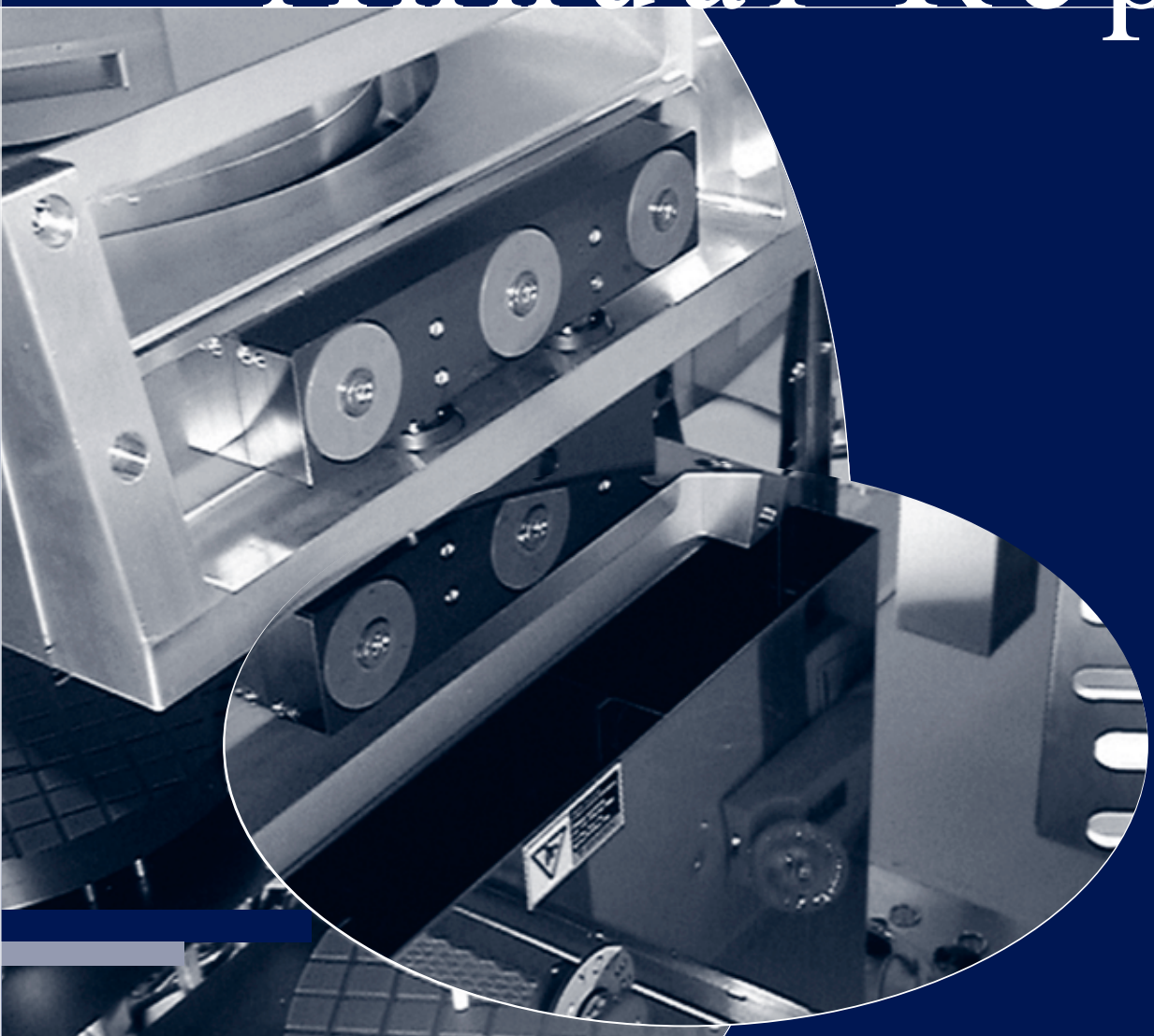
2003

Annual Report



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To Our Shareholders:

2003 marked a year of positive change for Axcelis as the semiconductor equipment industry began its long awaited recovery. Over the last three years we have been carefully sculpting our business model. The short term financial sacrifices we made during the downturn allowed us to invest in new technologies, introduce new products and strengthen our global support infrastructure. We believe that these investments will lead to substantial growth opportunities for Axcelis in the coming years.

We took aggressive cost reduction measures and implemented operational efficiency initiatives to enable profitability through the coming cycle. We are pleased with the tremendous financial leverage that Axcelis now holds. We continue to maintain a long term view of our business and we appreciate your support and patience through this period. With the market experiencing a strong recovery and our product lines well positioned, Axcelis sits on the cusp of a bright and promising new future.

Consider our accomplishments in 2003:

1) Axcelis returned to profitability in the fourth quarter, as new orders for our highly differentiated products and services grew to the highest level since the first quarter of 2000.
2) Axcelis reduced overall operating costs by $45 million since going public in 2000. We created a solid platform for growth and profitability by lowering our quarterly break-even revenue level to $90 million by year end.
3) Axcelis increased market share in key tool segments. We strengthened our position in the dry strip segment through the acquisition of Matrix Integrated Systems, which we believe will propel us into the number two position in this growing segment.

Building A Platform for Growth

We continued to execute our strategy of technology leadership with ongoing investments in R&D and a focus on the diversification of Axcelis' revenue mix. This strategy is increasing our value to customers and allowing us to build a solid platform for long term sustainable growth.

In 2003 we increased our penetration of the dry strip market with new product introductions and the acquisition of new technology. In May, we launched the RadiantStrip™ 320Lk, the industry's first 300mm dry strip system specifically designed to support the integration of low-k dielectric materials in the back end of line while delivering a 25% lower cost of ownership. This was followed by the acquisition of a competitive dry strip capital equipment manufacturer, Matrix Integrated Systems. The Matrix product platform enhances Axcelis' current dry strip technology portfolio, especially in the highly competitive front end of line applications, and strengthens Axcelis' position in the expanding dry strip market. The first new product to result from this acquisition, RapidStrip™, was launched in December 2003 and is already gaining strong traction with our customer base.

Our implanter portfolio continues to be the most competitive in the industry. Axcelis' Ultra™ high current implanter, introduced in 2002, continued to penetrate key customers during the year, a testament to its compelling productivity advantage. Our high current market position is strengthening due to the overwhelming advantage our tool offers compared with competitive single- and multi-wafer implant systems. Building on the strength of our high energy implant platform, which has led the sector with over 80% market share for the past five years, we introduced our Paradigm™ implanter. This new system was designed for more cost effective processing of high energy and medium current implants beyond the 90nm node. The resulting expanded applications base means customers can use fewer implanters to build advanced transistors, lowering overall operating and capital costs.

All chip manufacturers, especially foundries in Asia, are under enormous pressure to reduce cost-per-wafer in order to keep pace with the drive for lower priced consumer electronics and personal computers. To be successful going forward, equipment manufacturers must offer tools that deliver the best performance at the lowest cost, as well as service programs designed specifically to reduce cost of ownership and accelerate our customers' time to market. Axcelis' First Silicon Engineer and Accelerated Process Qualification programs, introduced in 2003, have been designed specifically to meet this need by helping customers ramp to first silicon quickly – this is absolutely critical in an industry where every manufacturing minute counts.

Focus on Shareholder Value

Key to delivering shareholder value is our ongoing effort to improve operational effectiveness and increase our profitability and cash efficiency through the cycle. Our progress this past year was significant as we continued to reduce fixed costs to lower our breakeven revenue by nearly 30% from the peak in 2000. This included reducing headcount by over 30% and lowering quarterly SG&A and R&D spending by 23%.

Lean manufacturing has always been an important initiative for Axcelis, but under such difficult business conditions, it was more important than ever. Our lean model continued to evolve with the launch of new global sourcing initiatives, dynamic supply chain management systems and other external sourcing programs – all of which allow us to further reduce cycle time and increase our gross margins. These initiatives will provide us with tremendous financial leverage as we move into 2004.

Market Leadership

We improved our market leadership position by earning market share gains in all of our product sectors in 2002. What's really exciting about this is what's on the horizon. We expect a repeat performance of share growth in key product lines in 2003. Many of Axcelis' products have been selected as the tools of record for our customers' next generation 300mm fabs. This achievement has helped us attain a clear leadership position, which we will continue to leverage through this upturn in our business cycle.

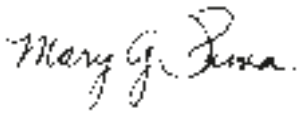
The Next Chapter

Overall, we are very proud of our achievements in 2003. We showed consistent improvement in our financial results, we continued to strengthen our market leadership position, and maintained a strong focus on providing customers differentiated value with a continuous stream of innovative new products and local support.

Looking ahead we see prosperity for Axcelis. Our served markets have increased by almost $2 billion over the last 10 years, and we are well positioned with next-generation technology to participate in this growth. We believe strong product momentum and recent strategic account positioning wins will translate into continued strength in Axcelis' market share and profitability in 2004.

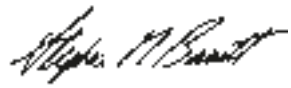
On behalf of the Axcelis board of directors, we'd like to thank our shareholders, customers, employees and suppliers for their continued support.

Sincerely,



Mary G. Puma
President and Chief Executive Officer

Michael Luttati
Executive Vice President
and Chief Operating Officer



Stephen G. Bassett
Acting Chief Financial Officer

Safe Harbor Statement
This document contains forward-looking statements under the SEC safe harbor provisions. These statements are based on management's current expectations and should be viewed with caution. They are subject to various risks and uncertainties, many of which are outside the control of the Company, including the conversion of orders to revenue in any particular quarter, or at all, our ability to implement successfully our profit plans, the continuing demand for semiconductor equipment, relative market growth, continuity of business relationships with and purchases by major customers, competitive pressure on sales and pricing, increases in material and other production costs that cannot be recouped in product pricing and global economic, political and financial conditions. These risks and other risk factors relating to Axcelis are described more fully in the most recent Form 10-K filed by Axcelis and in other documents filed from time to time with the Securities and Exchange Commission.

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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 year ended December 31, 2003

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

For the transition period from to

Commission file number 000-30941

AXCELIS TECHNOLOGIES, INC.
(Exact name of registrant as specified in its charter)

Delaware	**34-1818596**
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification No.)

108 Cherry Hill Drive
Beverly, Massachusetts 01915
(Address of principal executive offices, including zip code)

(978) 787-4000
(Registrant's telephone number, including area code)

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

Title of class	**Name of each exchange on which registered**
None	**None**

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

Common Stock, $.001 par value

Preferred Share Purchase Rights

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 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. ☐

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act. Yes ☒ No ☐

Aggregate market value of the voting stock held by nonaffiliates of the registrant as of June 30, 2003: $602,990,041

Number of shares outstanding of the registrant's Common Stock, $0.001 par value, as of January 31, 2004: 99,354,487

Documents incorporated by reference:

Portions of the definitive Proxy Statement for Axcelis Technologies, Inc.'s Annual Meeting of Stockholders to be held on April 29, 2004 are incorporated by reference into Part III of this Form 10-K.

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Forward Looking Statements

Certain information contained or incorporated by reference in this Annual Report on Form 10-K is forward-looking in nature. All statements included or incorporated by reference in this Annual Report on Form 10-K or made by management of Axcelis Technologies, Inc., other than statements of historical fact, are forward-looking statements. Examples of forward-looking statements include statements regarding Axcelis' future financial results, operating results, business strategies, projected costs, product development or future sales, competitive positions and plans and objectives of management for future operations. We use terminology such as "anticipates," "believes," "plans," "expects," "future," "intends," may," "will," "should," "estimates," "predicts," "potential," "continue," and similar expressions to identify such forward-looking statements. Our actual results could differ materially from the results contemplated by these forward-looking statements due to a number of important factors, including those discussed in Exhibit 99 to this Form 10-K and elsewhere in this Form 10-K. This Form 10-K also contains forward-looking statements attributed to third parties relating to their estimates regarding the growth of our markets. Forward-looking statements are subject to known and unknown risks, uncertainties, and other factors that may cause our actual results, as well as those of the markets we serve, levels of activity, performance, achievements and prospects to be materially different from those expressed or implied by the forward-looking statements. The Company undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

PART I

Item 1: Business

Overview of Our Business

We are a worldwide producer of ion implantation, dry strip, thermal processing and curing equipment used in the fabrication of semiconductor chips in the United States, Europe and Asia Pacific. We are the market share leader in ion implantation, have been the market share leader, as reported by Gartner Dataquest, in the ion implantation market segment in 6 of the last 8 years (through 2002). We have been the market share leader in the photostabilization market since its inception in 1993. The ion implantation business comprised approximately 73.7% of our revenues in 2003 with the remaining 26.3% being the dry strip, thermal processing and photostabilization businesses. In addition to equipment, we provide extensive aftermarket service and support, including spare parts, equipment upgrades, maintenance services and customer training. We sell to all the top 20 semiconductor chip manufacturers worldwide. We have a 50% owned joint venture with Sumitomo Heavy Industries, Ltd. in Japan. This joint venture, formed in 1982, is known as Sumitomo Eaton Nova Corporation, or SEN, and is the leading producer of ion implantation equipment in Japan. SEN licenses technology from us for ion implantation and has exclusive rights to market these products in the territory of Japan.

Axcelis was incorporated in the state of Delaware in December 1995 as a subsidiary of Eaton Corporation. Axcelis completed an initial public offering of approximately 18% of its shares in July 2000 and in December 2000, Eaton distributed the other 82% of its shares to its shareholders. Axcelis is headquartered in Beverly, Massachusetts. We maintain an Internet site at http://www.axcelis.com. We make available free of charge on and through this website our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission. Our website and the information contained therein or connected thereto shall not be deemed to be incorporated into this Form 10-K.

Industry Overview

Semiconductor chips, also known as integrated circuits, are used in personal computers, telecommunication equipment, digital consumer electronics, wireless communication products and other applications. Types of semiconductor chips include memory chips (which store and retrieve information), microprocessors (general purpose logic devices programmable to take instructions from software) and "system on chip" devices (which have both logic and memory features). Most semiconductor chips are built on a wafer of silicon up to twelve inches in diameter. Each semiconductor chip is made up of millions of tiny transistors or "switches" to control the functions of the device. The transistors are created by forming electrically active regions beneath the silicon surface to inhibit or prohibit electrical current flow. Later, metal interconnections are formed on top of the silicon that connect the transistor components together.

Semiconductor chip manufacturers utilize many different types of process tools in the making of integrated circuits. There are over 300 process steps utilizing over 50 different types of process tools required in the making of a single device like a microprocessor. Semiconductor chip manufacturers seek efficiency improvements through increased throughput, equipment utilization and higher manufacturing yields. Capacity is added by increasing the amount of manufacturing equipment in existing fabrication facilities and by constructing new fabrication facilities. During the period from early 1999 through 2000, semiconductor manufacturers met the increased demand for chips mostly by building new fabrication facilities, and by making additional equipment purchases to expand existing fabrication facilities. Periodic downturns in demand for electronic devices, such as that experienced

from 2001 through most of 2003, have had a severe adverse impact on the semiconductor industry and on suppliers to the semiconductor industry.

Periodically, and historically every seven or eight years, the semiconductor industry adopts a larger silicon wafer size to achieve lower manufacturing costs. Semiconductor manufacturers can produce more chips on a larger wafer, thus reducing the overall manufacturing cost per chip. The majority of wafer fabrication facilities today are using wafers with a diameter of 200 mm (8 inches). Currently, the industry is in the midst of a transition to 300 mm (12 inches) wafers. New manufacturing equipment is required to handle these larger wafers. It is anticipated that manufacturers will add new 300 mm production capabilities over the next two to five years, which will lead to increased demand for 300 mm equipment.

The customer base is also changing. Given the magnitude of the investment needed to build a new wafer fabrication facility (often referred to as a "fab"), which today exceeds $1 billion and can be as high as $3 billion for a new 300 mm fab, and the very large volume of product each fab can produce, contract semiconductor manufacturers, or foundries, have emerged. Foundries provide out-sourced manufacturing of chips for chip designers and device manufacturers who may use foundries for all or part of their chip manufacturing requirements. Foundries, which are predominantly located in Taiwan and Singapore, have become significant purchasers of semiconductor manufacturing equipment. Recently, new foundries are being built in China to rival Taiwan and Singapore as more chip production is being outsourced. China is predicted to be one of the fastest growing regions for semiconductor manufacturing.

Axcelis' Strategy

Our mission is to be a worldwide supplier of semiconductor processing equipment and services. Our vision is to be one of the top 10 semiconductor equipment companies, ranked by sales revenue, and to have the largest or second largest market share in each of our product markets. In 2002, Gartner Dataquest ranked us, together with SEN, 12th among semiconductor equipment manufacturers based on aggregated system sales revenues of $291 million.

