measurement of copper metal loss during the chemical mechanical planarization process. This technology uses the combination of an optical interferometer and our reflectometer technology to accurately determine metal loss, even over multiple layers during the final steps of metallization. Our technology is a unique method for precisely and accurately controlling this process step.

Broadband Light Scattering. Our new, broadband, white light inspection technology is used to detect and accurately locate particles and defects on the front and back sides of wafer surfaces, which could potentially lead to device failures and critical yield loss during the semiconductor manufacturing process. The technology combines a high efficiency, broadband light source with a high resolution detection system and proprietary digital image processing for defect and contamination detection on a wide variety of films and surfaces. This technology can be readily extended to other manufacturing processes, such as magnetic thin film heads and flat panel displays and represents a new market for us.

Customer Service and Support

We believe that customer service and technical support are important factors to distinguish us from our competitors and are essential to building and maintaining close, long-term relationships with our customers. We provide support to our customers with telephonic technical support access, direct training programs and operating manuals and other technical support information. We use our demonstration equipment for training programs, as well as for our sales and marketing efforts. Our Technical Training department has a complete set of metrology systems that are dedicated to customer training. We provide warranty and post-warranty service from our corporate office in Milpitas, California. We also have service operations based in Massachusetts, Oregon, Pennsylvania, Idaho, Vermont, Oregon, Arizona, and Texas. Local service and spare parts are provided in the United Kingdom by our operations in Scotland. Service, applications, and sales support for the European continent are provided through our operations in Italy and Germany. In Asia, service is provided by direct offices in Japan, Korea, Taiwan, Singapore and by a new office that we opened in 2002 in Shanghai, China. Our distributors and representatives also provide service in other countries in Asia.

We provide a one-year warranty on parts and labor for products sold domestically and in foreign markets. Service revenue, including sales of replacement parts, represented approximately 8.7%, 10.4% and 17.4% of total net revenues in 2000, 2001 and 2002, respectively.

Backlog

As of December 31, 2002 our backlog was approximately \$8.3 million. As of December 31, 2001, our backlog was approximately \$7.6 million. Backlog includes orders for products that we expect to ship within 12 months. Orders from our customers are subject to cancellation or delay by the customer without penalty. Historically, order cancellations and order rescheduling have not been significant. However, orders presently in backlog could be canceled or rescheduled. As only a portion of our revenues for any fiscal quarter represent systems in backlog, we do not believe that backlog is a meaningful or accurate indication of our future revenues and performance.

Competition

The market for our metrology systems is intensely competitive and characterized by rapidly evolving technology. We compete on a global basis with both larger and smaller companies in the United States, Japan, Israel and Europe. Our products compete primarily with: stand-alone thin film measurement products from KLA-Tencor Corporation, Therma-Wave, Inc., Rudolph Technologies and Dai Nippon Screen; integrated thin film measurement products from Nova Measuring Instruments Ltd. and Therma-Wave; and overlay measurement products from KLA-Tencor, Bio-Rad Laboratories Inc. and Schlumberger Ltd. Many of our competitors have substantially greater financial, engineering, manufacturing and marketing resources than we do. Significant competitive factors in our industry include: measurement technology; system performance, including automation and software capability; ease of use; reliability; established customer bases; cost of ownership; price and global customer service. We believe that we compete favorably with respect to these factors, but we must continue to develop and design new and improved products in order to maintain our competitive position.

Manufacturing

We manufacture our products in the United States, Japan and Korea. We combine proprietary measurement components and software produced in our facilities with components and subassemblies obtained from outside suppliers. Certain of our products include system engineering and software development to meet specific customer requirements. Our manufacturing operations do not require a major investment in capital equipment.

Certain components, subassemblies and services necessary for the manufacture of our systems are obtained from a sole supplier or limited group of suppliers. We do not maintain any long-term supply agreements with any of our suppliers. We have entered into an agreement with J.A. Woollam Company for the purchase of the spectroscopic ellipsometer components. Additionally, we use Newport Corporation as our primary source of robotics components.

Research and Development

Our research and development is directed towards enhancing existing products and developing and introducing new products to maintain technological leadership and to meet current and evolving customer needs. Our process, engineering, marketing, operations and management personnel have developed close collaborative relationships with many of our customers' counterparts and have used these relationships to identify market demands and target our research and development to meet those demands. We are working to develop potential applications of new and emerging technologies, including improved metrology methods. We conduct research and development at our facilities in California, Korea and Japan. We have extensive proprietary technology and expertise in such areas as spectroscopic reflectometry using our patented absolute reflectivity, robust pattern recognition and complex measurement software algorithms. We continue to add to our intellectual property, most recently in the areas of critical dimension measurement and integrated metrology. We also have extensive experience in systems integration engineering required to design compact, highly automated systems for advanced clean room environments. Expenditures for research and development during 2000, 2001 and 2002 were \$9.2 million, \$10.8 million and \$13.8 million, and represented 13.3%, 22.6% and 39.6% of total net revenues, respectively.

Intellectual Property

Our success depends in large part on the technical innovation of our products. We actively pursue a program of filing patent applications to seek protection of technologically sensitive features of our metrology systems. As of December 31, 2002, we held 19 United States patents with 36 patent applications pending, 16 of which were filed during 2002. The United States patents, issued during the period 1986 to 2002, will expire between 2003 to 2021. While we attempt to protect our intellectual property rights through patents and non-disclosure agreements, we believe that our success will depend to a greater degree upon innovation, technological expertise and our ability to adapt our products to new technology. We may not be able to protect our technology and competitors may be able to develop similar technology independently. In addition, the laws of certain foreign countries may not protect our intellectual property to the same extent as do the laws of the United States.

From time to time we receive communications from third parties asserting that our metrology systems may contain design features that are claimed to infringe their proprietary rights. We typically refer such matters to our legal counsel.

Employees

At December 31, 2002, we employed approximately 305 persons worldwide, including 93 in research and development, 60 in manufacturing and manufacturing support, 126 in marketing, sales and field service and 26 in general administration and finance. None of these employees is represented by a union and we have never experienced a work stoppage as a result of union actions. Many of our employees have specialized skills of value to us. Our future success will depend in large part upon our ability to attract and retain highly skilled scientific, technical, managerial, financial and marketing personnel, who are in great demand in the industry. We consider our employee relations to be good.

Executive Officers of the Registrant

The following are our current executive officers and their ages as of December 31, 2002:

<u>Name</u>	<u>Age</u>	<u>Position</u>
Vincent J. Coates.....	77	Chairman of the Board, Secretary
John D. Heaton.....	42	President, Chief Executive Officer and Director
Paul B. Nolan.....	47	Vice President and Chief Financial Officer
Roger Ingalls Jr.....	41	Vice President of Sales

Mr. Vincent J. Coates has been Chairman of the Board since Nanometrics was founded in 1975. He has been our Secretary since February 1989. He has also served as our Chief Executive Officer through April 1998 and as President from our founding through May 1996, except for the period January 1986 through February 1987 when he served exclusively as Chief Executive Officer. Mr. Coates has also served as Chairman of the Board of Nanometrics Japan Ltd., a subsidiary of the Company, since June 1998. Prior to his employment at Nanometrics, Mr. Coates co-founded Coates and Welter Instrument Corporation, a designer of electron microscopes, which company was subsequently acquired by Nanometrics. Mr. Coates also spent over twenty years working in engineering, sales and international operations for the Perkin-Elmer Corporation, a manufacturer of analytical instruments. In 1995, he received an award which recognized his contribution to the industry from Semiconductor and Equipment and Materials International, an industry trade organization.

Mr. John D. Heaton has served as a director of Nanometrics since July 1995. Since May 1996, he has served as our President. Since April 1998, he has also served as our Chief Executive Officer. From May 1996 to April 1998, he served as our Chief Operating Officer. Mr. Heaton has also served as President of Nanometrics Japan Ltd., a subsidiary of the Company, since January 1998. Beginning in 1978, Mr. Heaton served in various technical positions at National Semiconductor, a semiconductor manufacturer, prior to joining the Company in 1990.

Mr. Paul B. Nolan has served as Vice President and Chief Financial Officer of Nanometrics since March 1994. Mr. Nolan joined us Financial Analyst in March 1989, and served as Director of Finance from March 1993 to March 1994. Mr. Nolan served as Financial Analyst at Harris Corporation, a communications equipment company, prior to joining the Company.

Mr. Roger Ingalls Jr. has served as our Vice President of Sales since January 2002. Mr. Ingalls joined Nanometrics in March 1995, serving as Vice President and Director of Sales and Marketing from October 1997 to February 1998, and as Vice President and Director of Marketing from February 1998 to January 2002. Prior to joining Nanometrics, he served as a sales engineer for Nikon Inc., a precision optical company, from March 1993 to March 1995.

ITEM 2. PROPERTIES

Our principal manufacturing and administrative facility is located in Milpitas, California in a 133,000 square foot building owned by the Company. We purchased the Milpitas facility in July 2000 and moved into the facility in November 2000. We also have sales and service offices in Texas, China, Singapore and Taiwan. Rent expense for our facilities was approximately \$233,000 for 2002.

Through our Japanese subsidiary, we own a 50,000 square foot facility in Narita, Japan. This facility is utilized by our Japanese subsidiary for sales, service, engineering and manufacturing. Our Japanese subsidiary also leases three sales and service offices.

Through our Korean subsidiary, we own a 39,000 square foot facility in Pyungtaek, Korea. This facility is utilized by our Korean subsidiary for sales, service, engineering and manufacturing.

We believe that our existing facilities are adequate for our current needs and anticipated growth.

ITEM 3. LEGAL PROCEEDINGS

There are no material legal proceedings pending against us. However, we could become involved in litigation from time to time relating to claims arising out of our ordinary course of business.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted to a vote of security holders during the quarter ended December 31, 2002.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED SHAREHOLDER MATTERS

Our common stock is quoted on the Nasdaq National Market under the symbol "NANO." The following table sets forth, for the periods indicated, the high and low bid prices per share of our common stock as reported on the Nasdaq National Market. These quotations represent prices between dealers and do not include retail markups, markdowns or commissions and may not necessarily represent actual transactions.

	<u>High</u>	<u>Low</u>
2001		
First Quarter	\$22.31	\$12.38
Second Quarter.....	\$32.95	\$13.50
Third Quarter	\$36.66	\$13.00
Fourth Quarter.....	\$27.65	\$14.71
2002		
First Quarter	\$23.10	\$14.90
Second Quarter.....	\$20.35	\$13.16
Third Quarter	\$16.33	\$2.60
Fourth Quarter.....	\$6.30	\$1.82

On February 25, 2003, the last reported sale price of our common stock on the Nasdaq National Market was \$3.49 per share. As of December 31, 2002, there were approximately 146 shareholders of record of our common stock.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock. We currently expect to retain future earnings, if any, for use in the operation and expansion of our business and do not anticipate paying any cash dividends in the foreseeable future.

Stock Option Exchange Program

On November 12, 2002, we announced a voluntary stock option exchange program for certain eligible employees. Under the exchange program, we offered to exchange certain stock options to purchase an aggregate of 1,962,020 shares of our common stock in exchange for a promise to grant new stock options, subject to certain conditions, at a future date that is at least six months and one day after December 16, 2002, the date of cancellation. The stock options subject to the offer to exchange had been granted under either our 1991 stock option plan or our 2000 employee stock option plan with exercise prices equal to or greater than \$10.00 per share. Eligible employees who elected to participate in the exchange program were also required to exchange any other stock options, regardless of their exercise price, that were granted to them since May 12, 2002. The number of shares of common stock subject to the new options equals 90% of the number subject to the exchanged options. Under the exchange program, options to purchase 1,569,020 shares of our common stock were tendered and cancelled. We expect to grant 1,412,121 replacement options to eligible employees in June 2003. We do not anticipate that any additional compensation charges or variable plan accounting will result from the grant of the replacement options. Non-employee members of our Board of Directors were not eligible to participate in this program.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

The selected consolidated financial data set forth below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. The consolidated statement of operations data set forth below for the fiscal years ended December 31, 2000, 2001 and 2002, and the consolidated balance sheet data as of December 31, 2001 and 2002, have been derived from our consolidated financial statements included elsewhere in this Annual Report on Form 10-K and have been audited by Deloitte & Touche LLP, independent auditors. The consolidated statement of operations data set forth below for the fiscal years ended December 31, 1998 and 1999, and the consolidated balance sheet data as of December 31, 1998, 1999 and 2000, have been derived from our audited consolidated financial statements not included in this Annual Report on Form 10-K. The historical results are not necessarily indicative of results to be expected for any future period.

	Years Ended December 31,				
	1998	1999	2000	2001	2002
(In thousands, except per share data)					
Consolidated Statement of Operations Data:					
Net revenues:					
Product sales.....	\$29,718	\$32,162	\$63,468	\$42,653	\$28,669
Service.....	<u>3,546</u>	<u>4,246</u>	<u>6,023</u>	<u>4,931</u>	<u>6,054</u>
Total net revenues.....	33,264	36,408	69,491	47,584	34,723
Costs and expenses:					
Cost of product sales.....	13,002	14,606	25,082	17,949	13,237
Cost of service.....	3,669	4,560	6,022	5,406	5,765
Research and development.....	4,206	4,658	9,238	10,760	13,765
Acquired in-process research and development.....	1,421	-	-	-	-
Selling.....	5,728	5,871	10,313	9,523	10,862
General and administrative.....	2,828	2,973	4,258	4,177	5,104
Goodwill impairment.....	-	-	-	-	1,077
Total costs and expenses.....	30,854	32,668	54,913	47,815	49,810
Income (loss) from operations.....	2,410	3,740	14,578	(231)	(15,087)
Other income (expense):					
Interest income.....	572	662	4,129	2,576	583
Interest expense.....	(108)	(180)	(76)	(86)	(94)
Other, net.....	<u>64</u>	<u>94</u>	<u>(150)</u>	<u>(517)</u>	<u>100</u>
Total other income, net.....	<u>528</u>	<u>576</u>	<u>3,903</u>	<u>1,973</u>	<u>589</u>
Income (loss) before provision (benefit) for income taxes....	2,938	4,316	18,481	1,742	(14,498)
Provision (benefit) for income taxes.....	<u>1,108</u>	<u>1,682</u>	<u>5,942</u>	<u>782</u>	<u>(6,230)</u>
Income (loss) before cumulative effect of change in accounting principle.....	\$1,830	\$2,634	\$12,539	\$960	\$(8,268)
Cumulative effect of change in revenue recognition principle (SAB 101).....	-	-	(1,364)*	-	-
Net income (loss).....	<u>\$1,830</u>	<u>\$2,634</u>	<u>\$11,175</u>	<u>\$960</u>	<u>\$(8,268)</u>
Basic net income (loss) per share:					
Income (loss) before cumulative effect of change in accounting principle.....	\$0.21	\$0.30	\$1.14	\$0.08	\$(0.70)
Cumulative effect of change in revenue recognition principle (SAB 101).....	-	-	(0.12)*	-	-
Net income (loss).....	<u>\$0.21</u>	<u>\$0.30</u>	<u>\$1.02</u>	<u>\$0.08</u>	<u>\$(0.70)</u>
Diluted net income (loss) per share:					
Income (loss) before cumulative effect of change in accounting principle.....	\$0.20	\$0.28	\$1.06	\$0.08	\$(0.70)
Cumulative effect of change in revenue recognition principle (SAB 101).....	-	-	(0.12)*	-	-
Net income (loss).....	<u>\$0.20</u>	<u>\$0.28</u>	<u>\$0.94</u>	<u>\$0.08</u>	<u>\$(0.70)</u>

* Refer to discussions on SAB 101 in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	Years Ended December 31,				
	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
Shares used in per share computation:					
Basic	<u>8,635</u>	<u>8,829</u>	<u>10,986</u>	<u>11,691</u>	<u>11,878</u>
Diluted	<u>9,041</u>	<u>9,393</u>	<u>11,845</u>	<u>12,161</u>	<u>11,878</u>

	December 31,				
	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
			(In thousands)		
Consolidated Balance Sheet Data:					
Cash, cash equivalents and short-term investments.....	\$ 11,431	\$ 18,140	\$ 69,788	\$ 47,227	\$ 36,866
Working capital	30,621	36,021	92,420	80,171	74,776
Total assets	39,305	46,410	144,796	142,355	134,688
Debt obligations, less current portion	2,496	2,288	4,236	3,314	3,123
Total shareholders' equity	32,010	38,155	127,009	129,845	124,106

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with our consolidated financial statements and the notes thereto included elsewhere in this Annual Report on Form 10-K. Our discussion contains forward-looking statements based upon current expectations that involve risks and uncertainties, such as our plans, objectives and intentions. In some cases, forward-looking statements can be identified by words such as "believe," "expect," "anticipate," "plan," "potential," "continue" or similar expressions. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain risk factors, including those set forth in "Factors That May Affect Future Operating Results" and elsewhere in this Annual Report on Form 10-K. We believe it is important to communicate our expectations to our investors. However, there may be events in the future that we are not able to predict accurately or over which we have no control. You should be aware that the occurrence of the events described in these risk factors and elsewhere in this Annual Report on Form 10-K could materially and adversely affect our business, operating results and financial condition. We disclaim any obligation to update information contained in any forward-looking statement.

Overview

We are a leader in the design, manufacture, marketing and support of thin film metrology systems for the semiconductor, flat panel display and magnetic recording head industries. Our systems precisely measure a wide range of film types deposited on substrates during manufacturing in order to control manufacturing processes and increase production yields.

Our Business

Our business is dependent upon the capital expenditures of manufacturers of semiconductors, flat panel displays and magnetic recording heads and their suppliers. The demand by these manufacturers and suppliers for our products is, in turn, dependent on the current and future market demand for semiconductors and products utilizing semiconductors, disk drives and computers that utilize disk drives and flat panel displays for use in laptop computers, pagers, cell phones and a variety of other applications. The increasing complexity of the manufacturing processes for semiconductors, flat panel displays and magnetic recording heads is also an important factor in the demand for our metrology systems.

We derive our revenues from product sales and services, which include sales of accessories and service to the installed base of our products. For the year ended December 31, 2002, we derived 82.6% of our total net revenues from product sales and 17.4% of our total net revenues from services. Revenues from product sales and replacement and spare parts are generally recognized at the time of shipment. Revenues from service work are recognized when performed. In certain geographical regions where risk of loss and title do not transfer upon shipment, payments received are recorded as deferred revenue and recognized upon customer acceptance. See Note 1 of the Notes to Consolidated Financial Statements for more information regarding our revenue recognition policy.

Current Trends

Changing trends in the semiconductor, flat panel display and magnetic recording head manufacturing industries are increasing the need for metrology as a major component of manufacturing systems. These trends include:

- **Adoption of Chemical Mechanical Planarization.** Manufacturers now use CMP to flatten, or planarize, thin films to obtain the ultra-flat surfaces required for advanced photolithography. In addition, the introduction of new copper interconnect techniques has increased the need for CMP. Accordingly, semiconductor manufacturers are seeking metrology solutions that can help control the CMP process by measuring the thin film layer to determine precisely when the appropriate thickness has been achieved.
- **Dynamic Etch Time Adjustment.** Semiconductor manufacturers are adjusting etch time on-the-fly to compensate for measured variation and feedback is used to control the dose in lithography for the next wafer. If not properly controlled, CD variations in high-end microprocessors can cause some chips to run at slower speeds, affecting their ability to command premium pricing.
- **Adoption of New Types of Thin Film Materials.** Manufacturers are adopting new processes and technologies that increase the importance and utilization of thin film metrology systems. To achieve greater semiconductor device speed, manufacturers are utilizing copper and new, low dielectric constant (low k) insulating materials that require enhanced metrology solutions for the manufacturing process.

- **Increasing Complexity of Semiconductors.** Semiconductors are becoming more complex as they operate at faster speeds with smaller feature sizes, employ larger dies that contain more transistors and utilize increasing numbers of manufacturing process steps. The value of processed wafers and the cost of rework is significantly higher for these complex semiconductors and therefore, manufacturers are seeking to use metrology solutions to increase production yields and limit the amount of rework
- **Need for Rapid Ramp of Production Efficiencies.** Competitive forces influencing semiconductor device manufacturers, such as price cutting and shorter product life cycles, place pressure on the manufacturers to rapidly achieve production efficiency. Semiconductor device manufacturers are using metrology systems throughout the fab to ensure that manufacturing processes scale rapidly, are accurate and can be repeated on a consistent basis.

Nanometrics is committed to providing customers with solutions to the problems they experience in these areas.

Critical Accounting Policies

The preparation of our financial statements conforms with accounting principles generally accepted in the United States of America, which requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, expenses and related disclosures at the date of our financial statements. On an on-going basis, management evaluates its estimates including those related to bad debts, inventory valuations, warranty obligations, income taxes and intangible assets. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from management's estimates. Our critical accounting policies include revenue recognition, allowance for doubtful accounts, inventory valuation, warranty accrual, income tax assets and liabilities including the deferred tax asset valuation allowance, goodwill and stock based compensation due to the estimates and judgments involved with each of these items.

Revenue Recognition – We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the sales price is fixed or determinable, and collectibility is reasonably assured. For product sales, this generally occurs at the time of shipment if we have met defined customer acceptance experience levels with both the customer and the specific type of equipment. All other product sales are recognized upon customer acceptance. In certain geographical regions, where risk of loss and title transfers upon customer acceptance, revenue is also recognized upon customer acceptance. Revenue related to spare part sales is recognized on shipment and is included as part of service revenue. Revenue related service contracts are recognized ratably over the period under contract. Unearned maintenance and service contract revenue is not significant and is included in deferred revenue.

Allowance for Doubtful Accounts – Our allowance for doubtful accounts is based primarily on the magnitude and age of outstanding customer invoices in general, as well as on the status of collections issues with specific customers. Customer accounts are reviewed on a continuous basis.

Inventory Valuation – Inventories are stated at the lower of cost (first-in, first-out) or market. We track the age of our unused inventory on a monthly basis and if management determines that inventory has become obsolete or is considered to be excess inventory, it will be written-down to its estimated market value. Management's determination to write down inventory is generally based on such factors as economic conditions, expected demand and obsolescence based on engineering redesigns.

Warranty Accrual - We sell the majority of our products with a one-year repair or replacement warranty and record a provision for estimated claims at the time of sale. The warranty accrual is generally based on our historical warranty repair cost patterns, including the cost of parts and labor. The warranty accrual is reviewed and updated on a quarterly basis.

Income Tax Assets and Liabilities - We account for income taxes based on Statement of Financial Accounting Standards (SFAS) No. 109 *Accounting for Income Taxes*, whereby deferred tax assets and liabilities must be recognized using enacted tax rates for the effect of temporary differences between the book and tax accounting for assets and liabilities. Also, deferred tax assets must be reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized in the future. We evaluate the deferred tax assets on a quarterly basis to determine whether or not a valuation allowance is appropriate. Factors used in this determination include future expected income and the underlying asset or liability which generated the temporary tax difference.

Our income tax provision is based on estimates of our effective income tax rate for the year. The effective tax rate is generally estimated based on the geographic distribution of profits, the tax rates in different regions and the availability of tax credits. If actual results differ from our estimates, it may be necessary to record a valuation allowance on deferred tax assets or to adjust our effective tax rate, which could have a material effect on our financial results.

Goodwill - On January 1, 2002, we adopted SFAS No. 142, *Goodwill and Other Intangible Assets*. Upon implementation of this Statement, the transition impairment test was performed as of January 1, 2002, and no impairment loss was recorded. SFAS No. 142 requires that goodwill be reviewed at least annually for impairment. We elected to test our goodwill for possible impairment in the fourth quarter of 2002. Based upon the results of the annual impairment test, we recognized a goodwill impairment loss of \$1,077,000 in the fourth quarter of 2002. The fair value of the segment was estimated using the discounted cash flows method. As of December 31, 2002, we had no goodwill on our balance sheet.

Stock-Based Compensation - We account for stock-based compensation issued to employees using the intrinsic value method in accordance with the provisions of Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees*, as allowed by SFAS No. 123, *Accounting for Stock Based Compensation* as amended by SFAS No. 148, *Accounting for Stock Based Compensation - Transition and Disclosures, an Amendment of FASB Statement No. 123*. Under the intrinsic value method, we do not recognize any compensation expense, as the exercise price of all stock options is equal to the fair market value at the time the options are granted. We disclose the pro forma effect of recognizing compensation expense on stock options granted to employees in the footnotes to the consolidated financial statements.

Results of Operations

The following table presents our consolidated statements of operations data as a percentage of total net revenues for the years ended December 31, 2000, 2001 and 2002:

	Years Ended December 31,		
	2000	2001	2002
Net revenues:			
Product sales	91.3%	89.6%	82.6%
Service	8.7	10.4	17.4
Total net revenues	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Cost and expenses:			
Cost of product sales	36.1	37.7	38.1
Cost of service	8.7	11.4	16.6
Research and development	13.3	22.6	39.6
Selling	14.8	20.0	31.3
General and administrative	6.1	8.8	14.7
Goodwill impairment	-	-	3.1
Total cost and expenses	<u>79.0</u>	<u>100.5</u>	<u>143.4</u>
Income (loss) from operations	<u>21.0</u>	<u>(0.5)</u>	<u>(43.4)</u>
Other income (expense):			
Interest income	5.9	5.4	1.6
Interest expense	(0.1)	(0.2)	(0.2)
Other, net	(0.2)	(1.1)	0.3
Total other income, net	<u>5.6</u>	<u>4.1</u>	<u>1.7</u>
Income (loss) before provision (benefit) for income taxes	26.6	3.6	(41.7)
Provision (benefit) for income taxes	<u>8.6</u>	<u>1.6</u>	<u>(17.9)</u>
Income (loss) before cumulative effect of change in accounting principle	18.0	2.0	(23.8)
Cumulative effect of change in revenue recognition principle (SAB 101)	<u>(2.0)</u>	<u>-</u>	<u>-</u>
Net income (loss)	<u>16.0%</u>	<u>2.0%</u>	<u>(23.8)%</u>

Years ended December 31, 2000, 2001 and 2002

Total net revenues. Total net revenues decreased 27.0% from \$47.6 million in 2001 to \$34.7 million in 2002. Product sales decreased 32.8% from \$42.7 million in 2001 to \$28.7 million in 2002. Unit sales of automated, integrated and tabletop systems were each down from their 2001 levels. The decrease in product sales resulted from reduced demand for semiconductor process control metrology equipment in 2002, particularly in the U.S. and Asia. We believe that this reduced demand was attributable primarily to continued overcapacity and price pressures, particularly for DRAM products, in the semiconductor industry as well as the continued economic slowdown in the U.S. and Japan in 2002. Service revenue increased 22.8% from \$4.9 million in 2001 to \$6.1 million in 2002. The increase in service revenue is primarily attributable to higher sales of parts and services in the U.S. and Asia in 2002, which is partly due to a larger installed base of systems that have passed their warranty periods.

Total net revenues decreased 31.5% from \$69.5 million in 2000 to \$47.6 million in 2001. Product sales decreased 32.8% from \$63.5 million in 2000 to \$42.7 million in 2001. Unit sales of automated, integrated and tabletop systems were each down from their 2000 levels. The decrease in product sales resulted from reduced demand for semiconductor process control metrology equipment in 2001, particularly in the U.S. and Asia. We believe that this reduced demand was attributable primarily to overcapacity in the semiconductor industry as well as the economic slowdown in the U.S. and Japan in 2001. Service revenue decreased 18.1% from \$6.0 million in 2000 to \$4.9 million in 2001. The decrease in service revenue is primarily attributable to lower sales of parts and services in the U.S. and Asia in 2001 due in part to the decline in the semiconductor market during 2001 discussed above. International revenues, which includes sales by our foreign subsidiaries, constituted approximately 60.6%, 64.8% and 69.0% of total net revenues for 2000, 2001 and 2002, respectively.

Cost of product sales. Cost of product sales as a percentage of product sales increased from 42.1% in 2001 to 46.2% in 2002 primarily due to lower sales volumes in 2002 resulting in higher per unit manufacturing costs, along with a continued increase in manufacturing capacity added to our U.S. facility in 2002. The increased manufacturing capacity is part of a strategic move to internalize the production of key parts and components, allowing us to have greater control over their development, delivery, quality and cost. Cost of product sales as a percentage of product sales increased from 39.5% in 2000 to 42.1% in 2001 primarily because of lower sales volumes in 2001 resulting in higher per unit manufacturing costs, along with increased manufacturing capacity added to our U.S. facility in 2001.

Cost of service. Cost of service as a percentage of service revenue decreased from 109.6% in 2001 to 95.2% in 2002 primarily as a result of higher service sales, which exceeded our costs of service in the U.S. and Asia. Cost of service as a percentage of service revenue increased from 100.0% in 2000 to 109.6% in 2001 primarily as a result of lower service sales in the U.S. and Asia and the addition of service personnel in Singapore.

Research and development. Research and development expenses increased 27.9% from \$10.8 million in 2001 to \$13.8 million in 2002 as a result of increased headcount and higher materials expenses used in the development of new products in 2002, such as the NanoUDI 9300, the NanoCLP 9010, the NanoOCD 9020 and other unreleased products. Research and development expenses increased 16.5% from \$9.2 million in 2000 to \$10.8 million in 2001 as a result of additional headcount and higher materials expenses used in the development of new products in 2001. We are committed to the development of new and enhanced products and believe that new product introductions are required for us to maintain our competitive position. During 2002, R&D expenses represented 39.6% of total net revenues, compared to 22.6% in 2001 and 13.3% in 2000.

Selling. Selling expenses increased 14.1% from \$9.5 million in 2001 to \$10.9 million in 2002 primarily due to increased headcount of sales and support employees and an increase in related expenses for the purpose of promoting our products to existing and potential customers. Selling expenses decreased 7.7% from \$10.3 million in 2000 to \$9.5 million in 2001 primarily because of lower sales and related expenses, including commissions, in 2001. In 2002, selling expenses represented 31.3% of total net revenues, compared to 20.0% in 2001 and 14.8% in 2000.