We seek to provide best-in-breed semiconductor manufacturing equipment for selected front-end-of-line (transistor formation) as well as back-end-of-line (interconnect) process steps. Our primary strength is in the front-end transistor sequence, given our more than 20-year history in ion implantation, an important front-end-of-line process step. Our growth strategy involves expanding our product offering beyond implant. Through acquisitions completed in 1996, 1997 and 2003, we added complementary tool sets for processes (cleaning, curing, and thermal processing) that are adjacent to the ion implant process sequence. By adding these complementary products to our ion implantation product base, the total available market for all of our products has tripled over the last ten years, based on Dataquest's forecast for 2005, to over $3.0 billion. Our revenues from these complementary products represented 26.3% of our total 2003 revenues. We intend to continue growing our complementary product businesses, while maintaining our leadership position in ion implantation. In addition to offering adjacent front-end-of-line process steps around ion implant, these complementary tools led us to the back-end-of-line as these cleaning, curing and thermal processing tools are also used in the formation of interconnect layers. We believe the use of new materials for interconnects, such as copper conductors and new insulating materials called low-k dielectrics, will increase the appeal of our cleaning and curing products for back-end-of-line applications.

Operationally, we manage our business based on three main tenets:

- technology leadership
- operational excellence, and
- customer partnerships.

We have continued to invest in research and development through the industry cycles to assure our products meet the needs of our customers. We continue to add to our portfolio of patents and unpatented proprietary technology to ensure that our investment in technology leadership is translated into unique product advantages. We take pride in our staff of scientists and engineers that comprise over one-third of our workforce. We strive for operational excellence by focusing on ways to lower our manufacturing and design cost and to improve our delivery times to our customers. Finally, we have invested to improve our customer support infrastructure and have established Global Customer Teams, a very focused account management structure, to improve our customer relationships and increase customer satisfaction.

Ion Implantation Systems

Ion implantation is a principal step in the transistor formation cycle of the semiconductor manufacturing process. An ion implanter is a large, technically advanced machine that injects charged particles, or dopants, such as arsenic, boron or phosphorus, into a silicon wafer through an accurately controlled electric and magnetic field, with a precisely defined amount of energy ranging between several hundred and three million volts. Certain areas of the silicon wafer are blocked off by a polymer material known as photoresist which acts as a "stencil" to pattern devices so that the dopants will only enter the wafer where needed. The dopants change the electrical properties of the silicon wafer to create the active components of a chip called the transistors. The amount of energy used to implant the ions determines the depth to which the dopant penetrates the wafer, and the amount of dopant or dose determines how much the electrical properties of the silicon wafer are changed.

There are three types of ion implantation machines: high energy, high current and high tilt/ medium current. Each type injects ions either at greater dose, creating more ions per area (such as in high current tools), or with more energy, driving the ions deeper into the silicon (such as in high energy tools). The manufacturing processes for virtually all types of chips require the use of all three types of ion implanters. Typically, a wafer will receive from 10 to 35 ion implant steps as it is manufactured, depending on the complexity of the device. The industry trend is to design and build more complex, highly integrated chips that require more implants. An embedded memory device or system on chip is an example of a highly complex chip with multiple functions that will replace stand-alone chips in certain applications. We have designed our products to enhance the manufacturers' flexibility during the implant process, thus reducing the cost of production.

A high-energy implanter is typically used to implant dopants deep in the wafer, which allows improved isolation of adjoining transistors on the same chip. The high-energy segment is relatively new, with mainstream application being adopted in the mid to late 1990's. The use of high-energy implanters has expanded into the manufacture of virtually all types of chips. They are used in the manufacture of smaller, more complex chips, such as those used in cellular phones and other hand held devices, because they enable more functionality with less power consumption. They are also used for non-volatile memory applications such as FLASH memories and embedded technologies like system on chip to allow for multiple voltages on the same chip. These devices are typically manufactured using multi-wafer or "batch" implanters which process up to 13 wafers at one time, leading to increased productivity. Trends in this segment include the use of the high energy implanter for shallower implants that have typically been processed by a medium current implanter, which increases the capacity utilization of the machine, thus reducing its cost of ownership. In 2003 we introduced a new tool in our high energy family called the Paradigm. This machine offers better performance for lower energy medium current applications allowing customers to minimize the number of tools per fab lowering their capital cost. The Paradigm and Paradigm XE, high energy version, is the standard tool offering for 300 mm wafers.

For implants that require high concentration of dopants at medium to very shallow depths, a high current/low energy implanter is most often used. These implants are used to enable the electrical

connections from the silicon to the metal lines for the subsequent interconnect cycle. In some applications, very shallow, high-dose implants result in faster chips, an important feature for certain microprocessors, digital signal processors and other types of logic chips. Machines with very low energy are required to make very shallow implants. These low energy systems typically require multi-wafer or "batch" end stations which allow for a shorter beam line length, minimizing beam dispersion problems that arise from the low energy. As the demand for these faster chips requiring very shallow implants grows, we expect the number of implanter tools per fab to increase, since productivity is greatly reduced at these lower energy levels. As a result, industry analysts predict the high current market to be the fastest growing implant segment over the next few years. During 2002, we introduced our Ultra High Current / Low Energy line of ion implanters as an extension of our existing high current products. These implanters use proprietary technology to increase the throughput of the machine thus lowering its cost of ownership.

Most ion implant steps occur with the ion beam perpendicular to the wafer. A high tilt/medium current implanter, however, is primarily used for the implant step that requires the ion beam to be positioned at less than a 90 degree angle to the wafer to implant dopants below preexisting features. The use of the high tilt/medium current implanter extends into some high-energy applications to allow customers greater flexibility in selecting the optimal combination of implanters for their needs. These systems are typically single wafer machines to allow for the high tilt capability. We are also seeing an increasing need for high tilt lower energy implants for advanced devices, as chips become more complex.

Together with SEN, we offer a complete line of high energy, high current and high tilt/medium current implanters for all chips and for all implant steps. We have sold over 2,500 implanters worldwide. The following chart lists our principal products:

Product Category	Axcelis Product Name	Description
High Energy	**GSD/HE**	• 200mm high energy implantation for logic and memory chips
	GSD/VHE	• 200mm very high energy implantation for logic, memory chips and FLASH memory chips
	Paradigm	• 300mm high energy implantation with medium current process capability
	Paradigm XE (HE3)	• 300mm high energy implantation for all types of chips (Logic, DRAM and FLASH)
High Current	**GSDIII/LED**	• First generation 200mm high current implanter for low energy applications
	HC3 Ultra	• Second generation 300mm high current implanter with low energy capability introduced in April 2002
	GSD Ultra	• Second generation 200mm low energy implanter with higher throughput for advanced devices introduced in April 2002
High Tilt/Medium Current	**8250HT**	• 200mm high tilt and medium current applications for all chips
	MC3	• 300mm high tilt and medium current applications for all chips

All of our ion implantation systems share modular subsystems for efficiency and convenience. The subsystems for wafer handling robot, ion source, vacuum system and operator interface are common among our three implanter types. This common platform reduces our design, production time and costs, as well as overall cost of ownership for our customers by minimizing training, spare parts inventory and maintenance.

Curing and Cleaning Systems

Dry Strip and Photostabilization Systems. We entered the dry strip and photostabilization product markets through our acquisition of Fusion Systems Corporation in August 1997. Fusion pioneered the development of photostabilization in 1993. In the process steps prior to ion implantation, a light sensitive, polymer-based liquid, called photoresist, is spread in a uniformly thin film on the wafer in a pattern creating a "stencil" effect. Photostabilization uses ultraviolet light to harden, or "cure," the photoresist so that it is more effective in maintaining the desired pattern during the subsequent implant processes and etch steps (in which the top layer of the surface of the wafer not covered by photoresist is removed). After these steps, the photoresist is no longer necessary and must be removed. The primary means of removing photoresist and residue is a process called "dry strip" or "ashing." Our dry strip machines, also called ashers, use microwave and rf energy to turn process gases into plasma, which then acts to "clean" the surface of the wafer by removing the photoresist and unwanted residue.

In addition to the use of photoresist prior to the front-end-of-line implant and etch processes, photoresist is also applied and removed during back-end-of-line processes. Stripping photoresist during the front-end of line transistor sequence is relatively simple and, therefore, the equipment required is characterized by high throughput and low cost. Stripping photoresist in the back-end of line interconnect sequence requires more complicated tools and cleaning chemistries due to the advanced materials being used at smaller geometries. One key process is the stripping of the photoresist lying on top of the low-k dielectric film used for copper lines. Since the low-k materials are easily damaged during the photoresist removal process, tools must be designed to minimize this damage. Because of these differing requirements for the front-end and back-end-of-line tools, we believe that over the next several years, the market for dry-strip tools will divide into two segments of equal market size, addressing these two different applications. In July of 2003 we acquired Matrix Integrated Systems, a privately held company that specialized in front-end of line dry strip tools and processes. The Matrix tool technology for front-end photo resist removal coupled with our in-house technology for back-end photo resist removal provides a complete solution for our customers.

The following chart lists our principal products in each category:

Product Category	Axcelis Product Name	Description
Dry Strip	**Rapid Strip 220/320**	• 300mm/200mm photoresist strip system for front-end of line strip applications
	Radiant Strip 220/320 LK	• Second generation 200mm and 300mm photoresist strip system for back-end of line stripping of photo resist over low-k dielectrics
Curing (Photostabilizers)	**Gemini PS**	• 200mm photostabilization system for photoresist curing
	RapidCure	• 300mm/200mm photostabilization system for photoresist curing
	RapidErase	• Charge erasure applications

Fusion pioneered photostabilization technology, and we believe that our products remain the industry standard. Our dry strip tools are capable of removing bulk photoresist from the wafer, as well as the residue left behind after bulk strip. This reduces or eliminates the need for further wet chemical

stripping by eliminating the use of hazardous chemicals traditionally used for this step. Manufacturing cost is further reduced by the fact that our ashers do not require side access, conserving expensive cleanroom space.

Our photostabilizers are used by integrated circuit manufacturers worldwide because of our proprietary ultraviolet light source and the high throughput of the Gemini dual chamber platform. Through several joint development efforts with third parties our photostabilizers also have been used for several applications in the interconnect processes such as for hardening and drying low-k dielectric materials.

Thermal Processing Systems

At a number of points during the manufacturing process, silicon wafers need to be heated rapidly, often to 900 degrees centigrade or higher, in order to complete chemical or electronic reactions. This heating process is referred to as rapid thermal processing, or RTP. This step is used in both the transistor formation and interconnect formation processes of semiconductor manufacturing.

We acquired key technology in the area of rapid thermal processing through our 1996 acquisition of High Temperature Engineering Corporation. In 1999, we introduced our first rapid thermal processing products. Our RTP machine employs a patented design to process a single wafer in a hot wall vertical reactor. The reactor has three zones that are heated by resistive coils, as well as an actively cooled base, which create a uniform temperature gradient from top to bottom. Rapid heating and cooling of the wafer is achieved by simply adjusting the vertical position of the wafer within the reactor through the use of a lifter. The technology in our RTP system differs from most other RTP equipment, which regulates temperature though a lamp-based system.

The following chart lists our principal RTP products:

Product Category	Axcelis Product Name	Description
RTP	**Summit 200**	• 200mm thermal processing system
	Summit 300XT	• Second generation 300mm thermal processing system used for front end and back end of line applications

Our Summit series of RTP systems has a flexible design, offering both single and dual chamber systems. Its engineering incorporates recent developments in furnace design, temperature measurement, emission correction techniques and wafer handling. The machine is suited particularly well for lower temperature processing where lamp-based systems may have difficulty controlling the temperature. One of the trends in this market segment is the migration to lower temperature nickel silicide formation for advanced devices at 90 nanometers and below. Most logic customer's now are looking to migrate to nickel silicide processes from standard cobalt silicide processes over the next couple of years.

Post Sales Support and Services

We offer our customers extensive post sales service and support throughout the lifecycle of the equipment we manufacture. We believe that more than 3,500 of our products, including products shipped by SEN, are in use in 50 countries worldwide. The service and support that we provide include spare parts, equipment upgrades, and maintenance services. We offer service out of 38 field offices in eleven countries. Revenues generated through our service and support business represented about 39.5% of net revenues in 2003 and 37.8% of net revenues in 2002.

Our customer support network includes over 500 sales and marketing personnel and service engineers, including field service engineers, spare parts support staff and applications engineers. An additional 100 persons located at our manufacturing facilities work with our customers to provide advanced equipment support, applications support, customer training and documentation.

Most of our customers maintain spare parts inventories for our machines. We use a web-based spare parts management and replenishment tracking program, or SMART, to facilitate internet communication and e-commerce with our customers. The implementation of our SMART program has helped us to achieve reduced order fulfillment costs and cycle times resulting in an expanded customer base for this service offering. Our Productivity Plus program launched in 2001 provides equipment optimization capabilities through on-site networking and internet technology.

Sales and Marketing

We primarily sell our equipment and services through our direct sales force. We have 12 sales offices in eight countries. Aftermarket service and support is also offered at all of these offices. In the United States, we conduct sales and marketing activities from five locations. Outside of the United States, our sales offices are located in Taiwan, South Korea, China, Israel, Germany, Singapore, and Italy. In addition, isolated sales are made in smaller markets through distributors and manufacturing representatives.

In Japan, we market our products through two channels: one, we exclusively license our ion implant technology to our SEN joint venture, which manufactures and sells its machines and services directly to semiconductor manufacturers (see "SEN Joint Venture" below); and two, we sell our photostabilizers, dry strip and rapid thermal processing products in Japan through exclusive distribution agreements. From 1999 until 2003, Sumitomo Heavy Industries, Ltd. (SHI) acted as our Japanese distributor of these products. In 2003 the agreement with SHI expired and we signed an agreement with Toda Technologies Service Co., Ltd in Japan to provide sales and support services for our RTP and Dry Strip equipment in the Japanese market. International sales, including export sales from our U.S. manufacturing facilities to foreign customers and sales by our foreign subsidiaries and branches, accounted for 64.6% of total net sales in 2003, 52.0% in 2002, and 62.0% in 2001. Substantially all of our sales are denominated in U.S. dollars. SEN's sales are denominated in Japanese yen. See Note 13 to our Consolidated Financial Statements contained in Item 8 of this Form 10-K for a breakdown of our net sales and long-lived assets in the United States, Europe and Asia.

Customers

In 2003, the top 20 semiconductor manufacturers accounted for approximately 73.4% of total semiconductor industry capital spending, up from 72.5% in 2002. These manufacturers are from the four largest semiconductor manufacturing regions in the world: the United States, Asia Pacific (Taiwan, South Korea, Singapore, and China), Japan and Europe. SEN and we together serve all of the 20 largest semiconductor manufacturers. We believe that more than 3,500 of our products, including products shipped by SEN, are in use worldwide.

Net sales to our ten largest customers accounted for 66.8%, 63.5%, and 50.6% of net sales, respectively, in 2003, 2002, and 2001. We expect that sales of our products to relatively few customers will continue to account for a high percentage of net sales for the foreseeable future. In 2003, Samsung represented 11.9% of net sales and Micron represented 11.1% of net sales. In 2002, IBM was the only customer that represented more than 10% of net sales (with 14.2% of net sales) and in 2001, no customer represented more than 10% of net sales.

SEN Joint Venture

For more than 20 years, we have exclusively licensed our ion implantation technology in Japan to SEN, a Japanese corporation of which Axcelis owns 50%. The other 50% of SEN is owned by SHI. SEN has 666 employees based in Tokyo and Toyo, Japan and manufactures, sells and services ion implanters in Japan. Each of Axcelis and SHI has equal representation on SEN's Board of Directors. In addition, Naoki Takahashi, one of Axcelis' directors, is a director and officer of SHI.

SEN holds an exclusive royalty-bearing license to use our current and future ion implantation technology to manufacture, use and sell products in Japan and has granted us a royalty-free world-wide (except for Japan) license to use any technology SEN develops which is an improvement to our technology. SEN may sell its products outside Japan only with our consent and coordination. From time to time, we have sold our equipment into Japan to our non-Japanese customers and SEN has sold equipment outside of Japan primarily to its Japanese customers and their joint ventures.

SEN pays us royalties on its net sales of ion implantation products in accordance with the rates set forth in a license agreement between SEN and Axcelis. The royalty rates vary depending on the type of implanter sold. These royalty amounts were $5.9 million in 2003, $8.3 million in 2002, and $5.8 million in 2001. In 2003, both SEN and Axcelis elected to enter into a one-year period of negotiating modifications to the agreement. If SEN and Axcelis do not agree to modifications to the license agreement prior to December 31, 2004, the current license agreement will continue in effect until terminated by Axcelis or by SEN with the approval of the Axcelis representatives on the SEN Board. SEN has been very successful in achieving its business purpose to manufacture and sell ion implanters using our technology in Japan, and Axcelis intends to continue to optimize the value of SEN.

We also have a trademark license agreement with SEN covering the names "Eaton" and "Nova" which obligates SEN to pay us an additional 0.5% royalty on net sales. This agreement will terminate on December 31, 2004.

Research and Development

Our industry continues to experience rapid technological change, requiring us to frequently introduce new products and enhancements. Our ability to remain competitive in this market will depend in part upon our ability to develop new and enhanced systems and to introduce these systems at competitive prices and on a timely and cost effective basis.