General and administrative. General and administrative expenses increased 22.2% from \$4.2 million in 2001 to \$5.1 million in 2002. This increase resulted primarily from higher legal, patent, audit, tax and software related costs in 2002. General and administrative expenses decreased 1.9% from \$4.3 million in 2000 to \$4.2 million in 2001. During 2002, general and administrative expenses represented 14.7% of total net revenues, compared to 8.8% in 2001 and 6.1% in 2000.

Goodwill impairment. On January 1, 2002, we adopted SFAS No. 142, *Goodwill and Other Intangible Assets*. Upon implementation of this Statement, the transition impairment test was performed as of January 1, 2002, and no impairment loss was recorded. SFAS No. 142 requires that goodwill be reviewed at least annually for impairment. We elected to test our goodwill for possible impairment in the fourth quarter of 2002. Based upon the results of the annual impairment test, we recognized a goodwill impairment loss of \$1,077,000 in the fourth quarter of 2002. The fair value of the segment was estimated using a discounted cash flow methodology.

Total other income, net. Total other income, net decreased 70.1% from \$2.0 million in 2001 to \$589,000 in 2002 primarily due to lower interest income in 2002, resulting from lower investment balances and lower interest rates. Total other income, net decreased 49.4% from \$3.9 million in 2000 to \$2.0 million in 2001 primarily due to lower interest income in 2001.

Provision for income taxes. Our effective tax rate was a benefit of 43.0% in 2002, versus an expense of 44.9% in 2001. The difference relates primarily to the results of operations for each respective period. Our effective income tax benefit rate was 43.0% in 2002, which exceeded the U.S. statutory rate due primarily to state income tax benefits and the utilization of tax credits. Our effective income tax rate increased from 32.2% in 2000 to 44.9% in 2001 primarily due to profits earned by our Japanese subsidiary that could not be offset against losses from our other subsidiaries. The effective income tax rate in 2001 exceeded the U.S. statutory rate due primarily to foreign tax provision higher than U.S. rates and changes in the valuation allowance partially offset by the realization of foreign sales corporation benefit, while in 2000, the effective rate was lower than the U.S. statutory rate due primarily to utilization of tax credits, higher foreign sales corporation benefit and change in valuation allowance offset by higher state income tax.

Cumulative effect of change in revenue recognition principle (SAB 101). The cumulative effect of \$1.4 million in 2000 is the net result of recording \$2.5 million in net revenues, which were previously recorded in 1999, offset by \$1.1 million in related costs and expenses.

Liquidity and Capital Resources

At December 31, 2002, our cash and cash equivalents and short-term investments totaled \$36.9 million compared to \$47.2 million at December 31, 2001. These funds are invested primarily in U.S. Treasury Bills. Our working capital of \$74.8 million at December 31, 2002 decreased from \$80.2 million at December 31, 2001. We believe that our working capital, including cash, cash equivalents and short-term investments, will be sufficient to meet our needs at least through the next twelve months.

Operating activities during 2002 used cash of \$8.3 million primarily from the net loss and lower levels of deferred income taxes, deferred revenue as well as other current liabilities, such as accounts payable that, in part, reflected a decline in the purchase of inventory in 2002. This decrease was partially offset by the goodwill impairment write-off, lower inventories supporting the lower sales level in 2002 and lower accounts receivable, resulting in part from the decline in sales during 2002. Investing activities used \$31.7 million due primarily to net purchases of short-term investments of \$28.9 million and \$2.8 million in capital expenditures used primarily to expand our manufacturing capacity in the U.S. in 2002. Financing activities provided cash of \$998,000 primarily from the sale of shares under the employee stock purchase and option plans, offset to some extent by the net repayment of debt obligations in Japan.

Operating activities during 2001 used cash of \$7.1 million primarily from increased inventory and lower other current liabilities offset partially by lower accounts receivable resulting from reduced sales levels in 2001. Investing activities provided \$36.3 million due primarily to net sales of short-term investments of \$52.9 million offset to some extent by \$13.2 million in capital expenditures used to improve our facilities and to expand our manufacturing capacity in 2001. Financing activities provided cash of \$501,000 primarily from the sale of shares under the employee stock purchase and option plans offset to some extent by the net repayment of debt obligations in Japan.

Operating activities during 2000 provided cash of \$9.5 million primarily from net income and increased accounts payable and other current liabilities offset partially by higher accounts receivable and inventory levels. Investing activities used \$73.4 million due to net purchases of short-term investments of \$38.1 million and \$35.3 million in capital expenditures used for the purchase and improvement of our building in Milpitas, California in 2000. Financing activities provided cash of \$77.5 million primarily from a public offering of common stock in March 2000, the issuance of debt obligations and the sale of shares under the employee stock purchase and option plans offset by the net repayment of debt obligations in Japan.

We have evaluated and will continue to evaluate the acquisition of products, technologies or businesses that are complementary to our business. These activities may result in product and business investments, which may affect our cash position and working capital balances.

Recent Accounting Pronouncements

In June 1998, the Financial Accounting Standards Board (FASB) issued SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities*. This statement establishes accounting and reporting standards requiring that every derivative instrument, including derivative instruments embedded in other contracts, be recorded in the balance sheet as either an asset or liability measured at its fair value. We adopted SFAS No. 133 effective January 1, 2001. Adoption of SFAS No. 133 did not have a significant impact on our consolidated financial position, results of operations or cash flows.

In June 2001, SFAS No. 141, *Business Combinations*, was approved by the FASB. SFAS No. 141 requires that the purchase method of accounting be used for all business combinations initiated after June 30, 2001. We adopted SFAS No. 141 for business combinations initiated after June 30, 2001.

On January 1, 2002, we adopted SFAS No. 142, *Goodwill and Other Intangible Assets*. This Statement eliminates the amortization of goodwill and requires that goodwill be reviewed at least annually for impairment. Upon implementation of this Statement, the transition impairment test for goodwill was performed as of January 1, 2002, and no impairment loss was recorded. During 2002, we recorded a charge of \$1,077,000 for impairment of goodwill in accordance with SFAS No. 142. See Note 1 of the Notes to Consolidated Financial Statements. We had no goodwill on our balance sheet at December 31, 2002. This Statement also requires that the useful lives of previously recognized intangible assets be reassessed and the remaining amortization periods be adjusted accordingly. Adoption of this Statement did not require any adjustments to be made to the useful lives of existing intangible assets and no reclassifications of intangible assets to goodwill were necessary.

On January 1, 2002, we adopted SFAS No. 144, *Accounting for the Impairment of Disposal of Long-Lived Assets*. SFAS No. 144 supersedes SFAS No. 121, *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed of*, but retains its fundamental provision for recognizing and measuring impairment of long-lived assets to be held and used. This Statement requires that all long-lived assets to be disposed of by sale be carried at the lower of carrying amount of fair value less cost to sell, and that depreciation cease to be recorded on such assets. SFAS No. 144 standardizes the accounting and presentation requirements for all long-lived assets to be disposed of by sale, and supersedes previous guidance for discontinued operations of business segments. The initial adoption of this Statement did not have any impact on our consolidated financial statements.

In December 2002, the FASB issued SFAS No. 148, *Accounting for Stock-Based Compensation - Transition and Disclosures, an Amendment of FASB Statement No. 123*. This Statement provides alternative methods of transition for companies who voluntarily change to the fair value-based method of accounting for stock-based employee compensation in accordance to SFAS No. 123, *Accounting for Stock-Based Compensation* and enhances the disclosure requirements. This statement was effective upon its issuance.

We continue to account for stock-based compensation using the intrinsic value method in accordance with the provisions of Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees*, elected under SFAS No. 123, as amended. As a result, the adoption of this Statement did not have any impact on our consolidated financial statements. See additional information on stock-based compensation in Note 1 of the Notes to Consolidated Financial Statements.

In November 2002, the FASB issued Interpretation No. 45, *Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others* (FIN 45). FIN 45 requires a guarantor to include disclosures of certain obligations, and if applicable, at the inception of the guarantee, recognize a liability for the fair value of other obligations undertaken in issuing a guarantee.

The initial recognition and initial measurement provisions apply on a prospective basis to guarantees issued or modified after December 31, 2002 and did not have a material impact on our consolidated financial statements. The applicable disclosures have been made.

Factors That May Affect Future Operating Results

You should carefully consider the risks described below together with all of the other information included in this Annual Report on Form 10-K before making an investment decision. The risks and uncertainties described below are not the only ones that we face. If any of the following risks actually occurs, our business, financial condition or operating results could be harmed. In such case, the trading price of our common stock could decline, and you could lose all or part of your investment.

Risks Related to Our Business

Cyclicality in the semiconductor, flat panel display and magnetic recording head industries has led to substantial decreases in demand for our systems and may from time to time continue to do so.

Our operating results have varied significantly due to the cyclical nature of the semiconductor, flat panel display and magnetic recording head industries. The majority of our business depends upon the capital expenditures of semiconductor device and capital equipment manufacturers. These manufacturers' capital expenditures, in turn, depend upon the current and anticipated market demand for semiconductors and products using semiconductors. The semiconductor industry is cyclical and has historically experienced periodic downturns. These downturns have often resulted in substantial decreases

in the demand for capital equipment, including metrology systems. We have found that the resulting decrease in capital expenditures has typically been more pronounced than the downturn in semiconductor device industry revenues. We expect the cyclical nature of the semiconductor industry, and therefore, our business, to continue in the foreseeable future. Currently, the semiconductor industry is experiencing a downturn, which has existed for the past few years. Should the downturn continue or become more severe, our business and results of operations could suffer.

We are highly dependent on international sales and operations, which exposes us to foreign political and economic risks.

Sales to customers in foreign countries accounted for approximately 64.8% and 69.0% of our total net revenues in 2001 and 2002, respectively. We maintain facilities in Japan and Korea. We anticipate that international sales will continue to account for a significant portion of our revenues.

Our reliance on international sales and operations exposes us to foreign political and economic risks, including:

- political, social and economic instability;
- trade restrictions and changes in tariffs;
- import and export license requirements and restrictions;
- difficulties in staffing and managing international operations;
- disruptions in international transport or delivery;
- fluctuations in currency exchange rates;
- difficulties in collecting receivables; and
- potentially adverse tax consequences.

If any of these risks materialize, our international sales could decrease and our foreign operations could suffer.

Because we derive a significant portion of our revenues from sales in Asia, our sales and results of operations could be adversely affected by the instability of Asian economies.

Our sales to customers in Asian markets represented approximately 52.8% and 63.3% of our total net revenues in 2001 and 2002, respectively. Countries in the Asia Pacific region, including Japan, Korea and Taiwan, each of which accounted for a significant portion of our business in that region, have experienced general economic weaknesses over the past year, which has adversely affected our sales to semiconductor manufacturers located in these regions and could harm our sales in future periods.

Our largest customers account for a significant portion of our revenues, and our revenues would significantly decline if one or more of these customers were to purchase significantly fewer of our systems or if they delayed or cancelled a large order.

Historically, a significant portion of our revenues in each quarter and each year has been derived from sales to a relatively few number of customers, and we expect this trend to continue. There are only a limited number of large companies operating in the semiconductor, flat panel display and magnetic recording head industries. Accordingly, we expect that we will continue to depend on a small number of large customers for a significant portion of our revenues for at least the next several years. If any of our key customers were to purchase significantly fewer systems, or if a large order were delayed or cancelled, our revenues would significantly decline. In 2002, sales to Applied Materials accounted for 13.8% of our total net revenues. In 2001, sales to Applied Materials accounted for 17.6% of our total net revenues.

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 customers. Our relationships with our customers provide us with access to valuable information regarding industry trends, 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 long-term ability to produce commercially successful systems could be adversely affected.

We depend on Applied Materials for sales of our integrated metrology systems, and the loss of Applied Materials as a customer could harm our business.

We believe that sales of integrated metrology systems will be an important source of future revenues. Sales of our integrated metrology systems depend upon the ability of Applied Materials to sell semiconductor equipment products that include our metrology systems as components. If Applied Materials is unable to sell such products, or if Applied Materials chooses to focus its attention on products that do not integrate our systems, our business could suffer. We may be unable to retain Applied Materials as a customer. If we lose Applied Materials as a customer for any reason, our ability to realize sales from integrated metrology systems would be significantly diminished, which would harm our business.

Our quarterly operating results have varied in the past and probably will continue to vary significantly in the future, which will cause volatility in our stock price.

Our quarterly operating results have varied significantly in the past and are likely to vary in the future, which could cause our stock price to decline. Some of the factors that may influence our operating results and subject our stock to extreme price and volume fluctuations include:

- changes in customer demand for our systems;
- economic conditions in the semiconductor, flat panel display and magnetic recording head industries;
- the timing, cancellation or delay of customer orders and shipments;
- market acceptance of our products and our customers' products;
- competitive pressures on product prices and changes in pricing by our customers or suppliers;
- the timing of new product announcements and product releases by us or our competitors and our ability to design, introduce and manufacture new products on a timely and cost-effective basis;
- the timing of acquisitions of businesses, products or technologies;
- the levels of our fixed expenses, including research and development costs associated with product development, relative to our revenue levels; and
- fluctuations in foreign currency exchange rates, particularly the Japanese yen.

If our operating results in any period fall below the expectations of securities analysts and investors, the market price of our common stock would likely decline.

We obtain some of the components and subassemblies included in our systems from a single source or a limited group of suppliers, and the partial or complete loss of one of these suppliers could cause production delays and significant loss of revenue.

We rely on outside vendors to manufacture many components and subassemblies. Certain components, subassemblies and services necessary for the manufacture of our systems are obtained from a sole supplier or limited group of suppliers. We do not maintain any long-term supply agreements with any of our suppliers. We have entered into arrangements with J.A. Woollam Company for the purchase of the spectroscopic ellipsometer component and Newport Corporation for the robotics incorporated in our advanced measurement systems. Our reliance on a sole or a limited group of suppliers involves several risks, including the following:

- we may be unable to obtain an adequate supply of required components;
- we have reduced control over pricing and the timely delivery of components and subassemblies; and
- our suppliers may be unable to develop technologically advanced products to support our growth and development of new systems.

Some of our suppliers have relatively limited financial and other resources. Because the manufacturing of certain of these components and subassemblies involves extremely complex processes and requires long lead times, we may experience delays or shortages caused by our suppliers. If we were forced to seek alternative sources of supply or to manufacture such components or subassemblies internally, we could be forced to redesign our systems, which could cause production delays and prevent us from shipping our systems to customers on a timely basis. Any inability to obtain adequate deliveries from our suppliers, or any other circumstance that would restrict our ability to ship our products, could damage relationships with current and prospective customers, harm our business and result in significant loss of revenue.

Our current and potential competitors have significantly greater resources than we do, and increased competition could impair sales of our products.

We operate in the highly competitive semiconductor, flat panel display and magnetic recording head industries and face competition from a number of companies, many of which have greater financial, engineering, manufacturing, marketing and customer support resources than we do. As a result, our 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 could impair sales of our products. Moreover, there has been significant merger and acquisition activity among our competitors and potential competitors. These transactions by our competitors and potential competitors 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, flat panel display and magnetic recording head industries are large companies that require global support and service for their metrology systems. Some of our larger or more geographically diverse competitors might be better equipped to provide this global support.

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

Variations in the length of our sales cycles could cause our revenues to fluctuate widely from period to period. Our customers generally take long periods of time to evaluate our metrology systems. We expend significant resources educating and providing information to our prospective customers regarding the uses and benefits of our systems. The length of time that it takes for us to complete a sale depends upon many factors, including:

- the efforts of our sales force and our independent sales representatives and distributors;
- the complexity of the customer's metrology needs;
- the internal technical capabilities and sophistication of the customer;
- the customer's budgetary constraints; and
- the quality and sophistication of the customer's current processing equipment.

Because of the number of factors influencing the sales process, the period between our initial contact with a customer and the time at which we recognize revenue from that customer, if at all, varies widely. Our sales cycles, including the time it takes for us to build a product to customer specifications after receiving an order, typically range from three to six months. Occasionally our sales cycles can be much longer, particularly with customers in Asia who may require longer evaluation periods. During the sales 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 complete a sale, customers often purchase only one of our systems and then evaluate its performance for a lengthy period of time before purchasing additional systems. The purchases are generally made through purchase orders rather than through long-term contracts. The number of additional products that a customer purchases, if any, depends on many factors, including a customer's capacity requirements. The period between a customer's initial purchase and any subsequent purchases is unpredictable and can vary from three months to a year or longer. Variations in the length of this period could cause fluctuations in our operating results, which could adversely affect our stock price.

Relatively small fluctuations in our system prices may cause our operating results to vary significantly each quarter.

During any quarter, a significant portion of our revenue is derived from the sale of a relatively small number of systems. Our automated metrology systems range in price from approximately \$200,000 to \$700,000 per system, our integrated metrology systems range in price from approximately \$80,000 to \$300,000 per system and our tabletop metrology systems range in price from approximately \$50,000 to \$200,000 per system. Accordingly, a small change in the number or types of systems that we sell could cause significant changes in our operating results.

We depend on orders that are received and shipped in the same quarter, and therefore our results of operations may be subject to significant variability from quarter to quarter.

Our net sales in any given quarter depend upon a combination of orders received in that quarter for shipment in that quarter and shipments from backlog. Our backlog at the beginning of each quarter does not include all systems sales needed to achieve expected revenues for that quarter. Consequently, we are dependent on obtaining orders for systems to be shipped

in the same quarter that the order is received. Moreover, customers may reschedule shipments, and production difficulties could delay shipments. Accordingly, we have limited visibility of future product shipments, and our results of operations may be subject to significant variability from quarter to quarter.

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

We believe that once a semiconductor, flat panel display or magnetic recording head customer has selected one vendor's metrology system, the customer generally relies upon that system and, to the extent possible, subsequent generations of the same vendor's system, for the life of the application. Once a vendor's metrology system has been installed, a customer must often make substantial technical modifications and may experience downtime in order to switch to another vendor's metrology system. 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 from that customer once it has selected another vendor's system for an application.

If we deliver systems with defects, our credibility will be harmed, the sales and market acceptance of our systems will decrease and we could expend significant capital and resources as a result of such defects.

Our systems are complex and have occasionally contained errors, defects and bugs when introduced. If we deliver systems with errors, defects or bugs, our credibility and the market acceptance and sales of our systems would be harmed. Further, if our systems contain errors, defects or bugs, we may be required to expend significant capital and resources to alleviate such 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 in some circumstances against liability arising from defects in our systems. 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.

If we are not successful in developing new and enhanced metrology systems we will likely lose market share to our competitors.

We operate in an industry that is subject to technological changes, changes in customer demands and the introduction of new, higher performance systems with short product life cycles. To be competitive, we must continually design, develop and introduce in a timely manner new metrology systems that meet the performance and price demands of semiconductor, flat panel display and magnetic recording head manufacturers and suppliers. We must also continue to refine our current systems so that they remain competitive. We may experience difficulties or delays in our development efforts with respect to new systems, and we may not ultimately be successful in developing them. Any significant delay in releasing new systems could adversely affect our reputation, give a competitor a first-to-market advantage or cause a competitor to achieve greater market share.

Lack of market acceptance for our new products may affect our ability to generate revenue and may harm our business.

We have recently introduced new products to market and cannot accurately predict their future level of acceptance by our customers. As a result, we may not be able to generate anticipated revenue from these products. We have only recently started selling macro-defect inspection products, 300 millimeter technology platform products, wireless Nanonet technology and wafer stress management products. While we anticipate that these products will become an increasingly larger component of our business, their failure to gain acceptance with our customers could materially harm our business. Additionally, if our new products do gain market acceptance, our ability to sell our existing products may be impeded. As a result, there can be no assurance that the introduction of these products will be commercially successful or that these products will result in significant additional revenues or improved operating margins in future periods.

Successful infringement claims by third parties could result in substantial damages, lost product sales and the loss of important intellectual property rights by us.

Our commercial success depends in part on our ability to avoid infringing or misappropriating patents or other proprietary rights owned by third parties. From time to time we may receive communications from third parties asserting that our metrology systems may contain design features that are claimed to infringe on their proprietary rights. There can be no assurance that our new or current products do not infringe any valid intellectual property rights.

Our intellectual property may be infringed upon by third parties despite our efforts to protect it, which could threaten our future success and competitive position and adversely affect our operating results.

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, trade secret and trademark law to protect that technology. If we fail to adequately protect our intellectual property, it will be easier for our competitors to sell competing products. We own or have licensed a number of patents relating to our metrology systems, and have filed applications for additional patents. Any of our pending patent applications may be rejected, and we may not in the future be able to develop additional proprietary technology that is patentable. In addition, the patents 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. Third parties may also design around these patents.

In addition to patent protection, we rely upon trade secret protection for our confidential and proprietary information and technology. We routinely enter into confidentiality agreements with our employees. However, in the event that these agreements may be breached, we may not have adequate remedies. Our confidential and proprietary information and technology might also be independently developed by or become otherwise known to third parties. We may be required to initiate litigation in order to enforce any patents issued to or licensed by us, or to determine the scope or validity of a third party's patent or other proprietary rights. Any such litigation, regardless of outcome, could be expensive and time consuming, and could subject us to significant liabilities or require us to re-engineer our product or obtain expensive licenses from third parties, any of which would adversely affect our business and operating results.

We must expend a significant amount of time and resources to develop new products, and if these products do not achieve commercial acceptance, our operating results may suffer.

We expect to spend a significant amount of time and resources to develop new systems and refine 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 new systems. Our ability to commercially introduce and successfully market new systems is subject to a wide variety of challenges during this development cycle that could delay introduction of these systems. In addition, since our customers are not obligated by long-term contracts to purchase our systems, our anticipated product orders may not materialize, or orders that do materialize may be cancelled. As a result, if we do not achieve market acceptance of new products, our operating results may suffer.

We must attract and retain key personnel with relevant industry knowledge to help support our future growth.

Our success depends to a significant degree upon the continued contributions of our key management, engineering, sales and marketing, customer support, finance and manufacturing personnel. We do not enter into employment contracts with any of our key personnel. The loss of any of these key personnel, who would be difficult to replace, could harm our business and operating results. To support our future growth, we will need to attract and retain additional qualified employees. Competition for such personnel in our industry is ongoing, and we may not be successful in attracting and retaining qualified employees.

We manufacture all of our systems at a limited number of facilities, and any prolonged disruption in the operations of those facilities could reduce our revenues.

We produce all of our systems in our manufacturing facilities located in Milpitas, California and through our subsidiaries in Japan and Korea. Our manufacturing processes are highly complex and require sophisticated, costly equipment and specially designed facilities. As a result, any prolonged disruption in the operations of our manufacturing facilities could seriously harm our ability to satisfy our customer order deadlines. A significant portion of our operations are located in Japan and Korea, which may be subject to regional political and economic instability.

If we choose to acquire new and complementary businesses, products or technologies instead of developing them ourselves, 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 achieve this, from time to time we have acquired complementary businesses, products, or technologies instead of developing them ourselves and may choose to do so in the future. We do not know if we will be able to complete any acquisitions, or whether we will be able to successfully integrate any acquired business, operate it profitably or retain its key employees. Integrating any business, product or technology that

we acquire could be expensive and time consuming, disrupt our ongoing business and distract our management. In addition, in order to finance any acquisitions, we may be required to raise additional funds through public or private equity or debt financings. In that event, we could be forced to obtain financing on terms that are not favorable to us and, in the case of an equity financing, that result in dilution to our shareholders. If we are unable to integrate any acquired entities, products or technologies effectively, our business will suffer.

Our efforts to protect our intellectual property may be less effective in some foreign countries where intellectual property rights are not as well protected as in the United States.

In 2001 and 2002, 64.8% and 69.0%, respectively, of our total net revenues were derived from sales to customers in foreign countries, including certain countries in Asia, such as Taiwan, Korea and Japan. The laws of some foreign countries do not protect our proprietary rights to as great an extent as do the laws of the United States, and many U.S. companies have encountered substantial problems in protecting their proprietary rights against infringement in such countries. If we fail to adequately protect our intellectual property in these countries, it would be easier for our competitors to sell competing products in those countries.

Continuing economic and political instability could affect our business and results of operations.

The ongoing threat of terrorism targeted at the United States or other regions where we conduct business increases the uncertainty in our markets and the economy in general. This uncertainty is likely to result in continued economic stagnation, which would harm our business. In addition, increased international political instability may hinder our ability to do business by increasing our costs of operations. For example, our transportation costs, insurance costs and sales efforts may become more expensive as a result of geopolitical tension. These tensions may also negatively affect our suppliers and customers. If this international economic and political instability continues or increases, our business and results of operations could be harmed.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, which include changes in foreign currency exchange rates and interest rates. We do not use derivative financial instruments. Instead, we actively manage the balances of current assets and liabilities denominated in foreign currencies to minimize currency fluctuation risk. As a result, a hypothetical 10% change in the foreign currency exchange rates at December 31, 2001 and 2002 would not have a material impact on our results of operations. Our investments in marketable securities are subject to interest rate risk. However, due to the short-term nature of these investments, interest rate changes would not have a material impact on their value at December 31, 2001 and 2002. We also have fixed rate yen denominated debt obligations in Japan that have no interest rate risk. At December 31, 2001 and 2002, our total debt obligation was \$3.7 million and \$3.9 million, respectively, with a long-term portion of \$3.3 million and \$3.1 million, respectively. A hypothetical 10% change in interest rates at December 31, 2002 would not have a material impact on our results of operations.

ITEM 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by Item 8 of Form 10-K is presented here in the following order:

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

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INDEPENDENT AUDITORS' REPORT

To the Board of Directors and Shareholders
of Nanometrics Incorporated:

We have audited the accompanying consolidated balance sheets of Nanometrics Incorporated and subsidiaries (the "Company") as of December 31, 2001 and 2002, and the related consolidated statements of operations, shareholders' equity and comprehensive income (loss), and cash flows for each of the three years in the period ended December 31, 2002. Our audits also included the financial statement schedule listed in the Index at Item 15(a)(2). These financial statements and financial statement schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and financial statement schedule based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of Nanometrics Incorporated and subsidiaries as of December 31, 2001 and 2002, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2002 in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, such financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

As discussed in Note 1 to the financial statements, in 2002 the Company changed its method of accounting for goodwill and other intangible assets to conform to Statement of Financial Accounting Standards No. 142, "Goodwill and Other Intangible Assets."

Deloitte & Touche LLP
San Jose, California
February 13, 2003

NANOMETRICS INCORPORATED

CONSOLIDATED BALANCE SHEETS (In thousands, except share amounts)

ASSETS	December 31,	
	2001	2002
Current assets:		
Cash and cash equivalents	\$ 47,227	\$ 7,967
Short-term investments.....	-	28,899
Accounts receivable, net of allowances of \$562 and \$566 in 2001 and 2002, respectively.....	9,131	9,021
Inventories	26,311	25,847
Deferred income taxes	3,974	6,840
Prepaid expenses and other	2,474	2,803
Total current assets.....	89,117	81,377
Property, plant and equipment, net.....	48,412	50,050
Deferred income taxes.....	225	-
Goodwill.....	1,077	-
Intangible assets.....	2,238	1,748
Other assets.....	1,286	1,513
Total assets.....	\$ 142,355	\$ 134,688
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable.....	\$ 2,906	\$ 1,708
Accrued payroll and related expenses.....	1,148	1,004
Deferred revenue.....	2,261	1,396
Other current liabilities.....	1,981	1,574
Income taxes payable.....	272	139
Current portion of debt obligations.....	378	780
Total current liabilities.....	8,946	6,601
Other long-term liabilities.....	250	858
Debt obligations.....	3,314	3,123
Total liabilities.....	12,510	10,582
Commitments and contingencies (Note 6)		
Shareholders' equity:		
Common stock, no par value; 50,000,000 shares authorized; 11,787,033 and 12,006,641 outstanding in 2001 and 2002, respectively.....	98,531	99,911
Retained earnings.....	32,743	24,475
Accumulated other comprehensive loss.....	(1,429)	(280)
Total shareholders' equity.....	129,845	124,106
Total liabilities and shareholders' equity.....	\$ 142,355	\$ 134,688

See notes to consolidated financial statements.

NANOMETRICS INCORPORATED

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

	Years Ended December 31,		
	2000	2001	2002
Net revenues:			
Product sales.....	\$ 63,468	\$ 42,653	\$ 28,669
Service.....	<u>6,023</u>	<u>4,931</u>	<u>6,054</u>
Total net revenues.....	<u>69,491</u>	<u>47,584</u>	<u>34,723</u>
Costs and expenses:			
Cost of product sales.....	25,082	17,949	13,237
Cost of service.....	6,022	5,406	5,765
Research and development.....	9,238	10,760	13,765
Selling.....	10,313	9,523	10,862
General and administrative.....	4,258	4,177	5,104
Goodwill impairment.....	-	-	1,077
Total costs and expenses.....	<u>54,913</u>	<u>47,815</u>	<u>49,810</u>
Income (loss) from operations.....	<u>14,578</u>	<u>(231)</u>	<u>(15,087)</u>
Other income (expense):			
Interest income.....	4,129	2,576	583
Interest expense.....	(76)	(86)	(94)
Other, net.....	<u>(150)</u>	<u>(517)</u>	<u>100</u>
Total other income, net.....	<u>3,903</u>	<u>1,973</u>	<u>589</u>
Income (loss) before provision (benefit) for income taxes.....	18,481	1,742	(14,498)
Provision (benefit) for income taxes.....	<u>5,942</u>	<u>782</u>	<u>(6,230)</u>
Income (loss) before cumulative effect of change in accounting principle.....	12,539	960	(8,268)
Cumulative effect of change in revenue recognition principle (SAB 101).....	<u>(1,364)</u>	<u>-</u>	<u>-</u>
Net income (loss).....	<u>\$ 11,175</u>	<u>\$ 960</u>	<u>\$ (8,268)</u>
Basic net income (loss) per share:			
Income (loss) before cumulative effect of change in accounting principle.....	\$ 1.14	\$ 0.08	\$ (0.70)
Cumulative effect of change in revenue recognition principle (SAB 101).....	<u>(0.12)</u>	<u>-</u>	<u>-</u>
Net income (loss).....	<u>\$ 1.02</u>	<u>\$ 0.08</u>	<u>\$ (0.70)</u>
Diluted net income (loss) per share:			
Income (loss) before cumulative effect of change in accounting principle.....	\$ 1.06	\$ 0.08	\$ (0.70)
Cumulative effect of change in revenue recognition principle (SAB 101).....	<u>(0.12)</u>	<u>-</u>	<u>-</u>
Net income (loss).....	<u>\$ 0.94</u>	<u>\$ 0.08</u>	<u>\$ (0.70)</u>
Shares used in per share computation:			
Basic.....	<u>10,986</u>	<u>11,691</u>	<u>11,878</u>
Diluted.....	<u>11,845</u>	<u>12,161</u>	<u>11,878</u>

See notes to consolidated financial statements.