We devote a significant portion of our personnel and financial resources to research and development programs and seek to maintain close relationships with our customers to remain responsive to their product needs. We have also sought to reduce the development cycle for new products through a collaborative process whereby our engineering, manufacturing and marketing personnel work closely together with one another and with our customers at an earlier stage in the process. We also use 3D, computer-aided design, finite element analysis and other computer-based modeling methods to test new designs. We conduct our research and development programs at our facilities in Beverly, Massachusetts and in Rockville, Maryland. SEN also conducts research and development in Toyo, Japan.

Our expenditures for research and development during 2003, 2002, and 2001, were $63.3 million, $72.1 million, and $76.5 million respectively, or 19.7%, 23.3%, and 21.0%, of net sales, respectively. In 2003, we made several new product introductions at 300mm. We expect in future years that research and development expenditures will continue to represent a substantial percentage of net sales.

Manufacturing

We manufacture ion implant, photostabilization, dry strip and rapid thermal processing products at our 445,200 sq. ft. facility in Beverly, Massachusetts. In addition, SEN manufactures ion implant and

flat panel products at its 300,300 square foot facility in Toyo, Japan. From time to time, SEN acts as an out-sourced manufacturer for us in the case of those products currently manufactured by SEN and not by Axcelis, including our MC3 medium current implanter. In 2002, we completed the consolidation of our manufacturing operations from Rockville, Maryland (where we had previously manufactured our Curing and Cleaning products) to Beverly, Massachusetts. In 2003, we consolidated the manufacturing operations of Matrix Integrated Systems, Inc., an acquisition we made in the area of dry strip, from Richmond, California to Beverly, Massachusetts. We expect these manufacturing consolidations to continue to improve operational efficiencies and reduce cost as we now produce our equipment from one facility. Our manufacturing facilities employ advanced manufacturing methods and technologies, including lean manufacturing, Six Sigma controls and processes and web-enabled inventory purchase systems. We manufacture our products in cleanroom environments that are similar to the cleanrooms used by semiconductor manufacturers for wafer fabrication.

Our Beverly facility is also the location of our Advanced Technology Center, completed in early 2002. This center houses an advanced process development laboratory with 12,500 sq. ft of class 10/1000 cleanroom space for product demonstration and process development and a 34,000 sq. ft customer training center. To ensure that the customer's specifications are satisfied, per contract terms, the majority of systems are tested at our facilities prior to shipment, normally with the customer present, under conditions that substantially replicate the customer's production environment. These environmental conditions include power requirements, toxic gas usage, air handling requirements including humidity and temperature, equipment bay configuration, wafer characteristics and other factors. These procedures are intended to reduce installation and production qualification times and the amount of particulates and other contaminants in the assembled system, which in turn improves yield and reduces downtime for the customer.

After testing, the system is disassembled and packaged to maintain cleanroom standards during shipment. Installation is itself not a complex process and does not require specialized skills. It is typically performed by a team of assemblers from the customer and ourselves. It includes placing and leveling the equipment at its installation site, connecting it to sources of gas, water and electricity and recalibrating it to specifications that had previously been tested and met.

To reduce our labor expense and the time to installation for our customers, beginning in 1999, we adopted a new manufacturing technique for our ion implanter that we refer to as Ship from Cell. This technique allows us to avoid fully integrating and testing the integrated implanters on our factory floor prior to shipment. We assemble the implanters in 5 or 6 separate modules. The modules are then tested using specially developed software and are shipped directly to the customer, bypassing the manufacturing integration step. As a result, the implanter system is integrated for the first time on the customer's factory floor and tested for quality assurance. This technique saves an average of 4 weeks in our manufacturing cycle time, thus improving lead-times for our customers. Currently all of our 200 mm ion implanters can be shipped using the Ship from Cell technique. In 2003, 17% of our ion implantation tools were manufactured using the Ship from Cell technique compared with 40% of our tools shipped from cell in the peak of 2000. In the first half of 2004, we expect that all of our 300 mm tools will be qualified for Ship from Cell manufacturing and we expect that Ship from Cell will become the Axcelis standard for implantation manufacturing.

We purchase materials, components and subassemblies, such as pumps, machine components, power supplies and other electrical components, from various suppliers. These items are either standard products or built to our specifications. Some of the components and subassemblies included in our products are obtained either from a sole source or a limited group of suppliers, which could result in disruptions to our operations. We have installed a web-based supply chain system in order to increase efficiency and cut costs associated with obtaining materials and components. This system electronically exchanges information with our vendors as to purchase orders, forecasts and automatic delivery updates.

In 2002 we began outsourcing many of our major sub-assemblies and components. We have several large outsourcing partners that provide this service for assemblies like the frames, power distribution systems, wafer handling systems and vacuum systems. Axcelis will continue to aggressively pursue outsourcing to higher levels of machine build where the economics are justified, enabling factory capacity and margin improvement. At the end of 2003 we were outsourcing complex assemblies up to and including module build. We believe that in the future certain critical assemblies will continue to be manufactured in house due to the high level of expertise required.

Competition

The semiconductor wafer fabrication equipment market is highly competitive and is characterized by a small number of medium to large size participants. We compete in four principal product markets in both the front-end and back end of the semiconductor wafer fabrication process: ion implantation, dry strip, photostabilization and rapid thermal processing. Preexisting relationships have a significant influence on a customer's choice of equipment supplier. Other significant competitive factors in the semiconductor equipment market include price, cost of ownership, equipment performance, customer support, breadth of product line, distribution and financial viability.

Ion Implantation. In ion implantation, our major competition is Varian Semiconductor Equipment Associates, Inc. and Applied Materials, Inc., each of which competes in different areas of the implantation market. In the high-energy equipment segment our principal competitor is Varian Semiconductor. In the high current segment we compete mainly with Applied Materials, although Varian has a smaller position in that market as well. In the high tilt/medium current equipment segment, where we have a small market share, Varian has a leading market position. SEN is the largest manufacturer of ion implantation equipment in Japan and competes with Nissin Electric Co., Ltd., Ulvac Technologies, Inc., Varian and Applied Materials for sales in that market.

Curing and Cleaning Systems. Our principal competitors in the dry strip product market are Mattson Technology Inc. and Novellus Systems, Inc. and our principal competitor in photostabilization is Ushio in Japan, to whom we have granted a royalty-bearing patent license in this field.

Thermal Processing Systems. Our chief competitors in the rapid thermal processing equipment market are Applied Materials, Inc. and Mattson Technology Inc.

Intellectual Property

We rely on patent, copyright, trademark and trade secret protection, as well as contractual restrictions, in the United States and in other countries to protect our proprietary rights in our products and our business. As of January 15, 2004, we had 194 patents issued in the United States and 447 patents granted in other countries, as well as 500 patent applications (85 in the United States and 415 in other countries) on file with various patent agencies worldwide.

We intend to file additional patent applications as appropriate. Although patents are important to our business, we do not believe that we are substantially dependent on any single patent or any group of patents.

We have trademarks, both registered and unregistered, that are maintained to provide customer recognition for our products in the marketplace.

From time to time, we enter into license agreements with third parties under which we obtain or grant rights to patented or proprietary technology. Except for our license agreement with SEN (described above under "SEN Joint Venture"), none of our current licenses is material to us.

There has been substantial litigation regarding patent and other intellectual property rights in semiconductor-related industries. We have a patent litigation action against Applied Materials, Inc. (See Item 3. "Legal Proceedings.")

We can give no assurance that we, our licensors, licensees, customers or suppliers will not be subject to claims of patent infringement or claims to invalidate our patents, or that any such claims will not be successful, requiring Axcelis to pay substantial damages or delete certain features from our products or both.

Backlog

As of December 31, 2003, our systems backlog was $97.7 million, as compared to $60.0 million, and $73.9 million, respectively, for December 31, 2002 and 2001. Our policy is to include in backlog only those system orders for which we have accepted purchase orders and typically are due to ship within 6 months. Backlog does not include orders received for our service business (spare parts, consumables and service contracts) due to the turn rate associated with that business. Generally, orders for service or parts revenue received during the quarter are performed or shipped within the same quarter. All orders are subject to cancellations or rescheduling by customers with limited or no penalties. Due to possible changes in system delivery schedules, cancellations of orders and delays in systems shipments, our backlog at any particular date is not necessarily indicative of our actual sales for any succeeding period. In addition, our backlog at the beginning of a quarter typically does not include all orders required to achieve our sales objectives for that quarter and is not a reliable indicator of our future sales.

Employees

As of December 31, 2003, we had 1,534 full-time and 59 temporary employees worldwide, of which 1,285 were employed in North America, 201 in Asia and 107 in Europe. We consider our relationship with our employees to be good.

Environmental

We are subject to environmental laws and regulations in the countries in which we operate that regulate, among other things: air emissions; water discharges; and the generation, use, storage, transportation, handling and disposal of solid and hazardous wastes produced by our manufacturing, research and development and sales activities. As with other companies engaged in like businesses, the nature of our operations exposes us to the risk of environmental liabilities, claims, penalties and orders. We believe, however, that our operations are in substantial compliance with applicable environmental laws and regulations and that there are no pending environmental matters that would have a material impact on our business. We are ISO-14001 certified in our Beverly, MA and Rockville, MD Facilities.

Item 2: Properties

We have a total of 31 properties, of which 16 are located in the United States and the remainder is located in Asia and Europe, including offices in Taiwan, Singapore, South Korea, China, Malaysia, Italy, Germany and France. Of these properties, one is owned and 30 are leased. In early 2003, we sold a 55 thousand square foot building owned by us in Beverly for cash net proceeds of $5.9 million.

Our principal facilities are listed below:

Facility Location	Principal Use	Square Footage (Owned/Leased)
Beverly, Massachusetts	Manufacturing of ion implantation rapid thermal processing, dry strip and photo stabilization products, research and development, sales/ marketing and customer support.	445,200 (owned)
Beverly, Massachusetts	Corporate headquarters	55,000 (owned)
Rockville, Maryland	Research and Development, marketing and customer support.	88,552 (leased)

The Beverly facility includes a 135,000 square foot advanced process development, product demonstration, and customer-training center for all of the equipment we produce.

Our Japanese joint venture manufactures ion implantation products in a 300,300 square foot owned facility located in Toyo, Japan.

In 2003, we completed the relocation of the support functions for our Curing and Cleaning products located in Rockville, MD. As a result, we lowered our leased square footage at our Rockville facility from 117,328 square feet to 88,552 square feet.

Additionally, as a result of the acquisition of Matrix Integrated Systems, Inc., in July 2003, we acquired a leased facility of 30,683 square feet of office, research and development, and production space, which lease is expected to terminate not later than August of 2004.

We do not believe there is any material long-term, excess capacity in our manufacturing facilities, although utilization is subject to change based on customer demand. We believe that our manufacturing facilities and equipment generally are well maintained, in good operating condition, suitable for our purposes, and adequate for our present operations. Our Beverly, Massachusetts and Rockville, Maryland facilities are ISO 9001 and ISO 14001 certified.

Item 3: Legal Proceedings

In January 2001, we filed a lawsuit against Applied Materials, Inc. (“Applied”) in the United States District Court for the District of Massachusetts. The complaint alleged, among other things, that Applied’s medium current/high energy ion implanter infringed our patent for ion implantation equipment using radio frequency linear accelerator technology. The patent at issue expires in mid 2005. Applied filed counterclaims under applicable state law arising from certain communications allegedly made by Axcelis about the lawsuit and its claims of infringement. A jury trial in July 2003 resulted in a verdict in favor of Applied Materials. We filed a notice of appeal in August 2003. In March 2004, we entered into a Settlement Agreement with Applied in which the lawsuit and the appeal were settled and dismissed with each party bearing its own costs and fees.

Item 4: Submission of Matters to a Vote of Security Holders

None

Executive Officers and Key Management

Executive Officers

Mary G. Puma, 46, has been the Company's Chief Executive Officer since January 2002. From May 2000 until January 2002, Ms. Puma was the Company's President and Chief Operating Officer, prior to which she served as a Vice President of the Company from February 1999. In 1998, she became General Manager and Vice President of the Implant Systems Division of Eaton Corporation, a global diversified industrial manufacturer. In May 1996, she joined Eaton as General Manager of the Commercial Controls Division. Prior to joining Eaton, Ms. Puma spent 15 years in various marketing and general management positions for General Electric Company. Ms. Puma is a director of Nordson Corporation and Apogent Technologies, Inc.

Michael J. Luttati, 48, has been the Company's Executive Vice President and Chief Operating Officer since January 2002 and a Senior Vice President since July 2000. Mr. Luttati was General Manager, Ion Implant and Rapid Thermal Processing Systems from January 2000 until January 2002, prior to which he served as Director, Sales and Service from November 1998. Prior to joining us, Mr. Luttati served as Vice President, North America Sales Operations of Teradyne Inc., a manufacturer of semiconductor test and interconnection products, from 1996 to 1998 and, from 1983 to 1996, he held several other sales and marketing positions with Teradyne.

Stephen G. Bassett, 56, has been our interim Chief Financial Officer since June 2003. Prior to that, Mr. Bassett served as chief financial officer of Ezenia! Inc. from 1999 to 2002. From 1996 to 1999, Mr. Bassett worked as an independent financial consultant. From 1981 until 1996, Mr. Bassett served as an audit partner at Ernst & Young LLP, where he managed auditing services for a variety of organizations, ranging from multinational Fortune 500 companies to emerging businesses.

David W. Duff, Ph.D., 44, has been our Vice President and General Manager of our Ion Implant and Rapid Thermal Processing business since April 2002. Prior to that, Dr. Duff held several management positions at Axcelis since joining us in 1997, most recently, as Director of Marketing, Implant and Thermal Products. Prior to Axcelis, Dr. Duff worked in the capital equipment industry in variety of marketing management positions and prior to that, worked as a research scientist.

Lynnette C. Fallon, 44, is our Senior Vice President, Human Resources and Legal, General Counsel and corporate Secretary. Ms. Fallon joined Axcelis in April 2001 as Senior Vice President and General Counsel. Prior to that, Ms. Fallon was a partner in the Boston law firm of Palmer & Dodge LLP since 1992, where she was head of the Business Law Department from 1997 to 2001.

Jan-Paul van Maaren, 42, has been our Vice President and General Manager of our Curing and Cleaning business since December 2001. Prior to that, Dr. van Maaren held several management positions at Axcelis since joining us in 1997, most recently, as Director of Business Excellence for Ion Implantation and Rapid Thermal Processing systems. Prior to joining Axcelis, Dr. van Maaren held various marketing and management positions at Honeywell.

Key Management

Craig M. Halterman, 40, has been our Vice President and Chief Information Officer since July 2000 and was our Director of Information Technology since the beginning of 2000. Prior to joining us, Mr. Halterman was Information Technology Director at Honeywell/Allied Signal in its space and defense systems business since 1997. Prior to that, Mr. Halterman held various information technology positions at The Dow Chemical Co., Thompson Consumer Electronics, General Electric Co. and RCA Consumer Electronics.

Donald W. Palette, 46, has been our Vice President, Controller and Treasurer since June 2003, prior to which he was Director of Finance since August 2000 and Controller since 1999. Prior to joining

Axcelis in 1999, Mr. Palette was Director of Financial Reporting/Operations for Simplex, a leading manufacturer of fire protection and security systems. Prior to that, Mr. Palette was Director of Finance for Bell & Howell's Mail Processing Company, a leading manufacturer of high speed mail insertion and sorting equipment.

John M. Poate, 63, has been Vice President and Chief Technology Officer since June 2000. From 1997 until he joined Axcelis, Dr. Poate was Dean of the College of Science and Liberal Arts at the New Jersey Institute of Technology. From 1971 to 1997, he held several senior research positions, including head of silicon processing research, with Bell Laboratories.

Matthew P. Flynn, 47, became our Vice President Global Customer Operations in October 2002, prior to which Mr. Flynn was our Director of Sales, Ion Implant and RTP systems. Prior to joining Axcelis in 1996, Mr. Flynn held executive and management roles at Cherry Semiconductor, an integrated circuit manufacturer and at Teradyne Inc., a manufacturer of semiconductor test and interconnection products.

Kevin J. Brewer, 45, became our Vice President of Manufacturing Operations in October 2002, prior to which Mr. Brewer was Axcelis' Director of Operations. Prior to joining Axcelis in 1999, Mr. Brewer was Director of Operations, Business Jets at Raytheon Aircraft Company, a leading manufacturer of business and special mission aircraft owned by Raytheon Company, a manufacturer of defense, government and commercial electronics, as well as aircraft. Prior to that, Mr. Brewer held various management positions in operations and strategic planning in Raytheon Company's Electronic Systems and Missile Systems groups.

PART II

Item 5: Market for Registrant's Common Equity and Related Stockholder Matters

Our common stock trades on the Nasdaq stock market under the symbol ACLS. The following table sets forth the high and low closing sale prices as reported on the Nasdaq stock market during each of the quarters for the two most recent years. As of February 2, 2004, we had approximately 9,644 stockholders of record. Other than the $300 million cash dividend paid to Eaton out of the proceeds from our initial public offering in 2000, Axcelis has not paid any cash dividends. We do not anticipate paying cash dividends in the future and, in any event, would be restricted from doing so by the terms of our bank credit agreement.