NANOMETRICS INCORPORATED

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY AND COMPREHENSIVE INCOME (LOSS)

(In thousands, except share amounts)

	Common Stock		Retained Earnings	Accumulated Other Comprehensive	Total Shareholders' Equity	Compre- hensive Income (Loss)
	Shares	Amount		Income (Loss)		
Balances, December 31, 1999.....	9,163,998	\$ 17,277	\$ 20,608	\$ 270	\$ 38,155	
Comprehensive income:						
Net income.....	-	-	11,175	-	11,175	\$ 11,175
Other comprehensive income (loss), net of tax:						
Foreign currency translation adjustments.....	-	-	-	(981)	(981)	(981)
Unrealized gain on investments.....	-	-	-	8	8	8
Comprehensive income.....	-	-	-	-	-	<u>\$ 10,202</u>
Proceeds from common stock issuances, net of \$700 of issuance costs.....	2,012,500	72,367	-	-	72,367	
Issuance of common stock under employee stock purchase plan.....	16,507	261	-	-	261	
Issuance of common stock under stock option plan.....	414,834	2,158	-	-	2,158	
Tax benefit of employee stock transactions.....	-	3,866	-	-	3,866	
Balances, December 31, 2000.....	11,607,839	95,929	31,783	(703)	127,009	
Comprehensive income:						
Net income.....	-	-	960	-	960	\$ 960
Other comprehensive loss, net of tax:						
Foreign currency translation adjustments.....	-	-	-	(698)	(698)	(698)
Unrealized loss on investments.....	-	-	-	(28)	(28)	(28)
Comprehensive income.....	-	-	-	-	-	<u>\$ 234</u>
Other stock issued.....	12,813	214	-	-	214	
Issuance of common stock under employee stock purchase plan.....	33,845	453	-	-	453	
Issuance of common stock under stock option plan.....	132,536	914	-	-	914	
Tax benefit of employee stock transactions.....	-	1,021	-	-	1,021	
Balances, December 31, 2001.....	11,787,033	98,531	32,743	(1,429)	129,845	
Comprehensive loss:						
Net loss.....	-	-	(8,268)	-	(8,268)	\$ (8,268)
Other comprehensive income, net of tax:						
Foreign currency translation adjustments.....	-	-	-	1,148	1,148	1,148
Unrealized gain on investments.....	-	-	-	1	1	1
Comprehensive loss.....	-	-	-	-	-	<u>\$ (7,119)</u>
Issuance of common stock under employee stock purchase plan.....	125,403	568	-	-	568	
Issuance of common stock under stock option plan.....	94,205	578	-	-	578	
Tax benefit of employee stock transactions.....	-	234	-	-	234	
Balances, December 31, 2002.....	<u>12,006,641</u>	<u>\$ 99,911</u>	<u>\$ 24,475</u>	<u>\$ (280)</u>	<u>\$ 124,106</u>	

See notes to consolidated financial statements.

NANOMETRICS INCORPORATED
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	December 31,		
	2000	2001	2002
Cash flows from operating activities:			
Net income (loss).....	\$ 11,175	\$ 960	\$ (8,268)
Reconciliation of net income (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization.....	727	1,681	2,405
Goodwill impairment.....	-	-	1,077
Allowance for doubtful accounts.....	-	150	4
Deferred rent.....	(35)	-	-
Loss on sale/disposal of property.....	54	7	-
Deferred income taxes.....	(1,130)	(1,212)	(1,945)
Changes in assets and liabilities, net of effects of product line acquisition:			
Accounts receivable.....	(3,372)	4,480	554
Inventories.....	(6,913)	(11,259)	1,006
Prepaid income taxes.....	(221)	1,939	(37)
Prepaid expenses and other.....	(2,078)	(797)	(378)
Accounts payable, accruals and other current liabilities.....	4,675	(3,335)	(1,813)
Deferred revenue.....	3,544	(717)	(961)
Income taxes payable.....	3,115	986	86
Net cash provided by (used in) operating activities.....	9,541	(7,117)	(8,270)
Cash flows from investing activities:			
Purchases of short-term investments.....	(114,046)	(112,146)	(65,899)
Sales/maturities of short-term investments.....	75,898	165,000	37,000
Purchases of property, plant and equipment.....	(35,284)	(13,178)	(2,767)
Other assets.....	(2)	(3,373)	-
Net cash provided by (used in) investing activities.....	(73,434)	36,303	(31,666)
Cash flows from financing activities:			
Net proceeds from common stock issuance.....	72,367	-	-
Proceeds from issuance of debt obligations.....	3,187	-	268
Repayments of debt obligations.....	(457)	(866)	(416)
Sale of shares under employee stock purchase and stock option plans.....	2,419	1,367	1,146
Net cash provided by financing activities.....	77,516	501	998
Effect of exchange rate changes on cash.....	(131)	606	(322)
Net change in cash and cash equivalents.....	13,492	30,293	(39,260)
Cash and cash equivalents, beginning of year.....	3,442	16,934	47,227
Cash and cash equivalents, end of year.....	\$ 16,934	\$ 47,227	\$ 7,967
Supplemental disclosure of cash flow information:			
Cash paid for interest.....	\$ 78	\$ 103	\$ 96
Cash paid (received) for income taxes, net.....	\$ 3,497	\$ 2,402	\$ (4,634)

See notes to consolidated financial statements.

NANOMETRICS INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS Years Ended December 31, 2000, 2001 and 2002

1. Significant Accounting Policies

Description of Business - Nanometrics Incorporated and its wholly-owned subsidiaries design, manufacture, market, sell and support thin film, optical critical dimension and overlay dimension metrology systems for customers in the semiconductor, flat panel display and magnetic recording head industries. These metrology systems precisely measure a wide range of film types deposited on substrates during manufacturing in order to control manufacturing processes and increase production yields in the fabrication of integrated circuits, flat panel displays and magnetic recording heads. The thin film metrology systems use a broad spectrum of wavelengths, high-sensitivity optics, proprietary software and patented technology to measure the thickness and uniformity of films deposited on silicon and other substrates as well as their chemical composition. Our optical critical dimension technology is a patented critical dimension measurement technology that is used to precisely determine the dimensions on the semiconductor wafer that directly control the resulting performance of the integrated circuit devices. The overlay metrology systems are used to measure the overlay accuracy of successive layers of semiconductor patterns on wafers in the photolithography process.

Basis of Presentation - The consolidated financial statements include Nanometrics Incorporated and its wholly-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

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 at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Fiscal Year - Nanometrics uses a 52/53 week fiscal year ending on the Saturday nearest to December 31. Accordingly, fiscal years 2000, 2001 and 2002 all consisted of 52 weeks and ended on December 30, 2000, December 29, 2001 and December 28, 2002, respectively. For convenience in the accompanying consolidated financial statements, the year end is denoted as December 31.

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.

Short-Term Investments - Short-term investments consist of United States Treasury bills and are stated at fair value based on quoted market prices. Short-term investments are classified as available-for-sale based on Nanometrics' intended use. The difference between amortized cost and fair value representing unrealized holding gains or losses are recorded as a component of shareholders' equity as accumulated other comprehensive loss. Gains and losses on sales of investments are determined on a specific identification basis.

Fair Value of Financial Instruments - Financial instruments include cash equivalents, short-term investments and debt obligations. Cash equivalents and short-term investments are stated at fair market value based on quoted market prices. The recorded carrying amount of Nanometrics' debt obligations approximates fair market value.

Inventories - Inventories are stated at the lower of cost (first-in, first-out) or market.

Property, Plant and Equipment - Property, plant and equipment are stated at cost. Depreciation is computed using straight line and accelerated methods over the following estimated useful lives of the assets:

Building and improvements	15 - 40 years
Machinery and equipment	4 - 10 years
Furniture and fixtures	5 - 15 years

Leasehold improvements are amortized over the shorter of the estimated useful lives of the improvements or the lease term.

Intangible Assets - Nanometrics amortizes acquired intangible assets (included in other assets) using the straight-line method over an estimated useful life of five years.

Goodwill - As described in this Note 1, on January 1, 2002, Nanometrics adopted Statement of Accounting Standards (SFAS) No. 142, *Goodwill and Other Intangible Assets*. Upon implementation of this Statement, the transition impairment test was performed as of January 1, 2002, and no impairment loss was recorded. SFAS No. 142 requires that goodwill be reviewed at least annually for impairment. Nanometrics elected to test its goodwill for possible impairment in the fourth quarter of 2002. Based upon the results of the annual impairment test, Nanometrics recognized a goodwill impairment loss of \$1,077,000 in the fourth quarter of 2002. The fair value of the segment was estimated using a discounted cash flow methodology.

Long-Lived Assets - As described in this Note 1, Nanometrics adopted SFAS No. 144, *Accounting for the Impairment of Disposal of Long-Lived Assets*, on January 1, 2002. No impairment charge has been recorded in any of the periods presented.

Income Taxes - Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes and operating loss and tax credit carryforwards measured by applying currently enacted tax laws. A valuation allowance is provided when necessary to reduce deferred tax assets to an amount that is more likely than not to be realized.

Accumulated Other Comprehensive Loss - Accumulated other comprehensive loss consists of the following (in thousands):

	<u>December 31,</u>	
	<u>2001</u>	<u>2002</u>
Accumulated unrealized gains on available-for-sale securities, net.....	\$ -	\$ 1
Accumulated translation adjustments, net.....	<u>(1,429)</u>	<u>(281)</u>
Accumulated other comprehensive loss.....	<u>\$ (1,429)</u>	<u>\$ (280)</u>

Revenue Recognition - In December 1999, the Securities and Exchange Commission ("SEC") issued Staff Accounting Bulletin No. 101 (SAB 101), *Revenue Recognition in Financial Statements*, which summarizes certain views of the SEC staff in applying generally accepted accounting principles to revenue recognition in the financial statements. SAB 101 clarified delivery criteria which affected Nanometrics' revenue recognition policy.

Nanometrics changed its revenue recognition policy effective January 1, 2000, based upon SAB 101. Nanometrics recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the seller's price is fixed or determinable, and collectibility is reasonably assured. For product sales, this generally occurs at the time of shipment if Nanometrics has met defined customer acceptance experience levels with both the customer and the specific type of equipment. All other product sales are recognized upon customer acceptance. In certain geographical regions where risk of loss and title transfers upon customer acceptance revenue is also recognized upon customer acceptance. Revenue related to spare part sales is recognized on shipment and is included as part of service revenue. Revenue related service contracts is recognized ratably over the period under contract. Unearned maintenance and service contract revenue is not significant and is included in deferred revenue.

In accordance with guidance provided in SAB 101, Nanometrics recorded a non-cash charge of \$1,364,000, or \$0.12 per diluted share, as a result of the recognition of certain historical 1999 revenues in 2000.

Warranties - Nanometrics sells the majority of its products with a one-year repair or replacement warranty and records a provision for estimated claims at the time of sale. Components of the warranty accrual, which was included in the accompanying consolidated balance sheets as other current liabilities, was as follows:

Balance as of January 1, 2002.....	\$ 435,000
Actual warranty costs.....	(625,000)
Provision for warranty.....	<u>451,000</u>
Balance as of December 31, 2002.....	<u>\$ 261,000</u>

Stock-Based Compensation - Nanometrics accounts for stock-based compensation using the intrinsic value method in accordance with the provision of Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees*, as allowed by SFAS No. 123, *Accounting for Stock Based Compensation* as amended by SFAS No. 148, *Accounting for Stock Based Compensation - Transition and Disclosures, an Amendment of FASB Statement No. 123*.

Under the intrinsic value method, Nanometrics does not recognize any compensation expense, as the exercise price of all stock options is equal to the fair market value at the time the options are granted. Had compensation expense been recognized using the fair value-based method under SFAS No. 123, Nanometrics' pro forma consolidated income (loss) and income (loss) per share would have been as follows (in thousands, except per share amounts):

	Year Ended December 31,		
	2000	2001	2002
Net income (loss):			
As reported.....	\$ 11,175	\$ 960	\$ (8,268)
Deduct: Total stock-based employee compensation expense determined under fair value based method for all awards, net of related tax effects.....	(2,975)	(3,659)	(4,692)
Pro forma.....	<u>\$ 8,200</u>	<u>\$ (2,699)</u>	<u>\$ (12,960)</u>
Basic net income (loss) per share:			
As reported.....	\$ 1.02	\$ 0.08	\$ (0.70)
Pro forma.....	0.75	(0.23)	(1.09)
Diluted net income (loss) per share:			
As reported.....	0.94	0.08	(0.70)
Pro forma.....	0.69	(0.23)	(1.09)

Foreign Currency - The functional currencies of Nanometrics' foreign subsidiaries are the local currencies. Accordingly, translation adjustments for the subsidiaries have been included in shareholders' equity. Gains and losses from transactions denominated in currencies other than the functional currencies of Nanometrics or its subsidiaries are included in other income (expense) and consist of a loss of \$30,000 and \$614,000 for 2000 and 2001, respectively and a gain of \$154,000 for 2002.

Net Income Per Share - Basic net income per share excludes dilution and is computed by dividing net income by the number of weighted average common shares outstanding for the period. Diluted net income per share reflects the potential dilution from outstanding dilutive stock options (using the treasury stock method) and shares issuable under the employee stock purchase plan. During the year ended December 31, 2002, diluted net loss per share excludes common equivalent shares outstanding, as their effect is antidilutive. The reconciliation of the share denominator used in the basic and diluted net income per share computations is as follows (in thousands):

	Year Ended December 31,		
	2000	2001	2002
Weighted average shares outstanding - shares used in basic net income per share computation.....	10,986	11,691	11,878
Dilutive effect of common stock equivalents, using the treasury stock method.....	859	470	-
Shares used in diluted net income per share computation.....	<u>11,845</u>	<u>12,161</u>	<u>11,878</u>

Reclassifications - Certain reclassifications have been made to the prior years' financial statement presentations to conform to the current year presentation. Such reclassifications had no impact on the consolidated statements of operations or retained earnings.

Recently Issued Accounting Standards - In June 1998, the Financial Accounting Standards Board (FASB) issued SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities*. This statement establishes accounting and reporting standards requiring that every derivative instrument, including derivative instruments embedded in other contracts, be recorded in the balance sheet as either an asset or liability measured at its fair value. Nanometrics adopted SFAS No. 133 effective January 1, 2001. Adoption of SFAS No. 133 did not have a significant impact on the consolidated financial position, results of operations or cash flows of Nanometrics.

In June 2001, SFAS No. 141, *Business Combinations*, was approved by the FASB. SFAS No. 141 requires that the purchase method of accounting be used for all business combinations initiated after June 30, 2001. Nanometrics adopted SFAS No. 141 for business combinations initiated after June 30, 2001.

On January 1, 2002, Nanometrics adopted SFAS No. 142, *Goodwill and Other Intangible Assets*. This Statement eliminates the amortization of goodwill and requires that goodwill be reviewed at least annually for impairment. Upon implementation of this Statement, the transition impairment test for goodwill was performed as of January 1, 2002, and no impairment loss was recorded. During 2002, Nanometrics recorded a charge for impairment of goodwill in accordance with SFAS No. 142 (See Note 1, Goodwill). Nanometrics had no goodwill on its balance sheet at December 31, 2002. A reconciliation of previously reported net income and income (loss) per share to the amounts adjusted for the exclusion of goodwill amortization, net of related income tax effect, is as follows (in thousands, except per share amounts):

	Year Ended December 31,		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Reported net income (loss).....	\$ 11,175	\$ 960	\$ (8,268)
Add goodwill amortization, net of tax.....	<u>781</u>	<u>68</u>	<u>-</u>
Basic net income (loss).....	<u>\$ 11,956</u>	<u>\$ 1,028</u>	<u>\$ (8,268)</u>
Basic net income (loss) per share on reported net income (loss).....	\$ 1.02	\$ 0.08	\$ (0.70)
Goodwill amortization, net of tax.....	<u>0.07</u>	<u>0.01</u>	<u>-</u>
Adjusted net income (loss)	<u>\$ 1.09</u>	<u>\$ 0.09</u>	<u>\$ (0.70)</u>
Diluted net income (loss) per share on reported net income (loss).....	\$ 0.94	\$ 0.08	\$ (0.70)
Goodwill amortization, net of tax.....	<u>0.07</u>	<u>0.01</u>	<u>-</u>
Adjusted net income (loss).....	<u>\$ 1.01</u>	<u>\$ 0.09</u>	<u>\$ (0.70)</u>

This Statement also requires that the useful lives of previously recognized intangible assets be reassessed and the remaining amortization periods be adjusted accordingly. Adoption of this Statement did not require any adjustments to be made to the useful lives of existing intangible assets and no reclassifications of intangible assets to goodwill were necessary.

On January 1, 2002, Nanometrics adopted SFAS No. 144, *Accounting for the Impairment of Disposal of Long-Lived Assets*. SFAS No. 144 supersedes SFAS No. 121, *Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed of*, but retains its fundamental provision for recognizing and measuring impairment of long-lived assets to be held and used. This Statement requires that all long-lived assets to be disposed of by sale be carried at the lower of carrying amount of fair value less cost to sell, and that depreciation cease to be recorded on such assets. SFAS No. 144 standardizes the accounting and presentation requirements for all long-lived assets to be disposed of by sale, and supersedes previous guidance for discontinued operations of business segments. The initial adoption of this Statement did not have any impact of the consolidated financial statements of Nanometrics.

In December 2002, the FASB issued SFAS No. 148, *Accounting for Stock-Based Compensation - Transition and Disclosures, an Amendment of FASB Statement No. 123*. This Statement provides alternative methods of transition for companies who voluntarily change to the fair value-based method of accounting for stock-based employee compensation in accordance with SFAS No. 123, *Accounting for Stock-Based Compensation* and enhances the disclosure requirements. This statement was effective upon its issuance.

Nanometrics continues to account for stock-based compensation using the intrinsic value method in accordance with the provisions of Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees*, elected under SFAS No. 123, as amended. As a result, the adoption of this Statement did not have any impact on the consolidated financial statements of Nanometrics. See additional information on stock-based compensation in Note 1.

In November 2002, the FASB issued Interpretation No. 45, *Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others* (FIN 45). FIN 45 requires a guarantor to include disclosures of certain obligations, and if applicable, at the inception of the guarantee, recognize a liability for the fair value of other obligations undertaken in issuing a guarantee.

The initial recognition and initial measurement provisions apply on a prospective basis to guarantees issued or modified after December 31, 2002 and did not have a material impact on Nanometrics' consolidated financial statements. The applicable disclosures have been made.

Certain Significant Risks and Uncertainties - Financial instruments which potentially subject Nanometrics to concentration of credit risk consist of cash and cash equivalents, short-term investments and accounts receivable. Cash and cash equivalents and short-term investments are held primarily with two financial institutions and consist primarily of cash in bank accounts and United States Treasury bills. Nanometrics sells its products primarily to end users in the United States and Asia, and generally does not require its customers to provide collateral or other security to support accounts receivable. Management performs ongoing credit evaluations of its customers' financial condition. Nanometrics maintains allowances for estimated potential bad debt losses.

Nanometrics participates in a dynamic high technology industry and believes that changes in any of the following areas could have a material adverse effect on Nanometrics' future financial position, results of operations or cash flows: advances and trends in new technologies and industry standards; competitive pressures in the form of new products or price reductions on current products; changes in product mix; changes in the overall demand for products offered by Nanometrics; changes in third-party manufacturers; changes in key suppliers; changes in certain strategic relationships or customer relationships; litigation or claims against Nanometrics based on intellectual property, patent, product, regulatory or other factors; fluctuations in foreign currency exchange rates; risk associated with changes in domestic and international economic and/or political regulations; availability of necessary components or subassemblies; disruption of manufacturing facilities; and Nanometrics' ability to attract and retain employees necessary to support its growth.

Nanometrics' customer base is highly concentrated. A relatively small number of customers have accounted for a significant portion of Nanometrics' revenues. In 2002, aggregate revenue from Nanometrics' top ten largest customers consisted of 52% of Nanometrics' total net revenues.

Certain components and subassemblies used in Nanometrics' products are purchased from a sole supplier or a limited group of suppliers. In particular, Nanometrics currently purchases its spectroscopic ellipsometer and robotics used in its advanced measurement systems from a sole supplier or a limited group of suppliers. Any shortage or interruption in the supply of any of the components or subassemblies used in Nanometrics' products or the inability of Nanometrics to procure these components or subassemblies from alternate sources on acceptable terms, could have a material adverse effect on Nanometrics' business, financial condition and results of operations.

Related Party Transactions - During 2002, Nanometrics had outstanding long-term notes to one officer and two employees in the amount of \$429,000. The notes were outstanding prior to October 2002. The notes, which bear interest at 6% per annum, are due October 2004 and are classified as other assets on the balance sheet.

2. Inventories

Inventories consist of the following (in thousands):

	<u>December 31,</u>	
	<u>2001</u>	<u>2002</u>
Raw materials and subassemblies.....	\$ 18,279	\$ 18,353
Work in process.....	2,387	4,733
Finished goods.....	<u>5,645</u>	<u>2,761</u>
Total inventories.....	<u>\$ 26,311</u>	<u>\$ 25,847</u>

3. Property, Plant and Equipment

Property, plant and equipment consists of the following (in thousands):

	December 31,	
	2001	2002
Land.....	\$ 16,597	\$ 16,716
Building and improvements.....	29,299	31,261
Machinery and equipment.....	4,418	6,326
Furniture and fixtures.....	1,631	1,429
Construction in progress.....	126	-
Leasehold improvements.....	13	-
	<u>52,084</u>	<u>55,732</u>
Accumulated depreciation and amortization.....	<u>(3,672)</u>	<u>(5,682)</u>
Total property, plant and equipment, net.....	<u>\$ 48,412</u>	<u>\$ 50,050</u>

4. Other Current Liabilities

Other current liabilities consist of the following (in thousands):

	December 31,	
	2001	2002
Commissions payable.....	\$ 288	\$ 291
Accrued warranty.....	435	261
Accrued professional services.....	210	169
Other	<u>1,048</u>	<u>853</u>
Total other current liabilities.....	<u>\$ 1,981</u>	<u>\$ 1,574</u>

5. Debt Obligations

Debt obligations consist of the following (in thousands):

	December 31,	
	2001	2002
1995 working capital bank loan.....	\$ 1,068	\$ 834
1996 working capital bank loan.....	336	287
2000 working capital bank loan.....	2,288	2,502
Other debt obligations.....	-	280
Total.....	<u>3,692</u>	<u>3,903</u>
Current portion of debt obligations.....	<u>(378)</u>	<u>(780)</u>
Debt obligations.....	<u>\$ 3,314</u>	<u>\$ 3,123</u>

The 1995 working capital bank loan was obtained by Nanometrics' Japanese subsidiary. The loan is collateralized by receivables of the Japanese subsidiary and is guaranteed by the parent, Nanometrics Incorporated. The loan is denominated in Japanese yen (¥100,000,000 at December 31, 2002) and bears interest at 3.3% per annum. The loan is payable in quarterly installments with unpaid principal and interest due in May 2005.

The 1996 working capital bank loan was obtained by Nanometrics' Japanese subsidiary and is collateralized by land and building. The loan is denominated in Japanese yen (¥34,400,000 at December 31, 2002) and bears interest at 3.4% per annum. The loan is payable in quarterly installments with unpaid principal and interest due in May 2006.

The 2000 working capital bank loan was obtained by Nanometrics' Japanese subsidiary and is collateralized by land and building. The loan is denominated in Japanese yen (¥300,000,000 at December 31, 2002) and bears interest at 2.1% per annum. The loan is payable in quarterly installments with unpaid principal and interest due in November 2010.

Other debt obligations represent short-term borrowings by Nanometrics' Japanese subsidiary which are collateralized by the subsidiary's accounts receivable. The borrowings are denominated in Japanese yen and bear interest at 1.5% per annum. At December 31, 2002, future annual maturities of debt obligations are as follows (in thousands):

2003.....	\$ 780
2004.....	761
2005.....	594
2006.....	394
2007.....	347
Thereafter.....	<u>1,027</u>
Total.....	<u>\$ 3,903</u>

6. Commitments and Contingencies

Nanometrics leases manufacturing and administrative facilities and certain equipment under noncancellable operating leases. Nanometrics' corporate headquarters facility lease was terminated in November 2000 when corporate headquarters moved into a newly purchased facility. Rent expense for 2000, 2001 and 2002 was approximately \$1,221,000, \$302,000, and \$233,000, respectively. Future minimum lease payments under Nanometrics' operating leases for each of the years ending December 31 are as follows (in thousands):

2003.....	\$ 186
2004.....	97
2005.....	59
2006.....	10
2007.....	3
Thereafter.....	<u>-</u>
Total.....	<u>\$ 355</u>

In September 1998, Nanometrics' Korean subsidiary entered into a lease agreement for manufacturing facilities. The lease payments are based on a percentage of net product sales, as defined. The lease was terminated in February 2001, in conjunction with the completion of the new facility.

Pursuant to a 1985 agreement, as amended, if Nanometrics' Chairman of the Board is involuntarily removed from his position, Nanometrics is required to continue his salary and related benefits for a period of five years from such date.

7. Shareholders' Equity

Common Stock

The authorized capital stock of Nanometrics consists of 50,000,000 common shares, of which 50,000,000 shares have been designated "Common Stock"

Stock Option Plans

Under the 1991 Stock Option Plan (the 1991 Option Plan), as amended, Nanometrics may grant options to acquire up to 3,000,000 shares of common stock to employees and consultants at prices not less than the fair market value at date of grant for incentive stock options and not less than 50% of fair market value for nonstatutory stock options. These options generally expire five years from the date of grant and become exercisable as they vest, generally 33.3% upon each anniversary of the grant, as set forth in the stock option agreements. The 1991 Option Plan expired in July 2001.

Under the 1991 Directors' Stock Option Plan (the 1991 Directors' Plan), nonemployee directors of Nanometrics are automatically granted options to acquire 10,000 shares of common stock, at the fair market value at the date of grant, each year that such person remains a director of Nanometrics. Options granted under the Directors' Plan become exercisable as they vest 33.3% upon each anniversary of the grant and expire five years from the date of grant. The total shares authorized under the 1991 Directors' Plan are 300,000. The 1991 Directors' Plan expired in July 2001.

Under the 2000 Stock Option Plan (the 2000 Option Plan), as amended, Nanometrics may grant options to acquire up to 2,450,000 shares of common stock to employees and consultants at prices not less than the fair market value at date of grant for incentive and nonstatutory stock options. These options generally expire seven years from the date of grant, or a shorter term as provided by the stock option agreement and become exercisable as they vest, generally 33.3% upon each anniversary of the grant, as set forth in the stock option agreements. The 2000 Option Plan is the successor to the 1991 Option Plan, and all options existing under the 1991 Option Plan will continue to be governed by existing terms until exercise, cancellation or expiration.

Under the 2000 Directors' Stock Option Plan (the 2000 Directors' Plan), nonemployee directors of Nanometrics are automatically granted options to acquire 10,000 shares of common stock, at the fair market value at the date of grant, each year that such person remains a director of Nanometrics. Options granted under the Directors' Plan become exercisable as they vest 33.3% upon each anniversary of the grant and expire seven years from the date of grant. The total shares authorized under the 2000 Directors' Plan are 250,000. The 2000 Directors' Plan is the successor plan to the 1991 Directors' Plan, and all options existing under the 1991 Directors' Plan will continue to be governed by existing terms until exercise, cancellation or expiration.

Under the 2002 Nonstatutory Stock Option Plan (the 2002 Option Plan), Nanometrics may grant options to acquire up to 1,200,000 shares of common stock to employees and consultants at prices determined by the 2002 Option Plan administrator at the date of grant. These options generally expire seven years from the date of grant, or a shorter term as provided by the stock option agreement and become exercisable as they vest as set forth in the stock option agreements.

During the fourth quarter of 2002, Nanometrics offered to cancel qualifying options to purchase up to 1,962,020 shares of Nanometrics' common stock granted under the 2000 Option Plan and the 1991 Option Plan. Qualifying options included only those options with an exercise price of greater than or equal to \$10.00 per share. Nanometrics expects to grant all participating employees options equal to 90% of the options cancelled on or about June 17, 2003 at the then fair value of the common stock. Nanometrics cancelled options to purchase 1,569,020 shares and expects to issue options to purchase 1,412,121 shares on or about June 17, 2003.