	Common Stock Price	
	High	Low
2002		
First quarter	$16.04	$11.34
Second quarter	15.36	9.80
Third quarter	11.46	4.46
Fourth quarter	8.66	3.54
2003		
First quarter	$ 7.14	$ 4.15
Second quarter	6.74	4.39
Third quarter	10.13	6.08
Fourth quarter	11.84	8.44

Item 6: Selected Financial Data

The following selected consolidated statements of operations data for each of the three years ended December 31, 2003, 2002 and 2001 and the consolidated balance sheet data as of December 31, 2003 and 2002 have been derived from the audited consolidated financial statements contained in Item 8 of Part II of this Form 10-K. The selected consolidated statements of operations data for the year ended December 31, 2000 and the consolidated balance sheet data as of December 31, 2001 and 2000 have been derived from the audited financial statements contained in our Form 10-K filed on March 30, 2001. The selected consolidated statements of operations data for the year ended December 31, 1999 and the consolidated balance sheet data as of December 31, 1999 have been derived from the audited financial statements contained in our registration statement on Form S-1 filed on May 5, 2000, as amended.

The historical financial information set forth below may not be indicative of our future performance and should be read together with "Management's Discussion and Analysis" and our

historical consolidated financial statements and notes to those statements included in Items 7 and 8 of Part II of this Form 10-K.

	Years ended December 31,				
	2003	2002	2001	2000	1999
	(in thousands, except per share amounts)				
Consolidated statements of operations data					
Net sales	$ 321,973	$309,705	$365,264	$680,401	$397,267
Gross profit	104,351	103,965	131,025	299,309	157,082
Operating income (loss)	(53,054)	(58,318)	(62,245)	104,637	12,333
Net income (loss)	(113,876)	(26,150)	(20,163)	99,115	14,428
Net income (loss) per share (basic and diluted)	$ (1.16)	$ (0.27)	$ (0.21)	$ 1.13	$ 0.18
Shares used in computing basic and diluted per share amounts	98,514	97,920	97,215	88,063	80,000
Consolidated balance sheet data					
Cash and cash equivalents	$ 93,249	$146,298	$122,200	$168,157	$ 3,530
Working capital	227,988	288,181	226,412	297,348	169,759
Total assets	585,595	669,451	551,396	672,331	422,835
Long-term debt	125,000	125,000	—	—	—
Stockholders' equity	353,250	452,508	462,861	491,369	342,296

During 2000, the Company paid a dividend of $300 million ($3.75 per share) to Eaton Corporation. On June 30, 2000, in connection with our initial public offering, Eaton substantially completed the transfer of all the assets and related liabilities of its semiconductor equipment operations to us. Prior to the initial public offering, Eaton did not account for or operate Axcelis as a separate, stand-alone entity and, as a result, the financial information included herein may not reflect what our consolidated financial position and operating results would have been during the periods presented prior to the initial public offering, if we had been a separate, stand-alone entity.

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

Certain statements in "Management's Discussion and Analysis of Financial Condition and Results of Operations" are forward-looking statements that involve risks and uncertainties. Words such as may, will, should, would, anticipates, expects, intends, plans, believes, seeks, estimates and similar expressions identify such forward-looking statements. The forward-looking statements contained herein are based on current expectations and entail various risks and uncertainties that could cause actual results to differ materially from those expressed in such forward-looking statements. Factors that might cause such a difference include, among other things, those set forth under "Financial Condition, Liquidity and Capital Resources" and "Risk Factors" and those appearing elsewhere in this Form 10-K. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect management's analysis only as of the date hereof. The Company assumes no obligation to update these forward-looking statements to reflect actual results or changes in factors or assumptions affecting forward-looking statements.

Overview

We are a worldwide producer of ion implantation, dry strip, rapid thermal processing and photostabilization equipment used in the fabrication of semiconductors. In addition, we provide extensive aftermarket service and support, including spare parts, equipment upgrades, and maintenance services. We own 50% of the equity of a joint venture, known as SEN, with Sumitomo Heavy Industries, Ltd. in Japan. SEN licenses technology from the Company relating to the manufacture of

ion implantation products and has exclusive rights to manufacture and sell these products to the territory of Japan. SEN is the leading producer of ion implantation equipment in Japan.

Critical Accounting Policies

Management's discussion and analysis of our financial condition and results of operations are based upon Axcelis' consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an on-going basis, the Company evaluates its estimates, including those related to revenue recognition, income taxes, accounts receivable, inventory and warranty obligations. Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

The Company believes the following accounting policies are critical in the portrayal of our financial condition and results of operations and require management's most significant judgments and estimates in the preparation of our consolidated financial statements.

Revenue Recognition

The Company's revenue recognition policy involves significant judgment by management. As described in detail below, the Company considers a broad array of facts and circumstances in determining when to recognize revenue, including contractual obligations to the customer, and the complexity of the customer's post delivery acceptance provisions, and the installation process. In the future, if the post delivery acceptance provisions and installation process become more complex or result in a materially lower rate of acceptance than we now experience, the Company may have to revise its revenue recognition policy, which could affect the timing of revenue recognition.

For revenue arrangements prior to July 1, 2003 Axcelis generally recognized the full sale price at the time of shipment to the customer. The costs of system installation at the customer's site were accrued at the time of shipment for installation and acceptance testing performance obligations incurred at the time of sale. The Company recognized the full sales price at the time of shipment as management believes that the customer's post delivery acceptance provisions and installation process were established to be routine, commercially inconsequential and perfunctory because the process was a replication of the pre-shipment procedures. Also, customer payment terms typically provide that the majority of the purchase price is payable upon shipment. Terms do generally contain delayed payment arrangements for a portion of the purchase price, which are typically time-based.

In November 2002, the Financial Accounting Standards Board's Emerging Issues Task Force reached a consensus on Issue No. 00-21, "Accounting for Revenue Arrangements with Multiple Deliverables" ("EITF 00-21"). This issue addresses determination of whether an arrangement involving more than one deliverable contains more than one unit of accounting and how the arrangement consideration should be measured and allocated to the separate units of accounting. EITF 00-21 became effective for revenue arrangements entered into in periods beginning after June 15, 2003.

For revenue arrangements occurring on or after July 1, 2003, the Company has revised its revenue recognition policy to comply with the provisions of EITF 00-21. Axcelis' revenue transactions include sales of systems under multiple element arrangements. Revenue under these arrangements is allocated to all elements, except systems, based upon their estimated fair market value. The amount of revenue allocated to systems is calculated on a residual method. Under this method, the total value of the arrangement is allocated first to the undelivered elements based on the greater of the fair value of the

undelivered elements or the portion of the sales price that will not be received until the elements are delivered, with the residual amount being allocated to systems revenue. The amount allocated to installation is based upon hourly rates and the estimated time to complete the service. The fair value of all other elements is based upon the price charged when these elements are sold separately. System revenue is generally recognized upon shipment provided title and risk of loss has passed to the customer, evidence of an arrangement exists, fees are contractually fixed or determinable, collectibility is reasonably assured through historical collection results and regular credit evaluations, and there are no uncertainties regarding customer acceptance. Revenue for installation services is recognized at the time of customer acceptance. Revenue for other elements is recognized at the time products are shipped or the related services are performed.

Management continues to believe recognition of systems revenue at the time of shipment is appropriate because the customer's post delivery acceptance provisions and installation process have been established to be routine, commercially inconsequential and perfunctory because the process is a replication of the pre-shipment procedures. The majority of Axcelis' systems are designed and tailored to meet the customer's specifications as outlined in the contract between the customer and Axcelis. To ensure that the customer's specifications are satisfied, per contract terms, many customers request that newer systems are to be tested at Axcelis' facilities prior to shipment, normally with the customer present, under conditions that substantially replicate the customer's production environment and the customer's criteria are confirmed to have been met. Customers for mature products generally do not require pre-shipment testing. Axcelis has never failed to successfully complete a system installation. Should an installation not be successfully completed, the contractual provisions do not provide for forfeiture, refund or other purchase price concession beyond those prescribed by the provisions of the Uniform Commercial Code applicable generally to such transactions.

In the small number of instances where Axcelis is unsure of meeting the customer's specifications upon shipment of the system, Axcelis will defer the recognition of systems revenue until written customer acceptance of the system. This deferral period is generally within twelve months of shipment.

Service revenue includes revenue from spare parts, equipment upgrades and maintenance services. Revenue related to maintenance and service contracts is recognized ratably over the duration of the contracts. Revenue related to time and material services is recorded when the services are performed. Revenue related to spare parts sales is recognized upon the later of shipment or when the title and risk of loss passes to the customer.

Deferred Tax Assets

The Company has deferred tax assets resulting from tax credit carryforwards, net operating losses and other deductible temporary differences, which are available to reduce taxable income in future periods. SFAS No. 109 "Accounting for Income Taxes" requires that a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the Company operates, length of carryback and carryforward periods, existing sales backlog and projections of future operating results. Where there are cumulative losses in recent years, SFAS No. 109 creates a strong presumption that a valuation allowance is needed. This presumption can be overcome in very limited circumstances.

As of March 31, 2003 and December 31, 2002, the Company's evaluation of the realization of these assets was based upon evidence of cumulative historical profitability and estimates of future taxable income. The Company was profitable in year 2000 but was not profitable in years 2001 and 2002. Projections of future earnings were based on revenue assumptions consistent with industry forecasts for the next three years along with the necessary operating expenses to support the Company's revenue assumptions. Based on these projections, the Company estimated that the loss

carryforwards would be fully utilized within three years. During the second quarter of 2003, the Company entered a three year cumulative loss position and revised its projections of the amount and timing of future earnings. Due to these factors as well as the uncertainty of the amount and timing of profitability in future periods, the Company increased its valuation allowance as of June 30, 2003. This non-cash charge to earnings increased income tax expense by $69.6 million for the year ended December 31, 2003.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability and until such time, the Company would not expect to recognize any significant tax benefits in its future results of operations. However, going forward should the Company return to profitability and there is sufficient evidence, in accordance with the provisions of SFAS No. 109, to support the ultimate realization of income tax benefits attributable to net operating losses, tax credit carryforwards and other deductible temporary differences, a reduction in the valuation allowance may be recorded and the carrying value of deferred tax assets may be restored, resulting in a non-cash credit to earnings.

Goodwill and Other Intangible Assets

We account for our acquisitions under the purchase method of accounting pursuant to Statement of Financial Accounting Standard (SFAS) No. 141, "Business Combinations." Goodwill represents the excess of cost over net assets, including all identifiable intangible assets of acquired businesses that are consolidated. Pursuant to SFAS No. 142, "Goodwill and Other Intangible Assets," goodwill is not amortized. Other intangible assets that are separable from goodwill and have determinable useful lives are valued separately and amortized over their useful lives. Such other identifiable intangible assets consist mainly of developed technology and customer related intangibles and are generally amortized over periods ranging from five to ten years. We have determined that all of our intangible assets have finite lives.

During 2002, in accordance with SFAS No. 142, we ceased to amortize goodwill. In lieu of amortization, we perform an impairment review of our goodwill. Impairment tests are performed annually, or more frequently if there are other indicators of impairment. The annual impairment test consists of determining the fair market value of the business unit through a discounted cash flow analysis. Management's best judgments are employed in determining future market conditions that impact this discounted cash flow analysis. As a result of our annual review conducted as of December 31, 2003, we determined that there was no impairment of our goodwill. If we determine through the impairment review process that goodwill has been impaired, we would record the impairment charge in our statement of operations as a non-cash charge to earnings.

We assess the impairment of intangible assets, other than goodwill, whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important that could trigger an impairment review include the following:

- a significant underperformance relative to expected operating results;
- a significant change in the manner of our use of the acquired asset or the strategy for our overall business;
- a significant negative industry or economic trend; and
- our market capitalization relative to net book value.

As part of this assessment, we review the expected future undiscounted cash flows to be generated by the assets. When we determine that the carrying value of intangibles may not be recoverable, we measure any impairment based on a projected discounted cash flow method using a discount rate

determined by our management to be commensurate with the risk inherent in our current business model.

Accounts Receivable—Allowance for Doubtful Accounts

Axcelis records an allowance for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. If the financial condition of Axcelis' customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be necessary.

Inventory—Allowance for Excess and Obsolescence

Axcelis records an allowance for estimated excess and obsolete inventory. The allowance is determined using management's assumptions of future materials usage, based on estimates of future demand and market conditions. If actual market conditions become less favorable than those projected by management, additional inventory write-downs may be required.

Product Warranty and Installation Costs

The Company offers a one to three year warranty for all of its products, the terms and conditions of which vary depending upon the product sold. Prior to July 1, 2003, the Company estimated the costs that may be incurred under its standard warranty and product installation obligation and recorded a liability in the amount of such costs at the time product revenue was recognized. Subsequent to July 1, 2003, in connection with the change in its revenue recognition policy (see Revenue Recognition), the Company no longer accrues the estimated costs of its installation but defers the revenue related to the greater of the fair value of the installation services or the amount of revenue that is contingent upon the completion of the installation services. Factors that affect the Company's warranty and installation liability include the number of installed units, historical and anticipated product failure rates, material usage and service labor costs. The Company periodically assesses the adequacy of its recorded warranty and installation liability and adjusts the amount as necessary.

Results of Operations

The following table sets forth our results of operations as a percentage of net sales for the periods indicated:

	Years Ended December 31,		
	2003	2002	2001
Net sales			
Systems	60.5	62.2	66.6
Services	39.5	37.8	33.4
	100.0	100.0	100.0
Gross profit	32.4	33.6	35.9
Other costs & expenses			
Research & development	19.7	23.3	21.0
Selling	14.3	14.2	13.5
General & administrative	12.8	14.4	15.9
Amortization of intangible assets	0.6	0.5	2.5
Restructuring	1.5	—	—
Loss from operations	(16.5)	(18.8)	(17.0)
Other income (expense)			
Sumitomo Eaton Nova Corporation			
Royalty income	1.8	2.7	1.6
Equity income	2.8	1.6	3.3
Other royalty income	—	—	0.2
Interest income	0.6	1.2	1.5
Interest expense	(1.9)	(1.9)	—
Other—net	(0.6)	(0.8)	(0.6)
Loss before income taxes	(13.8)	(16.1)	(11.1)
Income taxes (credit)	21.6	(7.6)	(5.5)
Net loss	(35.4)%	(8.4)%	(5.5)%

Year ended December 31, 2003 in comparison to the year ended December 31, 2002

Net Sales

Sales of systems were $194.9 million or 60.5% of net sales in 2003, compared with $192.8 million, or 62.2% of net sales, in 2002. The increase in sales of systems was primarily attributable to increased levels of production volume by our semiconductor manufacturing customers. Increased sales were offset in part by reduced average selling prices caused by a competitive market environment and a concentration of systems sales to a limited number of customers.

Sales of services, which include spare parts, service labor and equipment upgrades, accounted for $127.1 million, or 39.5% of net sales, in 2003 compared with $116.9 million, or 37.8% of net sales in 2002. The demand for our services increased primarily as a result of improved capacity utilization by our customers.

For revenue arrangements occurring on or after July 1, 2003, the Company revised its revenue recognition policy to comply with the provisions of EITF 00-21(see Note 2 to the Consolidated Financial Statements). This change had the effect of reducing the net sales by $12.9 million in 2003.

Sales of ion implantation products and services accounted for $237.2 million of revenue in 2003, an increase of $4.0 million, or 1.7%, compared with $233.2 million in 2002. Sales of other products and

services, including dry strip products, photostabilization products and rapid thermal processing systems, accounted for $84.8 million in 2003 an increase of $8.3 million, or 10.8%, compared with $76.5 million in 2002.

Gross Profit

Gross profit was 32.4% of net sales in 2003 compared to gross profit of 33.6% in 2002. The decrease in gross profit was due to higher warranty costs associated with 300mm product shipments (approximately 1.5%); the Company's implementation of a revised revenue recognition policy to comply with the provisions of EITF 00-21 (approximately 1.5%); and a reduction in average selling prices discussed above, (approximately 1.1%). These items were offset by improved manufacturing costs due to increased factory utilization and lower raw material costs.

Research and Development

Research and development expense was $63.3 million in 2003, a decrease of $8.9 million, or 12.2%, compared to $72.1 million in 2002. The decrease in research and development expense in 2003 is due principally to lower investment in our 300mm product development efforts and a corresponding reduction in headcount by approximately 18% from December 31, 2002 to at December 31, 2003. Final completion and release of 300mm products was accomplished in the second half of 2002. Research and development expense for the fourth quarter of 2003 was $14.9 million and the Company expects to spend in the range of $15 to $16 million per quarter for research and development through 2004.

Selling

Selling expense was $46.2 million in 2003, an increase of $2.2 million, or 5.0%, as compared to $44.0 million in 2002. The increase in selling expense was primarily due to increased sales and sales support investments for our expanding Asia Pacific markets.

General and Administrative

General and administrative expense was $41.1 million in 2003, a decrease of $3.6 million, or 8.2%, as compared with $44.7 million in 2002. The decrease in general and administrative expense was attributable to lower costs associated with programmed headcount reductions and an adjustment of $1.7 million to reflect a change in estimate relating to unfunded pension expense and other benefits recorded in prior periods.

Amortization of Intangible Assets

Amortization of intangible assets was $2.0 million in 2003, an increase of $500 thousand, or 33.9%, as compared with $1.5 million in 2002. The increase was due to amortization expense relating to the intangible assets acquired as part of the Matrix Integrated Systems, Inc. acquisition completed on July 3, 2003.

Restructuring

Restructuring costs of $4.9 million in 2003 relate to severance and other benefits associated with reduction in force actions the Company took during the third quarter of 2003 to reduce headcount by approximately 200 permanent positions. At December 31, 2003 $4.0 million had been paid, with the remaining balance of $0.9 million expected to be paid by the end of 2004. The Company estimates the annual savings from the restructuring to approximate $18.5 million, benefits from which began to be realized in the fourth quarter of 2003.

Other Income (Expense)

Total other income was $8.7 million in 2003 as compared to $8.6 million in 2002. Other income consists primarily of royalty income and equity income from SEN. Royalty income from SEN was $5.9 million in 2003 as compared to $8.3 million in 2002. Equity income attributable to SEN was $9.0 million in 2003 compared to $4.8 million in 2002. The change in SEN's revenue recognition policy to comply with the provisions of EITF 00-21 had the effect of reducing the combined contribution (royalties and equity income) from SEN by approximately $5.2 million for 2003. Other fluctuations in royalty and equity contributions from SEN reflect changes in its sales volume and operating earnings resulting from changes in the Japanese semiconductor market.

Interest income of $1.8 million primarily relates to interest earned on cash, cash equivalents and short-term investments. Interest income decreased by $1.9 million from 2002 due primarily to a lower amount of cash, cash equivalents and short-term investments in 2003, as well as lower interest rates.

Interest expense of $6.2 million in 2003 primarily relates to the Company's long-term debt issued in January 2002. See Note 10 to the Consolidated Financial Statements contained in Item 8 of this Form 10-K.

Income Taxes (Credit)

Income taxes provided were $69.5 million in 2003 as compared to an income tax credit of $23.6 million in 2002. Income taxes for 2003 consist primarily of a valuation allowance of $69.7 million recorded at June 30, 2003 to reduce the carrying value of deferred tax assets to zero. See further discussion under "Critical Accounting Policies."

Year ended December 31, 2002 in comparison to the year ended December 31, 2001

Net Sales

Sales of systems were $192.8 million or 62.2% of net sales in 2002, compared with $243.1 million, or 66.6% of net sales, in 2001. The decrease in sales of systems was primarily attributable to a decline in sales volume arising from decreased levels of production volume by our semiconductor manufacturing customers.

Sales of services, which include spare parts, equipment upgrades and maintenance services, accounted for $116.9 million, or 37.8% of net sales, in 2002 compared with $122.1 million, or 33.4% of net sales in 2001. The decrease in sales of services reflects the cyclical nature of the semiconductor manufacturing industry and the related decline in capacity utilization by our customers which translates into a decline in demand for support services and spare parts.

Sales of ion implantation products and services accounted for $233.2 million of revenue in 2002 a decrease of $59.1 million, or 20.2%, compared to $292.3 million in 2001. Sales of other products and services, including dry strip products, photostabilization products and rapid thermal processing systems, accounted for $76.5 million of revenue in 2002 an increase of $3.5 million, or 4.8%, compared to $73.0 million in 2001.

Gross Profit

Gross profit as a percentage of net sales decreased to 33.6% in 2002 from 35.9% in 2001. This decrease was due principally to lower manufacturing capacity utilization caused by lower sales volume and an increasing mix of 300 mm sales which currently have lower average gross margins. 300mm sales comprised 41.0% of systems sales in 2002 compared to only 19% of total system sales in 2001.

Research and Development

Research and development expense was $72.1 million in 2002, a decrease of $4.4 million, or 5.8%, compared to $76.5 million in 2001. The decrease in research and development expense between years was due principally to a lower investment in our 300mm product development efforts consistent with the completion of the launch of our 300mm products during the year.

Selling

Selling expense was $44.0 million in 2002, a decrease of $5.4 million, or 10.9%, as compared to $49.4 million in 2001. The decrease in selling expense was primarily due to lower sales commissions and lower marketing expenses associated with lower overall sales volume and lower headcount and related expenses, net of severance costs.

General and Administrative

General and administrative expense was $44.7 million in 2002, a decrease of $13.3 million, or 22.9%, as compared with $58.0 million in 2001. The decrease in general and administrative expense was primarily attributable to a decrease in expenses incurred in connection with the Company's patent litigation with Applied Materials, Inc. of $7.2 million (See Part I, Item 3. "Legal Proceedings"), a decrease in headcount related expenses net of severance costs of $2.0 million and a decrease in expenses associated with transitioning to a stand-alone company of $3.4 million.

Amortization of Goodwill and Intangible Assets

Amortization of goodwill and intangible assets was $1.5 million in 2002, a decrease of $7.8 million, or 83.8%, compared with $9.3 million in 2001. The decrease was due to the Company's adoption of Statement of Financial Accounting Standard (SFAS) No. 142, "Goodwill and Other Intangible Assets" as described under Notes 2 and 6 to the Consolidated Financial Statements contained in Item 8 of this Form 10-K.

Other Income (Expense)

Total other income was $8.6 million in 2002 as compared to $21.8 million in 2001. Other income consists primarily of royalty income and equity income from SEN. Royalty income, primarily from SEN, was $8.2 million in 2002 as compared to $6.5 million in 2001. Equity income attributable to SEN was $4.8 million in 2002 compared to $12.2 million in 2001. The equity income decline was attributable to lower SEN sales volume due primarily to the continuing weakness in the Japanese semiconductor market. Despite the decline in SEN revenues between years, royalty income increased between years due to a more favorable mix of SEN products shipped in 2002 compared to 2001. Interest expense of $5.8 million in 2002 relates to the Company's long-term debt issued in January 2002. See Note 10 to the Consolidated Financial Statements contained in Item 8 of this Form 10-K.

Income Taxes (Credit)

The company had an income tax credit of $23.6 million in 2002 as compared to $20.2 million in 2001. Our effective income tax rate was (47.4)% in 2002 as compared to (50.1)% in 2001. The tax rate in both periods differs from the U.S. federal statutory rate primarily due to undistributed nontaxable equity income from SEN and credits from increased research activities. See Note 16 to the Consolidated Financial Statements contained in Item 8 of this Form 10-K.

Liquidity and Capital Resources

Cash, cash equivalents and short-term investments at December 31, 2003 were $108.2 million, compared to $181.3 million at December 31, 2002. The decrease in cash, cash equivalents and short-term investments between years is mainly attributable to the Company's pretax loss of $44.3 million for the year ended December 31, 2003, recognized equity income of SEN of $9.0 million which is not realized in cash, changes of $21.5 million in other elements of working capital which reflect an increase in sales order activity in the last half of the year (see "Outlook" below), and the acquisition of Matrix Integrated Systems in July 2003 for cash and acquisition expenses aggregating $14.6 million.

Net working capital was $228.0 million at December 31, 2003 as compared to net working capital of $288.2 million at December 31, 2002. The decrease in net working capital is mainly attributable to the Company's pre-tax loss for the year of $44.3 million, recognized equity income of SEN of $9.0 million (included in other assets), and the net impact on working capital related to the recognition of a valuation allowance on net current deferred tax assets recognized in prior periods.

Capital expenditures were $5.0 million and $11.8 million for the years ended December 31, 2003 and 2002, respectively. The decrease in capital expenditures is attributable to the completion in the first half of 2002 of the addition of the Company's Advanced Technology Center and manufacturing facility in Beverly, Massachusetts. The Company has no significant capital projects planned for 2004 and total capital expenditures are projected to approximate depreciation expense.

Future capital expenditures beyond 2004 will depend on a number of factors, including the timing and rate of the expansion of our business.

The Company has no off-balance sheet arrangements.

In October 2003 the Company renegotiated its $50 million revolving credit facility to extend the maturity to October 2006. The purpose of the facility is to provide funds for working capital and general corporate purposes as required. To the extent that the Company has borrowings under the agreement, those borrowings would bear interest at the bank's base rate, as defined in the agreement, or LIBOR plus an applicable percentage. The Company currently has no plans to borrow against the facility but may use the facility to support letters of credit in the future. The credit facility is secured by substantially all of the Company's assets and contains certain financial and other restrictive covenants including minimum levels of tangible net worth, liquidity, profitability and indebtedness as well as maximum levels of capital spending. At December 31, 2003 the Company did not meet a required liquidity threshold to allow it to borrow against the facility. The Company estimates that it will satisfy this liquidity threshold by the second quarter of 2004 and that borrowings pursuant to the terms of the underlying credit agreement will be available if needed.

During January 2004, the Company realized net proceeds of approximately $5.9 million from the sale of a building.

The following represents the contractual obligations and commercial commitments of the Company as of December 31, 2003 (in thousands):

		Payments Due by Period			
Contractual Obligations	**Total**	**2004**	**2005-2006**	**2007-2008**	**Thereafter**
Long-Term Debt	$125,000	—	—	$125,000	—
Purchase Order Commitments	52,875	$52,533	$ 342	—	—
Operating Leases	12,278	4,941	5,272	2,065	—
	$190,153	$57,474	$ 5,614	$127,065	—

		Amount of Commitment Expiration by Period			
Other Commercial Commitments	**Total**	**2004**	**2005-2006**	**2007-2008**	**Thereafter**
Unused Line of Credit	$ 50,000	—	$50,000	—	—
Standby Letters of Credit	3,800	$ 3,800	—	—	—
Guarantees	8,425	—	2,772	$ 4,686	$ 967
	$ 62,225	$ 3,800	$52,772	$ 4,686	$ 967

Axcelis' liquidity is affected by many factors. Some of these factors are based on normal operations of the business and others relate to the uncertainties of global economies and the semiconductor equipment industry. Although our cash requirements fluctuate based on the timing and extent of these factors, we believe that our existing cash and cash equivalents will be sufficient to satisfy our anticipated cash requirements for at least the next twelve months.

The Company has standby letters of credit to support certain operating lease obligations, workers' compensation insurance, and certain value added tax claims in Europe. Guarantees (of which $2.6 million are cash collateralized) relate to value added tax refunds in Europe.

Recent Accounting Pronouncements

In January 2003, the FASB issued Interpretation No. 46 "Consolidation of Variable Interest Entities, an Interpretation of Accounting Research Bulletin No. 51" (FIN 46). FIN 46 provides a new consolidation model which determines control and consolidation based on potential variability in gains and losses. The provisions of FIN 46 are effective for enterprises with variable interests in variable interest entities created after January 31, 2003. For public companies with variable interest in variable interest entities created before February 1, 2003, the provisions of FIN 46 are to be applied no later than December 31, 2003. The Company has determined that its equity investment in SEN does not constitute a variable interest entity that would require consolidation. Accordingly, FIN 46 did not have any impact on the Company's consolidated financial statements.

Outlook

The Company's performance for the year ended December 31, 2003 was directly related to continuing low levels of capital expenditures through the first nine months of the year by semiconductor manufacturers, especially manufacturers opening new or expanding existing fabrication facilities. The level of capital expenditures by these manufacturers depends upon the current and anticipated market demand for semiconductors and the products utilizing them, the available manufacturing capacity in manufacturers' fabrication facilities, and the ability of manufacturers to increase productivity in existing facilities without incurring additional capital expenditures. Currently, management, along with industry and economic analysts, believe that semiconductor manufacturers are looking to expand capacity and increase capital spending over the next twelve to twenty-four months. Based on bookings received in the third and fourth quarters of 2003 the Company believes it will begin

to realize benefits in terms of increased revenues and improved operating performance from this anticipated upturn in capital spending during 2004.

Management has continued its ongoing actions to reduce manufacturing costs as well as decrease research and development and SG&A expense. During the third quarter of 2003, the Company took actions to reorganize the business and eliminate 200 permanent positions. These actions are estimated to result in annual savings of $18.5 million, the benefit of which started to be realized in the fourth quarter of 2003.

On January 28, 2004, the Company announced its expectation that its revenues for the first quarter of 2004 will be in the range of $120 to $127 million, an increase of 25% to 32% in comparison to reported revenues for the fourth quarter of 2003. On these forecast revenues, management stated that gross margins are expected to be in the mid 30% range and net income per share for the first quarter of 2004 was expected to be $0.07 to $0.10 per share.

It is difficult for us to predict our customers' capital spending plans, which can change very quickly. In addition, at our current sales level, each sale, or failure to make a sale, could have a material effect on us in a particular quarter.

Risk Factors

Some of the matters discussed in this filing contain forward-looking statements regarding future events that are subject to risks and uncertainties. The following important factors, among others, could cause actual results to differ materially from those described by such statements. These factors include, but are not limited to: the cyclical nature of the semiconductor industry, our ability to keep pace with rapid technological changes in semiconductor manufacturing processes, the highly competitive nature of the semiconductor equipment industry, quarterly fluctuations in operating results attributable to the timing and amount of orders for our products and services, dependence on SEN (our Japanese joint venture) for access to the Japanese semiconductor equipment market, and those risk factors contained in the section titled "Outlook" and Exhibit 99.1 of this Form 10-K, which is incorporated herein by reference. If any of those risk factors actually occurs, our business, financial condition and results of operations could be seriously harmed and the trading price of our common stock could decline.

Item 7a: Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Sensitivity

Axcelis' exposure to market risk for changes in interest rates relates primarily to our investment portfolio, which consists entirely of cash-equivalents and short-term investments at December 31, 2003. The primary objective of our investment activities is to preserve principal while maximizing yields without significantly increasing risk. This is accomplished by investing in marketable high investment grade securities, and by limiting exposure to any one issue or issuer. We do not use derivative financial instruments in managing our investment portfolio and, due to the nature of our investments, we do not expect our operating results or cash flows to be affected to any significant degree by any change in market interest rates. As of December 31, 2003, all investments had a maturity within 90 days and were carried at cost, which approximates fair value. To the extent the Company has borrowings in the future under the revolving credit facility, such borrowings would be exposed to market risk associated with fluctuations in the bank's base rate or LIBOR.

Foreign Currency Exchange Risk

Substantially all of our sales are billed in U.S. dollars, thereby reducing the impact of fluctuations in foreign exchange rates on our results. Operating margins of certain foreign operations can fluctuate with changes in foreign exchange rates to the extent revenues are billed in U.S. dollars and operating

expenses are incurred in the local functional currency. During the year ended December 31, 2003, approximately 8.0% of the Company's revenues were derived from foreign operations with this inherent risk. Our investment in SEN and our royalty and equity income from SEN are subject to foreign currency exchange risks. The effect of a 10% depreciation of the Japanese Yen compared to the U.S. dollar would result in a write-down in the Company's investment in SEN and a corresponding decrease in accumulated other comprehensive income (included in stockholders' equity) of $7.3 million at December 31, 2003.

Item 8: Financial Statements and Supplementary Data

Response to this Item is submitted as a separate section of this report immediately following Item 15.

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

None

Item 9A: Controls and Procedures

(a) **Evaluation of Disclosure Controls and Procedures.** Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this annual report. Based on this evaluation, our principal executive officer and principal financial officer concluded that these disclosure controls and procedures are effective and designed to ensure that the information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the requisite time periods.

In connection with its audit of the Company's consolidated financial statements for the year ended December 31, 2003, Ernst & Young LLP ("Ernst & Young"), the Company's independent accountants, advised the Audit Committee and management of internal control matters with respect to certain inventory and revenue recognition transactions that they considered to be reportable conditions as that term is defined under standards established by the American Institute of Certified Public Accountants. The Company considered these matters in connection with the year end closing process and the preparation of the December 31, 2003 consolidated financial statements included in this Form 10-K and also determined that no prior period financial statements were materially affected by such matters. In response to the observations made by Ernst & Young, in 2004 the Company will implement certain enhancements to its internal controls and procedures, which it believes address the matters raised by Ernst & Young.

(b) **Changes in Internal Controls.** There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended) identified in connection with the evaluation of our internal control performed during our fourth quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART III

Item 10: Directors and Executive Officers of the Registrant

A portion of the information required by Item 10 of Form 10-K is incorporated by reference from the information responsive thereto contained in the sections captioned:

- "Proposal 1: Election of Directors,"
- "Committees of the Board of Directors,"
- "Section 16(a) Beneficial Ownership Reporting Compliance" and
- "Code of Ethics"

in Axcelis' Proxy Statement for the Annual Meeting of Stockholders to be held April 29, 2004 (the "Proxy Statement").

The remainder of such information is set forth under the heading "Executive Officers and Key Management" at the end of Part I of this report.

Item 11: Executive Compensation

The information required by Item 11 of Form 10-K is incorporated by reference from the information responsive thereto contained in the section captioned "Executive Compensation" in the Proxy Statement.