Option activity under the plans is summarized as follows:

	Outstanding Options		
	Shares Available	Number of Shares	Weighted Average Exercise Price
Balances, December 31, 1999 (665,688 exercisable at a weighted average price of \$5.21).....	479,172	1,494,664	\$ 7.49
Additional shares added through 2000 Option Plan and 2000 Directors' Plan.....	1,500,000	-	-
Exercised.....	-	(414,834)	5.20
Granted (weighted average fair value of \$17.34).....	(886,700)	886,700	31.23
Canceled.....	<u>99,506</u>	<u>(99,506)</u>	17.74
Balances, December 31, 2000 (634,696 exercisable at a weighted average price of \$6.62).....	1,191,978	1,867,024	18.73
Exercised.....	-	(132,536)	6.90
Expired.....	(40,744)	-	-
Granted (weighted average fair value of \$9.45).....	(780,250)	780,250	18.14
Canceled.....	<u>91,516</u>	<u>(91,516)</u>	21.01
Balances, December 31, 2001 (1,017,033 exercisable at a weighted average price of \$13.91).....	462,500	2,423,222	19.11
Additional shares added through 2002 Option Plan.....	1,200,000	-	-
Exercised.....	-	(94,205)	6.13
Granted (weighted average fair value of \$8.57).....	(937,100)	937,100	14.58
Canceled.....	<u>1,855,523</u>	<u>(1,855,523)</u>	21.15
Balances, December 31, 2002	<u>2,580,923</u>	<u>1,410,594</u>	\$ 14.27

Additional information regarding options outstanding as of December 31, 2002 is as follows:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Number Outstanding	Weighted Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
\$ 4.42 - \$ 7.25	444,523	3.13	\$ 5.92	278,523	\$ 5.94
7.81 - 9.00	174,239	1.30	8.08	174,239	8.08
12.86 - 19.69	507,666	3.48	16.09	218,389	15.56
20.13 - 30.88	211,666	3.30	24.16	119,611	24.22
34.69 - 47.63	<u>72,500</u>	3.00	38.85	<u>48,333</u>	38.85
\$ 4.42 - \$ 47.63	<u>1,410,594</u>	3.05	\$ 14.27	<u>839,095</u>	\$ 13.39

Employee Stock Purchase Plan

Under the 1986 Employee Stock Purchase Plan (the Purchase Plan), eligible employees are allowed to have salary withholdings of up to 10% of their base compensation to purchase shares of common stock at a price equal to 85% of the lower of the market value of the stock at the beginning or end of each six-month offering period, subject to an annual limitation. Shares issued under the plan were 16,507, 33,845 and 125,403 in 2000, 2001 and 2002 at weighted average prices of \$15.83, \$13.39 and \$4.53, respectively. The weighted average per share fair values of the 2000, 2001 and 2002 awards were \$14.67, \$5.94 and \$1.26, respectively. During the fourth quarter of fiscal year 2002, the Board of Directors terminated the Purchase Plan effective September 28, 2002.

Additional Stock Plan Information

As discussed in Note 1, Nanometrics accounts for its stock-based awards using the intrinsic value method in accordance with APB No. 25, *Accounting for Stock Issued to Employees*, and its related interpretations. Accordingly, no compensation expense has been recognized in the accompanying consolidated financial statements for employee stock arrangements.

Also as discussed in Note 1, Nanometrics adopted the provisions of SFAS No. 148, which amends SFAS No. 123 as stated. Under SFAS No. 123 as amended, the fair value of stock-based awards to employees is calculated through the use of option pricing models, even though such models were developed to estimate the fair value of freely tradable, fully transferable options without vesting restrictions, which differ significantly from Nanometrics' stock option awards. These models also require subjective assumptions, including future stock price volatility and expected time to exercise, which greatly affect the calculated values. Nanometrics' fair value calculations on stock-based awards under the 1991 and 2001 Option Plans and the 1991 and 2001 Directors' Plans were made using the Black-Scholes option pricing model with the following weighted average assumptions: expected life, three years from the date of grant in 2000, 2001 and 2002; stock volatility, 80% in 2000, 2001 and 2002; risk free interest rate, 6.4% in 2000, 4.2% in 2001 and 3.4% in 2002; and no dividends during the expected term. Nanometrics' calculations are based on a single option valuation approach and forfeitures are recognized at a historical rate of 26% for 2000, 24% for 2001 and 30% for 2002. Nanometrics' fair value calculations on stock-based awards under the Purchase Plan were also made using the Black-Scholes option pricing model with the following weighted average assumptions: expected life, six months in 2000 and 2001; stock volatility, 80% in 2000 and 2001, risk free interest rate, 6.1% in 2000, 3.1% in 2001; and no dividends during the expected term. There were no options outstanding under the Purchase Plan in 2002. See Note 1 Stock-Based Compensation for the disclosure of the pro-forma effects of SFAS 123, as amended.

8. Income Taxes

Income (loss) before provision (benefit) for income taxes consists of the following (in thousands):

	Years Ended December 31,		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Domestic.....	\$ 16,476	\$ (1,516)	\$ (11,751)
Foreign.....	<u>2,005</u>	<u>3,258</u>	<u>(2,747)</u>
Income (loss) before income taxes.....	<u>\$ 18,481</u>	<u>\$ 1,742</u>	<u>\$ (14,498)</u>

The provision (benefit) for income taxes consists of the following (in thousands):

	Years Ended December 31,		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Current:			
Federal.....	\$ 5,875	\$ 1,136	\$ (4,847)
State.....	807	439	266
Foreign.....	<u>390</u>	<u>419</u>	<u>296</u>
	<u>7,072</u>	<u>1,994</u>	<u>(4,285)</u>
Deferred:			
Federal.....	(536)	(1,073)	(506)
State.....	(29)	(437)	(1,480)
Foreign.....	<u>(565)</u>	<u>298</u>	<u>41</u>
	<u>(1,130)</u>	<u>(1,212)</u>	<u>(1,945)</u>
Provision (benefit) for income taxes.....	<u>\$ 5,942</u>	<u>\$ 782</u>	<u>\$ (6,230)</u>

Significant components of Nanometrics' deferred tax assets and liabilities are as follows (in thousands):

	December 31,	
	<u>2001</u>	<u>2002</u>
Deferred tax assets - current:		
Reserves and accruals not currently deductible.....	\$ 2,736	\$ 2,369
Capitalized inventory costs.....	906	696
Tax credit carryforwards.....	<u>390</u>	<u>3,835</u>
Total gross deferred tax assets - current.....	4,032	6,900
Valuation allowance.....	<u>(58)</u>	<u>(60)</u>
Total net deferred tax assets - current.....	<u>\$ 3,974</u>	<u>\$ 6,840</u>
Deferred tax assets (liabilities) - noncurrent:		
Reserves and accruals.....	\$ 53	\$ 58
Net operating loss carryforwards.....	232	892
Depreciation.....	(252)	(2,357)
Goodwill and capitalized acquired technology.....	341	934
Translation adjustments.....	<u>136</u>	<u>(25)</u>
Total net deferred tax assets (liabilities) - noncurrent.....	510	(498)
Valuation allowance.....	<u>(285)</u>	<u>(360)</u>
Total net deferred tax assets (liabilities) - noncurrent.....	<u>\$ 225</u>	<u>\$ (858)</u>

As of December 31, 2002, Nanometrics had available for carryforward research and experimental tax credits, minimum tax credits and foreign tax credits for federal income tax purposes of \$1,864,000, \$448,000 and \$328,000, respectively. Federal credit carryforwards begin to expire after 2005.

As of December 31, 2002, Nanometrics had available for carryforward state credits of \$1,195,000, as well as net operating loss carryforwards for state income tax purposes of \$6,662,000. State credits and state net operating loss carryforwards begin to expire after 2009 and 2011, respectively.

As of December 31, 2002, Nanometrics had available for carryforward a net operating loss for Korean income tax purposes of \$1,020,000. Net operating losses expire beginning in 2006.

Differences between income taxes computed by applying the statutory federal income tax rate to income before income taxes and the provision (benefit) for income taxes consist of the following (in thousands):

	<u>Years Ended December 31,</u>		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Income taxes computed at U.S. statutory rate.....	\$ 6,468	\$ 610	\$ (5,074)
State income taxes.....	820	1	(790)
Foreign tax provision (benefit) higher than U.S. rates.....	(312)	134	178
Foreign sales corporation benefit.....	(471)	-	(80)
Change in valuation allowance.....	(231)	342	77
Utilization of tax credits.....	(385)	(450)	(746)
Other, net.....	<u>53</u>	<u>145</u>	<u>205</u>
Provision (benefit) for income taxes.....	<u>\$ 5,942</u>	<u>\$ 782</u>	<u>\$ (6,230)</u>

9. Profit-Sharing, Retirement and Bonus Plans

No contributions were made by Nanometrics in 2000, 2001 and 2002 to Nanometrics' discretionary profit-sharing and retirement plan. Nanometrics paid \$1,217,000, \$416,000 and \$0 in 2000, 2001 and 2002, respectively, under formal discretionary cash bonus plans which cover all eligible employees.

10. Major Customers

In 2000, sales to three customers accounted for 20.5%, 11.8% and 10.0% of total revenues, respectively. In 2001, sales to one customer accounted for 17.6% of total revenues. In 2002, sales to the same customer accounted for 13.8% and sales to another customer accounted for 10.9% of total revenues.

At December 31, 2000, the customer accounting for 10.0% of total net revenues also accounted for 12.4% of accounts receivable. At December 31, 2001 and 2002, no single customer accounted for 10% or more of accounts receivable.

11. Goodwill and Intangible Assets

Intangible assets are recorded at cost, less accumulated amortization. Intangible assets as of December 31, 2002 consist of (in thousands):

	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization</u>	<u>Net Intangible Assets</u>
Technology.....	\$ 2,709	\$ 1,090	\$ 1,619
Other.....	<u>250</u>	<u>121</u>	<u>129</u>
Total.....	<u>\$ 2,959</u>	<u>\$ 1,211</u>	<u>\$ 1,748</u>

The estimated future amortization expense is as follows (in thousands):

<u>Fiscal Years</u>	
2003.....	\$ 427
2004.....	397
2005.....	285
2006.....	256
2007.....	256
Thereafter.....	<u>127</u>
Total amortization.....	<u>\$ 1,748</u>

Amortization is computed using the straight-line method over a weighted average period of six years for purchased technology and five years for other intangible items.

The changes in the carrying value of goodwill for the year ended December 31, 2002 are as follows for the different segments of the Company (in thousands):

	<u>United States</u>	<u>Korea</u>	<u>Total</u>
Balances as of January 1, 2002.....	\$ 1,028	\$ 49	\$ 1,077
Impairment loss.....	<u>(1,028)</u>	<u>(49)</u>	<u>(1,077)</u>
Balances as of December 31, 2002.....	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>

Nanometrics completed the acquisitions of the Jakes Machining Shop and the Metra product line in prior periods. During the fourth quarter of 2002, management of Nanometrics in conjunction with the annual impairment test determined goodwill was likely impaired as forecasts for revenue growth for the semiconductor industry continue to be weak.

Nanometrics compared the fair values for the reporting units to their respective carrying values and it was determined that both reporting units were impaired. The fair values of the reporting units were estimated using a present value of estimated future cash flows. To determine the amount of impairment we compared the implied fair value to the carrying value and the excess of carrying value over the implied fair value was treated as an impairment loss in accordance with SFAS No. 142. Nanometrics has recorded an impairment loss for the quarter ended December 31, 2002 of \$1.1 million.

12. Product, Segment and Geographic Information

Nanometrics' operating divisions consist of its geographically based entities in the United States, Japan, South Korea and Taiwan. All such operating divisions have similar economic characteristics, as defined in SFAS No. 131, *Disclosures About Segments of an Enterprise and Related Information*, and accordingly, Nanometrics operates in one reportable segment: the sale, design, manufacture, marketing and support of thin film, optical critical dimension and overlay dimension metrology systems. For the years ended December 31, 2000, 2001 and 2002, Nanometrics recorded revenue from customers throughout North America, Europe and Asia. The following table summarizes total net revenues and long-lived assets attributed to significant countries (in thousands):

	<u>Years Ended December 31,</u>		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Total net revenues:			
United States.....	\$ 27,391	\$ 16,752	\$ 10,770
Japan.....	13,028	13,712	8,284
Taiwan.....	11,652	6,727	7,898
Korea.....	13,532	4,693	3,647
Germany.....	1,491	2,018	378
All other.....	<u>2,397</u>	<u>3,682</u>	<u>3,746</u>
Total net revenues*.....	<u>\$ 69,491</u>	<u>\$ 47,584</u>	<u>\$ 34,723</u>
		<u>December 31,</u>	
		<u>2001</u>	<u>2002</u>
Long-lived assets:			
United States.....		\$ 43,375	\$ 42,989
Japan.....		6,660	6,787
Korea.....		3,139	3,367
Taiwan.....		<u>64</u>	<u>168</u>
Total long-lived assets.....		<u>\$ 53,238</u>	<u>\$ 53,311</u>

* Net revenues are attributed to countries based on the deployment and service locations of systems.

Nanometrics' product lines differ primarily based on the environment the systems will be used in. Automated systems are used primarily in high-volume production environments. Integrated systems are installed inside wafer processing equipment to provide near real-time measurements for improving process control and increasing throughput. Tabletop systems are used primarily in low-volume production environments and in engineering labs where automated handling and high throughput are not required. Sales by product type were as follows (in thousands):

	<u>Years Ended December 31,</u>		
	<u>2000</u>	<u>2001</u>	<u>2002</u>
Automated systems.....	\$ 38,441	\$ 27,416	\$ 19,969
Integrated systems.....	13,680	7,527	4,155
Tabletop systems.....	11,347	7,710	4,545
Total product sales.....	<u>\$ 63,468</u>	<u>\$ 42,653</u>	<u>\$ 28,669</u>

13. Selected Quarterly Financial Results (Unaudited)

The following tables set forth selected quarterly results of operations for the years ended December 31, 2001 and 2002 (in thousands, except per share amounts):

	<u>Quarters Ended</u>			
	<u>Mar. 31,</u> <u>2001</u>	<u>Jun. 30,</u> <u>2001</u>	<u>Sep. 30,</u> <u>2001</u>	<u>Dec. 31,</u> <u>2001</u>
Total net revenues.....	\$ 14,425	\$ 14,793	\$ 10,099	\$ 8,267
Gross profit.....	7,668	7,787	5,290	3,484
Income (loss) from operations.....	2,101	1,813	(1,166)	(2,979)
Net income (loss).....	1,623	1,537	(450)	(1,750)
Net income (loss) per share:				
Basic.....	\$ 0.14	\$ 0.13	\$ (0.04)	\$ (0.15)
Diluted.....	\$ 0.14	\$ 0.13	\$ (0.04)	\$ (0.15)
Shares used in per share computation:				
Basic.....	11,616	11,658	11,707	11,783
Diluted.....	11,992	12,195	11,707	11,783

	<u>Quarters Ended</u>			
	<u>Mar. 31,</u> <u>2002</u>	<u>Jun. 30,</u> <u>2002</u>	<u>Sep. 30,</u> <u>2002</u>	<u>Dec. 31,</u> <u>2002</u>
Total net revenues.....	\$ 8,025	\$ 8,392	\$ 8,569	\$ 9,737
Gross profit.....	3,976	3,909	3,840	3,996
Loss from operations.....	(2,547)	(3,088)	(3,915)	(5,537)
Net loss.....	(1,547)	(1,702)	(1,816)	(3,203)
Net loss per share, basic and diluted.....	\$ (0.13)	\$ (0.14)	\$ (0.15)	\$ (0.27)
Shares used in per share computation, basic and diluted.....	11,790	11,837	11,886	11,998

* * * * *

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The sections entitled "Election of Directors" and "Section 16(a) Beneficial Ownership Reporting Compliance" appearing in the Registrant's proxy statement for the annual meeting of shareholders for the year ended December 31, 2002 sets forth certain information which is incorporated by reference. Certain information with respect to persons who are executive officers of the Registrant is set forth under the caption "Business - Executive Officers of the Registrant" in Part I of this report.