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

The information required by Item 12 of Form 10-K is incorporated by reference from the information responsive thereto contained in the sections in the Proxy Statement captioned:

- "Share Ownership of 5% Stockholders,"
- "Share Ownership of Directors and Executive Officers" and
- "Equity Plan Reserves Disclosure"

in the Proxy Statement.

Item 13: Certain Relationships and Related Transactions

The information required by Item 13 of Form 10-K is incorporated by reference from the information responsive thereto contained in the sections in the Proxy Statement captioned:

- "Executive Agreements,"
- "Certain Transactions" and
- "Compensation Committee Interlocks and Insider Participation"

Item 14. Principal Accountant Fees and Services

The information required by Item 14 of Form 10-K is incorporated by reference from the information responsive thereto contained in the section captioned "Proposal 2: Ratification of the Appointment of Independent Auditors" in the Proxy Statement.

PART IV

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

(a) The following documents are filed as part of this Report:

1) Financial Statements:

2) Financial Statement Schedules:

Schedule II—Valuation and Qualifying Accounts for the years ended December 31, 2003, 2002 and 2001

All other schedules for which provision is made in the applicable regulation of the Securities and Exchange Commission are not required under the related instructions or are inapplicable, and therefore have been omitted.

(b) Reports on Form 8-K

A Current Report on Form 8-K was furnished with the Securities and Exchange Commission on October 27, 2003 relating to the Company's announcement of earnings for its quarter ended September 30, 2003.

(c) Exhibits

The exhibits filed as part of this Form 10-K are listed on the Exhibit Index immediately preceding such Exhibits, which Exhibit Index is incorporated herein by reference.

(d) Financial Statement Schedules

The response to this portion of Item 15 is submitted as a separate section of this report.

Report of Ernst & Young LLP, Independent Auditors

Board of Directors and Stockholders
Axcelis Technologies, Inc.

We have audited the accompanying consolidated balance sheets of Axcelis Technologies, Inc. (the "Company") as of December 31, 2003 and 2002, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2003. Our audits also included the financial statement schedule listed in the Index at Item 15a. These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and schedule based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States. 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, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Axcelis Technologies, Inc. at December 31, 2003 and 2002, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2003, in conformity with accounting principles generally accepted in the United States. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

As discussed in Notes 2 and 6 to the consolidated financial statements, effective January 1, 2002, the Company adopted Statement of Financial Accounting Standards No. 142 "Accounting for Goodwill and other Intangible Assets."

As discussed in Note 2 to the consolidated financial statements, effective July 1, 2003, the Company adopted the provisions of Emerging Issues Task Force Issue No. 00-21, "Accounting for Revenue Arrangements with Multiple Deliverables."

/s/ ERNST & YOUNG LLP

Boston, Massachusetts
January 28, 2004

AXCELIS TECHNOLOGIES, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share amounts)

	Year Ended December 31,		
	2003	**2002**	**2001**
Net sales			
Systems	$ 194,899	$192,780	$243,125
Services	127,084	116,925	122,139
	321,973	309,705	365,264
Costs of sales	217,622	205,740	234,239
Gross profit	104,351	103,965	131,025
Operating expenses			
Research & development	63,284	72,069	76,538
Selling	46,202	44,038	49,439
General & administrative	41,057	44,716	58,014
Amortization of goodwill & intangible assets	1,955	1,460	9,279
Restructuring charges	4,907	—	—
	157,405	162,283	193,270
Loss from operations	(53,054)	(58,318)	(62,245)
Other income (expense)			
Sumitomo Eaton Nova Corporation			
Royalty income	5,866	8,275	5,835
Equity income	8,954	4,806	12,205
Other royalty income	151	104	628
Interest income	1,807	3,691	5,400
Interest expense	(6,229)	(5,803)	—
Other—net	(1,836)	(2,498)	(2,224)
	8,713	8,575	21,844
Loss before income taxes	(44,341)	(49,743)	(40,401)
Income taxes (credit)	69,535	(23,593)	(20,238)
Net loss	$(113,876)	$ (26,150)	$ (20,163)
Net loss per share (basic and diluted)	$ (1.16)	$ (0.27)	$ (0.21)
Shares used in computing basic and diluted net loss per share	98,514	97,920	97,215

See accompanying Notes to Consolidated Financial Statements

AXCELIS TECHNOLOGIES, INC.

CONSOLIDATED BALANCE SHEETS

(In thousands, except per share amounts)

	December 31,	
	2003	**2002**
ASSETS		
Current assets		
Cash & cash equivalents	$ 93,249	$146,298
Restricted cash	3,800	—
Short-term investments	14,972	34,992
Accounts receivable, net	84,925	60,311
Inventories	123,985	115,290
Deferred income taxes & other current assets	8,928	18,329
Total current assets	329,859	375,220
Property, plant & equipment, net	80,927	93,597
Investment in Sumitomo Eaton Nova Corporation	73,327	57,868
Goodwill	46,774	40,682
Intangible assets	20,119	13,141
Deferred income taxes	—	57,136
Restricted cash, long-term portion	2,616	4,353
Other assets	31,973	27,454
	$ 585,595	$669,451
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable	$ 36,335	$ 32,594
Accrued compensation	8,343	6,745
Warranty	17,000	16,625
Income taxes	7,109	12,823
Deferred revenue	14,441	224
Other current liabilities	18,643	18,028
Total current liabilities	101,871	87,039
Long-term debt	125,000	125,000
Other long-term liabilities	5,474	4,904
Stockholders' equity		
Preferred stock, $0.001 par value, 30,000 shares authorized; none issued or outstanding	—	—
Common stock, $0.001 par value, 300,000 shares authorized; 99,114 shares issued and 98,994 shares outstanding at December 31, 2003; 98,359 shares issued and 98,239 shares outstanding at December 31, 2002	99	98
Additional paid-in capital	451,389	447,533
Deferred compensation	(811)	(782)
Treasury stock, 120 shares at December 31, 2003 and 2002	(1,218)	(1,218)
Retained earnings (deficit)	(101,507)	12,369
Accumulated other comprehensive income (loss)	5,298	(5,492)
	353,250	452,508
	$ 585,595	$669,451

See accompanying Notes to Consolidated Financial Statements

Issuance of restricted common shares	97	—	573	(573)	—	—	—	—
Forfeiture of restricted common shares	(29)	—	(355)	355	—	—	—	—
Deferred stock-based compensation expense	—	—	—	189	—	—	—	189
Balance at December 31, 2003	99,114	$99	$451,389	$ (811)	$(1,218)	$(101,507)	$ 5,298	$353,250

See accompanying Notes to Consolidated Financial Statements.

AXCELIS TECHNOLOGIES, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

	Year Ended December 31,		
	2003	**2002**	**2001**
Operating activities			
Net loss	$(113,876)	$(26,150)	$(20,163)
Adjustments to reconcile to net cash used for operating activities			
Depreciation	11,608	10,298	11,936
Amortization of intangible assets	1,955	1,460	9,279
Stock compensation expense, net of forfeitures	189	340	—
Deferred income taxes	73,685	(39,648)	(16,017)
Undistributed income of Sumitomo Eaton Nova Corporation	(8,954)	(4,806)	(12,205)
Changes in operating assets & liabilities, excluding amounts related to business combination			
Accounts receivable	(20,176)	4,727	86,446
Inventories	(4,410)	(7,327)	15,822
Other current assets	(167)	(118)	(327)
Accounts payable & other current liabilities	(42)	(12,657)	(27,464)
Deferred revenue	16,311	—	(25,818)
Income taxes	(5,714)	12,823	(31,153)
Other assets	(4,778)	3,484	(7,505)
Other	(1,440)	1,590	592
Net cash used for operating activities	(55,809)	(55,984)	(16,577)
Investing activities			
Sales (purchases) of short-term investments, net	20,020	(34,992)	—
Expenditures for property, plant & equipment	(4,993)	(11,751)	(29,577)
Acquisition of Matrix Integrated Systems, net of cash acquired of $400	(14,572)	—	—
Increase in restricted cash	(2,063)	(2,376)	(1,977)
Other—net	575	(260)	677
Net cash used for investing activities	(1,033)	(49,379)	(30,877)
Financing activities			
Proceeds from the exercise of stock options	760	152	2,296
Issuance of common stock under Employee Stock Purchase Plan	2,879	5,622	870
Acquisition of treasury shares	—	—	(1,218)
Proceeds from long-term debt, net	—	121,578	—
Net cash provided by financing activities	3,639	127,352	1,948
Effect of exchange rate changes on cash	154	2,109	(451)
Net increase (decrease) in cash & cash equivalents	(53,049)	24,098	(45,957)
Cash & cash equivalents at beginning of period	146,298	122,200	168,157
Cash & cash equivalents at end of period	$ 93,249	$146,298	$122,200
Cash paid for interest	$ 5,313	$ 2,656	—
Cash paid for income taxes	666	269	$ 497

See accompanying Notes to Consolidated Financial Statements

AXCELIS TECHNOLOGIES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In thousands, except per share amounts)

Note 1. Nature of Business and Basis of Presentation

Axcelis Technologies, Inc. ("Axcelis" or the "Company"), is a worldwide producer of ion implantation, dry strip, rapid thermal processing and photostabilization equipment used in the fabrication of semiconductors in the United States, Europe and Asia. In addition, the Company provides extensive aftermarket service and support, including spare parts, equipment upgrades, and maintenance services. The Company owns 50% of the equity of a joint venture with Sumitomo Heavy Industries, Ltd. in Japan. This joint venture, which is known as Sumitomo Eaton Nova Corporation, or SEN, licenses technology from the Company relating to the manufacture of ion implantation products and has exclusive rights to manufacture and sell these products to the territory of Japan. SEN is the leading producer of ion implantation equipment in Japan.

Prior to July 10, 2000, Axcelis was a wholly-owned subsidiary of Eaton Corporation ("Eaton"). On April 26, 2000, Eaton announced its plan to reorganize its semiconductor equipment operations into an independent, publicly-held company, Axcelis Technologies, Inc. On June 30, 2000, Eaton substantially completed the transfer of all the assets and related liabilities of its semiconductor equipment operations to the Company. Prior to the transfer, the financial statements of the semiconductor equipment operations were presented on a combined basis. On July 10, 2000, the Company commenced its initial public offering (IPO) of 15,500,000 shares of common stock. On July 20, 2000, the IPO was completed when the underwriters of the IPO exercised their over-allotment option to purchase an additional 1,550,000 shares. A portion of the net proceeds of the offering of $348.6 million was used to pay a previously declared $300 million dividend to Eaton. Subsequent to the IPO, Eaton owned approximately 82 percent of Axcelis' outstanding common stock. On October 25, 2000, Eaton announced that its board of directors had declared a stock dividend of all remaining shares of Axcelis held by Eaton. The dividend was distributed on December 29, 2000. The distribution was made on the basis of 1.179023 shares of Axcelis for each Eaton common share outstanding.

Note 2. Significant Accounting Policies

Principles of Consolidation

The consolidated financial statements include the accounts of Axcelis and its subsidiaries. All significant intercompany balances and transactions are eliminated in consolidation. The equity method of accounting is used to account for the Company's 50% investment in SEN.

Use of Estimates

The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Actual results could differ from those estimates.

Foreign Currency

The functional currency for all operations outside the United States is the local currency. Financial statements for these operations are translated into United States dollars at year-end rates as to assets and liabilities and average exchange rates as to revenues and expenses. The resulting translation adjustments are recorded in stockholders' equity as the only element of accumulated comprehensive income (loss). Foreign currency transaction gains and losses recorded in the consolidated statements of operations are not material for all periods presented.

Cash, Cash Equivalents and Short-Term Investments

Cash and cash equivalents are highly liquid investments (primarily time deposits) acquired with a remaining maturity of three months or less at the time of acquisition. Short-term investments, which are intended to be held to maturity, are highly liquid investments with a remaining maturity greater than three months at the time of acquisition. The carrying values of cash equivalents and short-term investments in the consolidated balance sheets approximated their estimated fair values.

Restricted Cash

Restricted cash at December 31, 2003 consists of cash collateralizing standby letters of credit of $3,800 and a bank guarantee of $2,616.

Inventories

Inventories are carried at lower of cost, determined using the first-in, first-out (FIFO) method, or market.

Axcelis records an allowance for estimated excess and obsolete inventory. The allowance is determined using management's assumptions of future materials usage, based on estimates of future demand and market conditions. If actual market conditions become less favorable than those projected by management, additional inventory write-downs may be required.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Depreciation is computed by the straight-line method for financial statement purposes. The historical cost of buildings is depreciated over forty years and machinery and equipment principally over three to ten years. Expenditures for maintenance and repairs are expensed as incurred. Expenses for renewals and betterments are capitalized.

Impairment of Long-Lived Assets

Long-lived assets (primarily property, plant and equipment and intangible assets) are reviewed for impairment losses whenever events or changes in circumstances indicate the carrying amount may not be recoverable. Events or circumstances that would result in an impairment review primarily include operations reporting sustained losses or a significant change in the use of an asset. An impairment loss would be recognized based on the amount by which the carrying value of the asset exceeds its fair value.

Goodwill

For years prior to 2002 substantially all goodwill was amortized over 15 years. Effective January 1, 2002, the Company adopted Statement of Financial Accounting Standard (SFAS) No. 142, "Goodwill and Other Intangible Assets" which eliminated the requirement to amortize goodwill.

The Company tests for impairment of goodwill on an annual basis or whenever events and changes in circumstances suggest that the carrying amount may not be recoverable. As of December 31, 2003, the Company completed its annual assessment and determined that goodwill was not impaired.

Concentration of Risk

Financial instruments, which potentially expose Axcelis to concentrations of credit risk, consist principally of accounts receivable, cash equivalents and short-term investments. Axcelis' customers consist of semiconductor manufacturers located throughout the world. Axcelis' net sales to its ten largest customers accounted for 66.8%, 63.5% and 50.6% of net sales in 2003, 2002 and 2001,

respectively. Axcelis performs ongoing credit evaluations of its customers' financial condition and generally requires no collateral to secure accounts receivable. For selected overseas sales, Axcelis requires customers to obtain letters of credit before product is shipped. Axcelis maintains an allowance for doubtful accounts based on its assessment of the collectibility of accounts receivable.

Axcelis' exposure to market risk for changes in interest rates relates primarily to our investment portfolio, which consists entirely of cash-equivalents and short-term investments at December 31, 2003. The primary objective of our investment activities is to preserve principal while maximizing yields without significantly increasing risk. This is accomplished by investing in marketable high investment grade securities, and by limiting exposure to any one issue or issuer. We do not use derivative financial instruments in managing our investment portfolio and, due to the nature of our investments, we do not expect our operating results or cash flows to be affected to any significant degree by any change in market interest rates. As of December 31, 2003, all investments mature within 90 days and are carried at cost, which approximates fair value.

Some of the components and subassemblies included in our products are obtained either from a sole source or a limited group of suppliers, which could result in disruptions to our operations.

Fair Value of Financial Instruments

The fair values of the Company's cash, cash equivalents and short-term investments approximate their carrying values (cost) at December 31, 2003. The fair value of the Company's convertible subordinated notes at December 31, 2003, estimated based on quoted market prices, approximated $119,375.

Revenue Recognition

The Company's revenue recognition policy involves significant judgment by management. As described in detail below, the Company considers a broad array of facts and circumstances in determining when to recognize revenue, including contractual obligations to the customer, the complexity of the customer's post delivery acceptance provisions, and the installation process. In the future, if the post delivery acceptance provisions and installation process become more complex or result in a materially lower rate of acceptance than we now experience, the Company may have to revise its revenue recognition policy, which could affect the timing of revenue recognition.

For revenue arrangements prior to July 1, 2003 Axcelis generally recognized the full sale price at the time of shipment to the customer. The costs of system installation at the customer's site were accrued at the time of shipment for installation and acceptance testing performance obligations incurred at the time of sale. The Company recognized the full sales price at the time of shipment as management believes that the customer's post delivery acceptance provisions and installation process were established to be routine, commercially inconsequential and perfunctory because the process was a replication of the pre-shipment procedures. Also, customer payment terms typically provide that the majority of the purchase price is payable upon shipment. Terms do generally contain delayed payment arrangements for a portion of the purchase price, which are typically time-based.

In November 2002, the Financial Accounting Standards Board's Emerging Issues Task Force reached a consensus on Issue No. 00-21, "Accounting for Revenue Arrangements with Multiple Deliverables" ("EITF 00-21"). This issue addresses determination of whether an arrangement involving more than one deliverable contains more than one unit of accounting and how the arrangement consideration should be measured and allocated to the separate units of accounting. EITF 00-21 became effective for revenue arrangements entered into in periods beginning after June 15, 2003.

For revenue arrangements occurring on or after July 1, 2003, the Company has revised its revenue recognition policy to comply with the provisions of EITF 00-21. Axcelis' revenue transactions include

sales of systems under multiple element arrangements. Revenue under these arrangements is allocated to all elements, except systems, based upon their estimated fair market value. The amount of revenue allocated to systems is calculated on a residual method. Under this method, the total value of the arrangement is allocated first to the undelivered elements based on the greater of the fair value of the undelivered elements or the portion of the sales price that will not be received until the elements are delivered, with the residual amount being allocated to systems revenue. The amount allocated to installation is based upon hourly rates and the estimated time to complete the service. The fair value of all other elements is based upon the price charged when these elements are sold separately. System revenue is generally recognized upon shipment provided title and risk of loss has passed to the customer, evidence of an arrangement exists, fees are contractually fixed or determinable, collectibility is reasonably assured through historical collection results and regular credit evaluations, and there are no uncertainties regarding customer acceptance. Revenue for installation services is recognized at the time of customer acceptance. Revenue for other elements is recognized at the time products are shipped or the related services are performed.

Management continues to believe recognition of systems revenue at the time of shipment is appropriate because the customer's post delivery acceptance provisions and installation process have been established to be routine, commercially inconsequential and perfunctory because the process is a replication of the pre-shipment procedures. The majority of Axcelis' systems are designed and tailored to meet the customer's specifications as outlined in the contract between the customer and Axcelis. To ensure that the customer's specifications are satisfied, per contract terms, many customers request that newer systems are to be tested at Axcelis' facilities prior to shipment, normally with the customer present, under conditions that substantially replicate the customer's production environment and the customer's criteria are confirmed to have been met. Customers for mature products generally do not require pre-shipment testing. Axcelis has never failed to successfully complete a system installation. Should an installation not be successfully completed, the contractual provisions do not provide for forfeiture, refund or other purchase price concession beyond those prescribed by the provisions of the Uniform Commercial Code applicable generally to such transactions.

In the small number of instances where Axcelis is unsure of meeting the customer's specifications upon shipment of the system, Axcelis will defer the recognition of systems revenue until written customer acceptance of the system. This deferral period is generally within twelve months of shipment.

Service revenue includes revenue from spare parts, equipment upgrades and maintenance services. Revenue related to maintenance and service contracts is recognized ratably over the duration of the contracts. Revenue related to time and material services is recorded when the services are performed. Revenue related to spare parts sales is recognized upon the later of shipment or when the title and risk of loss passes to the customer.

Shipping and Handling Costs

Shipping and handling costs are included in cost of products sold.

Stock-Based Compensation

As permitted under Statement of Financial Accounting Standards (SFAS) No. 123, "Accounting for Stock-Based Compensation," as amended by SFAS No. 148 "Accounting for Stock-Based Compensation Transition and Disclosure," Axcelis has elected to follow the provisions of Accounting Principles Board (APB) No. 25 to account for stock-based awards to employees. Under APB No. 25, compensation expense with respect to such awards is not recognized, if on the date the awards were granted, the exercise price equaled the market value of the common shares.

As required by SFAS No. 123 the following proforma information is presented as if Axcelis had accounted for stock-based awards to its employees granted subsequent to 1995 under the fair value

method. The fair values of the options granted have been estimated at the date of grant using the Black-Scholes options pricing model with the following assumptions:

	Axcelis Stock Option Plan		
	2003	2002	2001
Dividend yield	0%	0%	0%
Expected volatility	74%	80%	139%
Risk-free interest rate	2.5% to 3.6%	2.8% to 4.5%	4.3% to 4.8%
Expected option life in years	4	4	4
Weighted average fair value per share of options granted during the year	$4.77	$6.08	$11.77

The Black-Scholes options valuation model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions, including the expected stock price volatility. Because Axcelis' options have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in the opinion of management, the existing models do not necessarily provide a reliable single measure of the fair value of the Company's options.

For purposes of the following pro forma information, the estimated fair values of the options are assumed to be amortized to expense over the options' vesting periods.

	Year Ended December 31		
	2003	2002	2001
Net loss, as reported	$(113,876)	$(26,150)	$(20,163)
Deduct: Total stock-based employee compensation expense determined under fair value based method for all awards, net of related income tax effect	(20,167)	(15,855)	(12,645)
Pro forma net loss	$(134,043)	$(42,005)	$(32,808)
Net loss per share (basic and diluted)			
As reported	$ (1.16)	$ (0.27)	$ (0.21)
Pro forma	$ (1.36)	$ (0.43)	$ (0.34)

Deferred Income Taxes

The Company has deferred tax assets resulting from tax credit carryforwards, net operating losses and other deductible temporary differences, which are available to reduce taxable income in future periods. SFAS No. 109 "Accounting for Income Taxes" requires that a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the Company operates, length of carryback and carryforward periods, existing sales backlog and projections of future operating results. Where there are cumulative losses in recent years, SFAS No. 109 creates a strong presumption that a valuation allowance is needed. This presumption can be overcome in very limited circumstances.

As of March 31, 2003 and December 31, 2002, the Company's evaluation of the realization of these assets was based upon evidence of cumulative historical profitability and estimates of future taxable income. The Company was profitable in year 2000 but was not profitable in years 2001 and

2002. Projections of future earnings were based on revenue assumptions consistent with industry forecasts for the next three years along with the necessary operating expenses to support the Company's revenue assumptions. Based on these projections, the Company estimated that the loss carryforwards would be fully utilized within three years. During the second quarter of 2003, the Company entered a three year cumulative loss position and revised its projections of the amount and timing of future earnings. Due to these factors as well as the uncertainty of the amount and timing of profitability in future periods, the Company increased its valuation allowance as of June 30, 2003. This non-cash charge to earnings increased income tax expense by $69.7 million for the year ended December 31, 2003.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability and until such time, the Company would not expect to recognize any significant tax benefits in its future results of operations. However, going forward should the Company return to profitability and there is sufficient evidence, in accordance with the provisions of SFAS No. 109, to support the ultimate realization of income tax benefits attributable to net operating losses, tax credit carryforwards and other deductible temporary differences, a reduction in the valuation allowance may be recorded and the carrying value of deferred tax assets may be restored, resulting in a non-cash credit to earnings.

Net Income (Loss) Per Share

SFAS No. 128, "Earnings Per Share," requires two presentations of earnings per share, "basic" and "diluted". Basic earnings per share is computed by dividing income available to common stockholders (the numerator) by the weighted-average number of common shares outstanding (the denominator) for the period. The computation of diluted earnings per share is similar to basic earnings per share, except that the denominator is increased to include the number of additional common shares that would have been outstanding if the potentially dilutive common shares had been issued. Shares used in the calculation of basic and diluted earnings per share were 98,514, 97,920 and 97,215 for the years ended December 31, 2003, 2002 and 2001, respectively.

The Company has excluded 8,179, 6,960, and 1,165 of common stock equivalents attributable to outstanding stock options, computed using the treasury stock method, and conversion of the notes, computed using the if converted method, from the computation of diluted earnings per share in 2003, 2002, and 2001, respectively, because they are anti-dilutive.

Reclassifications

Certain prior year balances have been reclassified to conform with the current year presentation.

Recent Accounting Pronouncements

In January 2003, the Financial Accounting Standards Board ("FASB") issued Interpretation No. 46 "Consolidation of Variable Interest Entities, an Interpretation of Accounting Research Bulletin No. 51" (FIN 46). FIN 46 provides a new consolidation model which determines control and consolidation based on potential variability in gains and losses. The provisions of FIN 46 are effective for enterprises with variable interests in variable interest entities created after January 31, 2003. For public companies with variable interest in variable interest entities created before February 1, 2003, the provisions of FIN 46 are to be applied no later than March 31, 2004. The Company has determined that its equity investment in SEN does not constitute a variable interest entity that would require consolidation. Accordingly, FIN 46 did not have any impact on the Company's consolidated financial statements.

Note 3. Accounts Receivable

The components of accounts receivable follow:

	December 31,	
	2003	2002
Trade receivables	$77,115	$56,498
Other receivables	11,138	6,762
Sumitomo Eaton Nova Corporation	495	695
	88,748	63,955
Allowance for doubtful accounts	(3,823)	(3,644)
	$84,925	$60,311

Note 4. Inventories

The components of inventories follow:

	December 31,	
	2003	2002
Raw materials	$ 84,773	$ 77,085
Work in process	32,292	27,237
Finished goods	6,920	10,968
	$123,985	$115,290

Note 5. Property, Plant & Equipment

The components of property, plant and equipment follow:

	December 31,	
	2003	2002
Land & buildings	$65,966	$72,806
Machinery & equipment	63,977	67,899
Construction in process	4,340	5,164
	134,283	145,869
Accumulated depreciation	(53,356)	(52,272)
	$80,927	$93,597

A building held for sale at December 31, 2003, of approximately $5,900, is included in other current assets. The sale was finalized during January 2004.

Note 6. Goodwill & Intangible Assets

Effective January 1, 2002, the Company adopted SFAS No. 142 which eliminated the requirement to amortize goodwill and indefinite-lived intangible assets, addressed the amortization of intangible assets with a definite life and established criteria for measuring and recognition of impairment of goodwill and indefinite-lived intangible assets. The adoption of SFAS No. 142 in the fiscal first quarter of 2002 and subsequently updated in the fiscal fourth quarter of 2002, did not require the recognition of a loss due to goodwill impairment, and resulted in no amortization of goodwill for the twelve months ended December 31, 2002. The Company also determined that based on an examination of the economic life of its intangible assets as of January 1, 2002, the amortization period for these intangible assets should be ten years from that date.

The Company tests for impairment of goodwill on an annual basis or whenever events and changes in circumstances suggest that the carrying amount may not be recoverable. As of December 31, 2003, the Company completed its annual assessment and determined that goodwill was not impaired.

In connection with the acquisition of Matrix Integrated Systems, Inc. on July 3, 2003, the Company recorded goodwill of $6,092 and other intangible assets of $8,933.

The components of intangible assets follow:

	December 31,	
	2003	2002
Developed technology	$48,030	$40,000
Customer-related	903	—
	48,933	40,000
Accumulated amortization	(28,814)	(26,859)
	$20,119	$13,141

The estimated useful lives of intangible assets ranges from five to ten years. Estimated amortization expense for the year ending December 31, 2004 and for each of the four succeeding years is $2,448.

Had SFAS No. 142 been adopted for the year ended December 31, 2001, the impact on net loss and net loss per share would have been as follows:

	2001
Reported net loss	$(20,163)
Add back: Goodwill amortization, net of tax	1,780
Adjust: Intangible asset amortization, net of tax	2,122
Adjusted net loss	$(16,261)
Reported net loss per share:	$ (0.21)
Add back: Goodwill amortization, net of tax	0.02
Adjust: Intangible asset amortization, net of tax	0.02
Adjusted net loss per share	$ (0.17)

Note 7. Acquisition of Matrix Integrated Systems

On July 3, 2003, the Company completed the acquisition of Matrix Integrated Systems, Inc. (“Matrix”), a photoresist dry strip equipment supplier based in Richmond, California for cash and acquisition expenses of $14.6 million. The acquisition was accounted for as a purchase. Accordingly, the

results of operations of Matrix have been included in the Company's results of operations since the date of acquisition. Pro forma information is not presented because the acquisition is not considered material.

Note 8. Restructuring Charges

Restructuring charges of $4.9 million relate to severance and other benefits associated with reduction in force actions taken, during the third quarter of 2003 that reduced headcount by approximately 200 permanent positions. At December 31, 2003 $4.0 million had been paid, with the remaining balance of $0.9 million expected to be paid by the end of the third quarter of 2004.

Note 9. Product Warranty and Installation

The Company offers a one to three year warranty for all of its products, the terms and conditions of which vary depending upon the product sold. Prior to July 1, 2003, the Company estimated the costs that may be incurred under its standard warranty and product installation obligation and recorded a liability in the amount of such costs at the time product revenue was recognized. Subsequent to July 1, 2003, in connection with the change in its revenue recognition policy (see Revenue Recognition), the Company no longer accrues the estimated costs of its installation but defers the revenue related to the greater of the fair value of the installation services or the amount of revenue that is contingent upon the completion of the installation services. Factors that affect the Company's warranty and installation liability include the number of installed units, historical and anticipated product failure rates, material usage and service labor costs. The Company periodically assesses the adequacy of its recorded warranty and installation liability and adjusts the amount as necessary.

Changes in the Company's product warranty and installation liability for the years ended December 31, 2003 and 2002 are as follows:

	Years ended December 31,	
	2003	2002
Beginning balance	$16,625	$24,218
Warranties and installations issued during the period	22,292	19,079
Settlements made during the period	(22,314)	(25,936)
Changes in liability for pre-existing warranties and installations during the period	397	(736)
Balance at December 31, 2003	$17,000	$16,625

Note 10. Financing Arrangements

Revolving Credit Facility

In October 2003 the Company renegotiated its $50 million revolving credit facility to extend the maturity to October 2006. The purpose of the facility is to provide funds for working capital and general corporate purposes as required. To the extent that the Company has borrowings under the agreement, those borrowings would bear interest at the bank's base rate, as defined in the agreement, or LIBOR plus an applicable percentage. The Company currently has no plans to borrow against the facility but may use the facility to support letters of credit in the future. The credit facility is secured by substantially all of the Company's assets and contains certain financial and other restrictive covenants including minimum levels of tangible net worth, liquidity, profitability and indebtedness as well as maximum levels of capital spending. At December 31, 2003 the Company did not meet a required liquidity threshold to allow it to borrow against the facility. The Company estimates that it will satisfy

this liquidity threshold by the second quarter of 2004 and that borrowings pursuant to the terms of the underlying credit agreement will be available if needed.

Convertible Subordinated Notes

In January 2002, the Company completed an offering of $125 million of 4.25% Convertible Subordinated Notes ("the Notes"), which mature on January 15, 2007. Interest on the Notes is payable on January 15 and July 15 of each year, commencing July 15, 2002. The Notes are convertible into shares of Axcelis common stock at any time prior to the close of business on the maturity date, unless previously redeemed, at a conversion price of $20.00 per share, subject to certain adjustments. The Notes are redeemable, in whole or in part, at the option of the Company beginning on January 19, 2005 with at least 30 days notice at redemption prices starting at 101.7% and at diminishing prices thereafter, plus accrued interest. The Notes are unsecured and subordinated in right of payment in full to all existing and future senior indebtedness, as defined. Expenses associated with the offering of approximately $3.6 million have been deferred and are being amortized to interest expense using the straight-line method, which approximates the effective interest method, over the term of the Notes.

Note 11. Defined Contribution Plan

The Company maintains the Axcelis Long-Term Investment Plan, a defined contribution plan that became effective on January 1, 2001. All regular employees are eligible to participate and may contribute up to 35% of their compensation on a before-tax basis subject to IRS limitations. Highly compensated employees may contribute up to 12% of their compensation on a before-tax basis subject to IRS limitations. During 2003, the Company matched employee contributions in an amount equal to the greater of (A) 100% of the employee's pre-tax contributions up to $1,000 or (B) 50% of the employee's pre-tax contributions, up to the first 6% of eligible compensation. In 2002, the Company's match was set at 100% of the employee's pre-tax contributions up to $1,000. In 2001, the Company's match was set at 50% of the employee's pre-tax contributions, up to the first 6% of eligible compensation. Under this plan, $2.3 million, $1.3 million and $2.7 million was recognized as expense in 2003, 2002 and 2001, respectively.

Note 12. Stock Award Plans

Axcelis Stock Plan

The Company maintains the Axcelis Technologies, Inc. 2000 Stock Plan (the Plan), a stock award and incentive plan which permits the issuance of options, stock appreciation rights, restricted stock, and performance awards to selected employees, directors and consultants of the Company. The Plan originally reserved 18.5 million shares of common stock for grant under the Plan, which original maximum amount increases annually on July 14th by the lesser of (i) five percent (5%) of the then number of outstanding shares of Common Stock, (ii) 5.0 million shares or (iii) such lesser amount as may be determined by the Board. The effect of this provision was to increase the shares available for grant under the Plan by 4.9 million in each of the years ended December 31, 2003, 2002 and 2001. Expiration of options or stock appreciation rights are based on award agreements, or in the case of incentive stock options, awards expire ten years from the date of grant. Non-qualified stock options may, if approved by the Board of Directors, have a stated term in excess of ten years. Generally, awards terminate upon termination of employment (or 90 days thereafter) for options granted to employees. Under the terms of the Plan, the exercise price, determined by the Board of Directors, may not be less than the fair market value of a share of the Company's common stock on the date of grant.

The following table summarizes Axcelis' stock option activity as of and for the years ended December 31, 2003 and 2002 and 2001:

	2003		2002		2001	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price
Outstanding at beginning of year	13,016	$13.13	9,364	$15.05	7,695	$15.33
Granted	3,353	8.27	4,973	10.04	2,264	13.89
Exercised	(104)	7.32	(22)	6.79	(133)	8.84
Forfeited	(2,094)	12.58	(1,299)	15.31	(462)	14.08
Outstanding at end of year	14,171	$12.10	13,016	$13.12	9,364	$15.05
Available for grant at end of year	18,568		14,944		13,725	

The following table summarizes information with respect to stock options outstanding and exercisable at December 31, 2003:

Range of Exercise Price	Outstanding at December 31, 2003	Weighted-Average Exercise Price	Exercisable at December 31, 2003	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life
$ 4.63–$ 6.88	3,128	$ 5.81	515	$ 6.00	8.8 Years
$ 7.13–$10.65	3,898	9.18	2,399	8.93	6.2
$10.75–$16.12	4,367	12.96	1,582	13.71	8.5
$16.40–$22.00	2,778	21.95	2,261	21.94	6.5
	14,171	$12.10	6,757	$14.18	7.5

There were 174 and 106 shares of restricted stock outstanding under the Plan at December 31, 2003 and 2002, respectively.