ITEM 11. EXECUTIVE COMPENSATION

The section entitled "Executive Compensation" appearing in the Registrant's proxy statement for the annual meeting of shareholders for the year ended December 31, 2002 sets forth certain information with respect to the compensation of management of the Registrant and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED SHAREHOLDER MATTERS

The section entitled "Election of Directors" appearing in the Registrant's proxy statement for the annual meeting of shareholders for the year ended December 31, 2002 sets forth certain information with respect to the ownership of the Registrant's Common Stock and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The section entitled "Transactions with Management" appearing in the Registrant's proxy statement for the annual meeting of shareholders for the year ended December 31, 2002 sets forth certain information with respect to certain business relationships and transactions between the Registrant and its directors and officers and is incorporated herein by reference.

PART IV

ITEM 14. CONTROLS AND PROCEDURES

Nanometrics maintains disclosure controls and procedures that are designed to ensure that information required to be disclosed in the periodic reports filed by Nanometrics with the Securities and Exchange Commission (the "Commission") is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Commission and that such information is accumulated and communicated to Nanometrics' management. In designing and evaluating the disclosure controls and procedures, Nanometrics' management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based on their most recent evaluation, which was completed within 90 days of the filing of this Annual Report on Form 10K, Nanometrics' Chief Executive Officer and Chief Financial Officer believe that the Company's disclosure controls and procedures (as defined in Rules 13a-14 and 15d-14 of the Securities Exchange Act of 1934, as amended) are effective. There were not any significant changes in internal controls or in other factors that could significantly affect these internal controls subsequent to the date of their most recent evaluation.

ITEM 15. EXHIBITS, CONSOLIDATED FINANCIAL STATEMENT SCHEDULES, AND REPORTS ON FORM 8-K

(a) 1. Consolidated Financial Statements.

See Index to Consolidated Financial Statements at Item 8 on page II-16 of this Annual Report on Form 10-K.

2. Consolidated Financial Statement Schedules.

The following consolidated financial statement schedules of Nanometrics Incorporated are filed as part of this Annual Report on Form 10-K and should be read in conjunction with the Consolidated Financial Statements of Nanometrics Incorporated:

<u>Schedule</u>	<u>Page</u>
II - Valuation and Qualifying Accounts.....	IV-6

Schedules not listed above have been omitted because they are not applicable or are not required or the information required to be set forth therein is included in the Consolidated Financial Statements or notes thereto.

(b) Reports on Form 8-K. We did not file any reports on Form 8-K during the quarter ended December 31, 2002.

(c) Exhibits.

The following exhibits are filed with this Annual Report on Form 10-K:

<u>Exhibit No.</u>	<u>Description</u>
3.1	Amended and Restated Articles of Incorporation of Nanometrics Incorporated.
3.2 ⁽²⁾	Bylaws of Nanometrics Incorporated.
3.3 ⁽⁵⁾	Certificate of Amendment of Amended and Restated Bylaws of Nanometrics Incorporated.
4.1 ⁽¹⁾	Form of Common Stock Certificate.
10.1 ⁽²⁾	Form of Indemnification of Agreement for Directors & Officers. (Management contract required to be filed pursuant to Item 15(c) of this report.)
10.2 ⁽³⁾	1991 Stock Option Plan, as amended through May 15, 1997.
10.3 ⁽⁶⁾	1991 Director Option Plan.
10.4 ⁽²⁾	Loan Agreement between Japan Development Bank and Nanometrics Japan k.k.
10.5 ⁽²⁾	Loan Agreement and Guarantee dated June 5, 1995 between Mitsubishi Bank, Limited and Nanometrics Japan Ltd.
10.6 ⁽⁴⁾	Nanometrics Incorporated 2000 Employee Stock Option Plan and form of Stock Option Agreement.
10.7 ⁽⁴⁾	Nanometrics Incorporated 2000 Director Stock Option Plan and form of Stock Option Agreement.
10.8 ⁽⁷⁾	Nanometrics Incorporated 2002 Nonstatutory Stock Option Plan and form of Stock Option Agreement.

<u>Exhibit No.</u>	<u>Description</u>
21 ⁽²⁾	Subsidiaries of Registrant.
23.1	Independent Auditors' Consent.
24	Power of Attorney (see page IV-3).
99.1	Certificate of Chief Executive Officer and Chief Financial Officer.

- (1) Incorporated by reference to exhibits filed with Registrant's Registration Statement on Form S-1 (File No. 2-93949), which became effective November 28, 1984.
- (2) Incorporated by reference to the Registrant's Annual Report on Form 10-K (File No. 000-13470) filed on April 1, 1998.
- (3) Incorporated by reference to Exhibit 4.1 filed with Registrant's Registration Statement on Form S-8 (File No. 333-33583) filed on August 14, 1997.
- (4) Incorporated by reference to exhibits filed with Registrant's Registration Statement on Form S-8 (File No. 333-40866) filed on July 7, 2000.
- (5) Incorporated by reference to Exhibit 3.10 filed with Registrant's Annual Report on Form 10-K dated March 30, 2001.
- (6) Incorporated by reference to Exhibit 4.2 filed with Registrant's Registration Statement on Form S-8 (File No. 33-43913) filed on November 14, 1991.
- (7) Incorporated by reference to Exhibit 4.1 filed with the registrant's Registration Statement on Form S-8 (File No. 333-101137) filed on November 11, 2002.

(d) Consolidated Financial Statements and Schedules.

See Item 15(a) of this Annual Report on Form 10-K above.

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.

Dated: March 27, 2003

NANOMETRICS INCORPORATED

By: /s/ Paul B. Nolan
Paul B. Nolan
Chief Financial Officer and Vice President

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints John D. Heaton and Paul B. Nolan jointly and severally, his attorneys-in-fact, each with the power of substitution, for him in any and all capacities, to sign any and all amendments to this Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report on Form 10-K has been signed below by the following persons on behalf of the registrant on the 26th day of March, 2003 in the capacities indicated.

<u>Signature</u>	<u>Title</u>
<u>/s/ John D. Heaton</u> John D. Heaton	President, Chief Executive Officer and Director (Principal Executive Officer)
<u>/s/ Paul B. Nolan</u> Paul B. Nolan	Chief Financial Officer and Vice President (Principal Financial and Accounting Officer)
<u>/s/ Vincent J. Coates</u> Vincent J. Coates	Chairman of the Board
<u>/s/ Nathaniel Brenner</u> Nathaniel Brenner	Director
<u>/s/ William Oldham</u> William Oldham	Director
<u>/s/ Edmond R. Ward</u> Edmond R. Ward	Director

I, John D. Heaton, certify that:

1. I have reviewed this annual report on Form 10-K of Nanometrics Incorporated;
2. Based on my knowledge, this annual 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 annual report;
3. Based on my knowledge, the financial statements, and other financial information included in this annual 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 annual report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:
 - (a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within these entities, particularly during the period in which this annual report is being prepared;
 - (b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and
 - (c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):
 - (a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and
 - (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and
6. The registrant's other certifying officers and I have indicated in this annual report whether or not there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 27, 2003

By: /s/ John D. Heaton
Name: John D. Heaton
Title: Chief Executive Officer

I, Paul B. Nolan, certify that:

1. I have reviewed this annual report on Form 10-K of Nanometrics Incorporated;
2. Based on my knowledge, this annual 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 annual report;
3. Based on my knowledge, the financial statements, and other financial information included in this annual 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 annual report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:
 - (a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within these entities, particularly during the period in which this annual report is being prepared;
 - (b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and
 - (c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):
 - (a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and
 - (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and
6. The registrant's other certifying officers and I have indicated in this annual report whether or not there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 27, 2003

By: /s/ Paul B. Nolan
Name: Paul B. Nolan
Title: Chief Financial Officer

SCHEDULE II

NANOMETRICS INCORPORATED
VALUATION AND QUALIFYING ACCOUNTS

Allowance for Doubtful Accounts

<u>Year Ended</u>	<u>Balance at beginning of period</u>	<u>Charged to costs and expenses</u>	<u>Deductions- write-offs of accounts</u>	<u>Balance at end of period</u>
December 31, 2000.....	<u>\$425,000</u>	<u>\$0</u>	<u>\$7,000</u>	<u>\$418,000</u>
December 31, 2001.....	<u>\$418,000</u>	<u>\$150,000</u>	<u>\$6,000</u>	<u>\$562,000</u>
December 31, 2002.....	<u>\$562,000</u>	<u>\$4,000</u>	<u>\$0</u>	<u>\$566,000</u>

EXHIBIT 3.1

**AMENDED AND RESTATED
ARTICLES OF INCORPORATION
OF NANOMETRICS INCORPORATED**

The undersigned certify that:

1. They are the president and the secretary, respectively, of Nanometrics Incorporated, a California corporation.
2. The Articles of Incorporation of the corporation are hereby amended and restated to read as follows:

ARTICLE I

"The name of this corporation is: "Nanometrics Incorporated."

ARTICLE II

The purpose of this corporation is to engage in any lawful act or activity for which a corporation may be organized under the General Corporation Law of California other than the banking business, the trust company business or the practice of a profession permitted to be incorporated by the California Corporations Code.

ARTICLE III

This corporation is authorized to issue only one class of shares of stock which shall be designated "Common Stock." The total number of shares of Common Stock which this corporation is authorized to issue is 50,000,000 shares.

ARTICLE IV

Pursuant to Section 2302 of the California Corporations Code, this corporation elects to be governed by all the provisions of the California Corporations Code effective January 1, 1977, not otherwise applicable to it.

ARTICLE V

1. **Limitation of Directors' Liability.** The liability of the directors of this corporation for monetary damages shall be eliminated to the fullest extent permissible under California law.
 2. **Indemnification of Corporate Agents.** This corporation is authorized to provide for, through bylaw provisions or through agreements with the agents, or both, the indemnification of agents (as defined in Section 317 of the California Corporations Code) of the corporation in excess of that expressly permitted by said Section 317 for said agents to the fullest extent permissible under California law, subject to the limitations set forth in Section 204 of the California Corporations Code in actions brought by or on behalf of this corporation for breach of duty to this corporation or its shareholders.
 3. **Repeal or Modification.** Any repeal or modification of the foregoing provisions of this Article V shall not adversely affect any right of indemnification or limitation of liability of an agent of this corporation relating to acts or omissions occurring prior to such repeal or modification.
3. The foregoing Amended and Restated Articles of Incorporation have been approved by the board of directors.
 4. The foregoing Amended and Restated Articles of Incorporation have been duly approved by the required vote of shareholders in accordance with Section 902 of the California Corporations Code. The total number of outstanding shares of this corporation is 11,801,199. The total number of shares voting in favor of the amendment equaled or exceeded the vote required was more than 50%. No shares of Junior Common were outstanding. All shares of Series B were previously converted to Common Stock.

We further declare under penalty of perjury under the laws of the State of California that the matters set forth in this certificate are true and correct of our own knowledge.

Date: June 7, 2002

/s/ John D. Heaton

John D. Heaton
President and Chief Executive Officer

/s/ Vincent J. Coates

Vincent J. Coates
Secretary

EXHIBIT 23.1

INDEPENDENT AUDITORS' CONSENT

We consent to the incorporation by reference in Registration Statement Nos. 33-43913, 333-33583, 333-40866, 333-101137, and 333-91714 of Nanometrics Incorporated on Form S-8 of our report dated February 13, 2003 (which report expresses an unqualified opinion and includes an explanatory paragraph relating to a change in method of accounting for goodwill and other intangible assets), appearing in this Annual Report on Form 10-K of Nanometrics Incorporated for the year ended December 31, 2002.

Deloitte & Touche LLP
San Jose, California
March 24, 2003

EXHIBIT 99.1

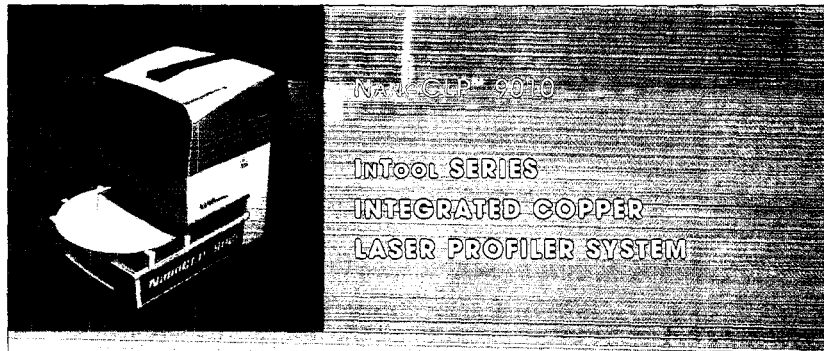
**CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, John D. Heaton, 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 Nanometrics Incorporated on Form 10-K for the annual period ended December 31, 2002 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Nanometrics Incorporated.

By: /s/ John D. Heaton
Name: John D. Heaton
Title: Chief Executive Officer

I, Paul B. Nolan, 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 Nanometrics Incorporated on Form 10-K for the quarterly period ended December 31, 2002 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Nanometrics Incorporated.

By: /s/ Paul B. Nolan
Name: Paul B. Nolan
Title: Chief Financial Officer



USING INSOURCING TO MEET TECHNOLOGY CHALLENGES

A key element of Nanometrics' integrated business strategy is insourcing, which is linked directly with the company's vertically integrated supply chain. By manufacturing its own key technologies, insourcing allows the company to control its own destiny.

Insourcing key technologies will position Nanometrics ahead of the competition in the upturn because it allows Nanometrics to respond quickly to increases in market demands. It also enables the company to reuse similar technologies within the product for multiple applications, resulting in a better performing, more integrated product. The resulting product is smaller, faster and cheaper.

With outsourcing, companies are dependent upon vendors for their machined parts and must build inventory to meet uneven order rates by customers. This can result in long production lead times, which can ultimately force customers to turn elsewhere in an effort to reduce cycle times.

Nanometrics has its own machine shop, anodizing shop and related parts of the business in-house. This allows the company to deliver its metrology tools quickly, while ensuring the highest quality. Insourcing also translates to more value for customers by reducing the number of equipment providers in the supply chain.



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