Note 13. Stockholders' Equity

Common Stock Repurchase

In November 2000, the Board of Directors authorized the repurchase up to six million shares. Through December 31, 2003, 120 shares had been repurchased at a cost of $1,218. The repurchase program expires March 2004 (three years after the initial purchase transaction under the program).

Preferred Stock

The Company may issue up to 30 million shares of preferred stock in one or more series. The Board of Directors is authorized to fix the rights and terms for any series of preferred stock without additional shareholder approval. In June 2000, the Board of Directors authorized and designated 3 million shares of preferred stock as Series A Participating Preferred Stock for issuance pursuant to our Shareholder Rights Plan discussed below. As of December 31, 2003 and 2002, there were no outstanding shares of preferred stock.

Shareholder Rights Plan

In June 2000, the Board of Directors adopted a Shareholder Rights Plan and declared a dividend distribution of one share purchase right (a "Right") for each outstanding share of common stock to stockholders of record at the close of business on June 30, 2000. Each share of common stock newly issued after that date also will carry with it one Right. Each Right will entitle the record holder to

purchase from the Company one one-hundredth of a share of Series A Participating Preferred Stock at an exercise price of $110.00 per Right subject to adjustment. If certain takeover events occur, exercise of the rights would entitle the holders thereof (other than the acquiring person or group) to receive common shares or common stock of a surviving corporation, or cash, property or other securities, with a market value equal to twice the purchase price. These takeover events include a person or group becoming the owner of 20% or more of our outstanding common stock or the commencement of, or announcement of an intention to make, a tender offer or exchange offer the consummation of which would result in the beneficial ownership by a person or group of 20% or more of the Company's outstanding common shares. The Rights expire in June 2020, and may be redeemed by the Company at the option of our Board of Directors, for $.001 per Right.

Employee Stock Purchase Plan

The Company maintains the 2000 Employee Stock Purchase Plan, which provides effectively all Axcelis employees the opportunity to purchase common stock of the Company at less than market prices. Purchases are made through payroll deductions up to 10% of the employee's salary, subject to certain caps set forth in the plan. Generally, employees may purchase Axcelis common stock at 85% of the market value of the Company's common stock on the first trading day of each offering period or on the day the stock is purchased, whichever is lower. The purchase price may be adjusted by a committee of the Board of Directors. Compensation expense is not recognized by the Company because the plan is a non-compensatory plan under Section 423 of the Internal Revenue Code. The number of shares of common stock that may be issued under the stock purchase plan is 2.5 million shares, plus an annual increase to be added on the last day of each fiscal year beginning in 2001 equal to one percent of the outstanding shares on such date, or a lesser amount approved by the Board of Directors. The effect of this provision was to increase the shares available for grant under the Plan by 990, 982 and 971 in 2003, 2002 and 2001, respectively. The maximum shares that may be issued under the plan may not exceed 7.5 million shares. The Company issued 582, 735,and 312, shares under the plan in 2003, 2002 and 2001, respectively.

At December 31, 2003, 14,171 shares of common stock were reserved for issuance on outstanding options granted under the Axcelis stock plan and 18,568 shares are available for issuance on future stock awards under that plan. In addition, 3,814 shares have been reserved for issuance under the employee stock purchase plan and 6,250 upon conversion of the Notes.

Note 14. Lease Commitments

At December 31, 2003, the Company had lease commitments into 2007. Minimum rental commitments under noncancelable operating leases, which expire at various dates and in most cases contain renewal options, are as follows (in millions): 2004, $4.9; 2005, $2.9; 2006, $2.4; 2007, $2.1.

Rental expense in 2003, 2002, and 2001 (in millions) was $8.5, $9.2, and $8.8, respectively.

Note 15. Business Segment and Geographic Region Information

Axcelis operates in one business segment, which is the manufacture of capital equipment for the semiconductor manufacturing industry. The principal market for semiconductor manufacturing equipment is semiconductor manufacturers. Substantially all sales are made directly by Axcelis to customers located in the United States, Europe and Asia Pacific.

Axcelis' ion implantation systems product line includes high and medium current implanters and high energy implanters and services. Other products include dry strip equipment, photostabilizers, and thermal processing systems. In addition to equipment, Axcelis provides aftermarket service and support, including spare parts, equipment upgrades, maintenance services and customer training.

Net sales by product line follow:

	2003	2002	2001
Ion implantation systems & services	$237,213	$233,157	$292,263
Other products systems & services	84,760	76,548	73,001
	$321,973	$309,705	$365,264

Net sales and long-lived assets by geographic region based on the physical location of the operation recording the sale or the asset, follow:

	Net Sales	Long-Lived Assets
2003		
United States	$265,964	$79,396
Europe	26,016	343
Asia Pacific	29,993	1,188
	$321,973	$80,927
2002		
United States	$263,772	$91,709
Europe	23,557	362
Asia Pacific	22,376	1,526
	$309,705	$93,597
2001		
United States	$314,567	$90,489
Europe	33,996	359
Asia Pacific	16,701	1,770
	$365,264	$92,618

Long-lived assets consist of property, plant and equipment, net. Operations in Europe and Asia Pacific consist of sales and service organizations.

International sales, including export sales from our U.S. manufacturing facilities to foreign customers and sales by our foreign subsidiaries and branches, were $208,110 (64.6%), in 2003, $161,132 (52.0%) in 2002, and $226,483 (62.0%) in 2001.

Note 16. Income Taxes

Income (loss) before income taxes for the years ended December 31 follows:

	2003	2002	2001
United States	$(55,810)	$(55,038)	$(58,643)
Foreign	2,515	489	6,037
Equity income of Sumitomo Eaton Nova Corporation	8,954	4,806	12,205
	$(44,341)	$(49,743)	$(40,401)

Income taxes (credit) for the years ended December 31 follow:

	2003	2002	2001
Current			
United States			
Federal	—	$ 8,683	$ (6,859)
State	$ 378	2,929	(556)
Foreign	255	4,443	3,194
Total current	633	16,055	(4,221)
Deferred			
United States	66,102	(37,093)	(14,708)
Foreign	2,800	(2,555)	(1,309)
Total deferred	68,902	(39,648)	(16,017)
Income taxes (credit)	$69,535	$(23,593)	$(20,238)

Reconciliations of income taxes (credit) at the United States Federal statutory rate to the effective income tax rate for the years ended December 31 follow:

	2003	2002	2001
Income tax credit at the United States statutory rate	$(15,520)	$(17,410)	$(14,140)
State taxes, net of federal income tax benefit	378	(997)	225
Change in valuation allowance	80,999	900	—
Deemed distribution from foreign subsidiaries	9,007	—	—
Credit for increasing research activities	(4,698)	(5,791)	(2,048)
Foreign income tax rate differentials	(29)	(229)	(227)
Equity income of Sumitomo Eaton Nova Corporation	(3,134)	(1,682)	(4,272)
Other—net	2,532	1,616	224
	$ 69,535	$(23,593)	$(20,238)

Significant components of current and long-term deferred income taxes at December 31 follow:

	Current Assets	Long-term Assets
2003		
Inventories	$ 11,119	—
Warranty	5,950	—
Accrued vacation	477	—
Deferred revenue	4,532	$ 733
Property, plant & equipment	—	(5,279)
Intangible assets	—	(4,680)
Tax net operating loss carryforwards	—	48,315
Tax credit carryforwards	—	28,775
Other items		1,671
Valuation allowance	(22,078)	(69,535)
	$ —	$ —
2002		
Inventories	$ 10,105	—
Warranty	3,684	—
Accrued vacation	592	—
Property, plant & equipment	—	$ (2,071)
Intangible assets	3	(6,819)
Net operating loss carryforwards	—	47,904
Tax credit carryforwards	—	17,219
Other items	2,165	1,803
Valuation allowance	—	(900)
	$ 16,549	$ 57,136

At December 31, 2003, the Company has approximately $91.6 million of deferred tax assets resulting from tax credit carryforwards, net operating losses, and other deductible temporary differences, which are available to reduce taxable income in future periods. SFAS No. 109 "Accounting for Income Taxes" requires that a valuation allowance be established when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. A review of all available positive and negative evidence needs to be considered, including a company's performance, the market environment in which the Company operates, length of carryback and carryforward periods, existing sales backlog, and projections of future operating results. Where there are cumulative losses in recent years, SFAS No. 109 creates a strong presumption that a valuation allowance is needed. This presumption can be overcome in very limited circumstances.

At December 31, 2002 and March 31, 2003, the Company's evaluation of the realization of these assets was based upon evidence of cumulative historical profitability and estimates of future taxable income. The Company was profitable in 2000 but was not profitable in 2001 and 2002. Projections of future earnings were based on revenue assumptions consistent with industry forecasts for the next three years along with the necessary operating expenses to support the Company's revenue assumptions. Based on these projections, the Company estimated that the loss carryforwards would be fully utilized within three years.

During the second quarter of 2003, the Company entered a three year cumulative loss position and revised its projections of the amount and timing of profitability in future periods. As a result, the Company increased its valuation allowance as of June 30, 2003. The valuation allowance for deferred tax assets amounted to $91.6 million and $.9 million at December 31, 2003 and 2002, respectively. The

increase in valuation allowance of $90.7 million for the year ended December 31, 2003 consists of $81.0 million charged to income tax expense, $4.8 million reclassified from current taxes payable, and $4.9 million related to deferred tax assets obtained with the acquisition of Matrix Integrated Systems, Inc. in July 2003.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability and until such time, the Company would not expect to recognize any significant tax benefits in its future results of operations. However, going forward should the Company return to profitability and there is sufficient evidence, in accordance with the provisions of SFAS No. 109, to support the ultimate realization of income tax benefits attributable to net operating losses, tax credit carryforwards, and other deductible temporary differences, a reduction in the valuation allowance may be recorded and the carrying value of deferred tax assets may be restored, resulting in a non-cash credit to earnings.

At December 31, 2003, the Company has federal, state, and foreign tax net operating loss carryforwards, the tax effect of which is approximately $48.3 million. Net operating loss carryforwards from acquired businesses, the future tax benefit of which approximates $4.5 million, can be used to offset future taxable income subject to certain annual limitations. Any future income tax benefits related to net operating loss carryforwards of acquired businesses will be recorded as a reduction of goodwill during the period the benefit is realized.

The Company has research and development tax credit carryforwards of approximately $20.3 million at December 31, 2003 that can be used to reduce future U.S. income tax liabilities. The carryforwards expire between 2021 and 2023. In addition, the Company has foreign tax credit carryforwards of approximately $8.5 million at December 31, 2003 that are available to reduce future U.S. income tax liabilities subject to certain limitations. These foreign tax credit carryforwards expire between 2006 and 2008.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately $71.7 million at December 31, 2003, including $67.9 million attributable to the equity income of Sumitomo Eaton Nova Corporation. These earnings are considered to be indefinitely reinvested. Upon distribution of these earnings in the form of dividends or otherwise, some portion of the distribution would be subject to both U.S. income taxes and foreign withholding taxes, less an adjustment for applicable foreign tax credits. Determination of the amount of any U.S. income tax liability is not practicable because of the complexities associated with its hypothetical calculation.

Note 17. Significant Customers

Two customers individually accounted for 11.9% and 11.1% of net sales in 2003, respectively. One customer individually accounted for 14.2% of net sales in 2002 and no single customer represented more than 10% of net sales in 2001. Net sales to the Company's ten largest customers accounted for 66.8%, 63.5%, and 50.6%, of net sales, respectively, in 2003, 2002, and 2001.

Note 18. Sumitomo Eaton Nova Corporation (unaudited)

Sumitomo Eaton Nova Corporation (SEN) was established in 1982 under the Commercial Code of Japan and is owned equally by Sumitomo Heavy Industries, Ltd., a Japanese corporation, and Axcelis.

SEN designs, manufactures, sells and services ion implantation equipment in Japan under a license agreement with Axcelis. Summary financial information follows (in thousands):

	2003	2002	2001
Twelve months ended November 30:			
Net sales	$164,179	$138,690	$185,841
Gross profit	78,132	62,483	98,667
Income from operations	32,573	15,510	41,716
Net income	17,908	9,611	24,410
November 30:			
Current assets	185,705	122,596	113,963
Noncurrent assets	34,560	36,955	40,797
Current liabilities	72,570	42,522	57,472
Noncurrent liabilities	800	952	577

The year end for SEN is March 31. The consolidated statements of operations for Axcelis include the results of SEN for the twelve-month periods ended November 30, which represents a one-month lag. The information above has been presented as of and for the twelve months ended November 30 to conform to Axcelis' equity accounting for SEN.

A summary of Axcelis' transactions with SEN follows (in thousands):

	2003	2002	2001
Net sales to SEN	$3,179	$1,985	$8,390
Royalty income from SEN	5,866	8,275	5,835
Dividends received	456	464	444
Axcelis' equity in income of SEN	8,954	4,806	12,205
Accounts receivable at December 31 from SEN	495	695	401

Axcelis' retained earnings included $37.1 million and $28.6 million of undistributed earnings of SEN at December 31, 2003 and 2002, respectively.

Note 19. Transactions with Eaton Corporation

Commencing with the initial public offering, the Company entered into various agreements with Eaton, which provided for transitional services and support, including those associated with voice and data transmissions and other data-related operations, accounts receivable, accounts payable, fixed assets, payroll, general accounting, financial accounting consolidation, cash management, human resources, tax, legal and real estate. Under these agreements, the Company reimbursed Eaton for its direct and indirect costs of providing these services until the divestiture, and thereafter, for a limited time, the Company reimbursed Eaton for its costs plus an additional fee for providing certain of these additional services. The transition periods covered by these agreements vary, but generally expired on December 29, 2001. The agreements did not necessarily reflect the costs of obtaining these services from unrelated third parties or of providing the applicable services in-house. However, management believed that purchasing these services from Eaton provided an efficient means of obtaining these services during the transition period. Transition expenses included in Axcelis' consolidated statement of operations for the year ended December 31, 2001 amounted to $3.4 million. There were no transition expenses for the years ended December 31, 2002 and 2003.

Note 20. Quarterly Results of Operations (unaudited)

	Dec. 31, 2003[1]	Sept. 30, 2003[2]	June 30, 2003[3]	March 31, 2003	Dec. 31, 2002	Sept. 30, 2002	June 30, 2002	March 31, 2002
Net sales	$95,890	$59,007	$84,671	$82,405	$65,515	$93,117	$88,988	$62,085
Gross profit	35,761	13,899	27,016	27,675	18,895	36,445	33,228	15,397
Net income (loss)	3,270	(31,942)	(78,878)	(6,326)	(6,833)	191	(1,677)	(17,831)
Basic and diluted net income (loss) per share	$ 0.03	$ (0.32)	$ (0.80)	$ (0.06)	$ (0.07)	$ 0.00	$ (0.02)	$ (0.18)

(1) Includes decrease in warranty cost of $2.3 million and restructuring cost of $0.2 million.

(2) Includes increase in warranty cost of $4.3 million and restructuring cost of $4.7 million.

(3) Includes tax provision of $69.7 million related to an increase in the valuation allowance for deferred tax assets and a $1.7 million adjustment reducing selling, general and administrative expenses reflecting a change in estimate relating to unfunded pension expense and other benefit claims recorded in prior periods.

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.

AXCELIS TECHNOLOGIES, INC.

DATED: FEBRUARY 26, 2004

By: /s/ MARY G. PUMA
Mary G. Puma, Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

Signature	Title	Date
/s/ MARY G. PUMA Mary G. Puma	Director and Principal Executive Officer	February 26, 2004
/s/ STEPHEN G. BASSETT Stephen G. Bassett	Principal Accounting and Financial Officer	February 26, 2004
/s/ ALEXANDER M. CUTLER Alexander M. Cutler	Director	February 26, 2004
/s/ R. JOHN FLETCHER R. John Fletcher	Director	February 26, 2004
/s/ STEPHEN R. HARDIS Stephen R. Hardis	Director	February 26, 2004
/s/ WILLIAM C. JENNINGS William C. Jennings	Director	February 26, 2004
/s/ PATRICK H. NETTLES Patrick H. Nettles	Director	February 26, 2004
/s/ NAOKI TAKAHASHI Naoki Takahashi	Director	February 26, 2004
/s/ H. BRIAN THOMPSON H. Brian Thompson	Director	February 26, 2004
/s/ GARY L. TOOKER Gary L. Tooker	Director	February 26, 2004

EXHIBIT INDEX

Exhibit No.	Description
2.1	Tax Sharing and Indemnification Agreement between Eaton Corporation and the Company. Incorporated by reference from Exhibit 2.5 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
3.1	Amended and Restated Certificate of Incorporation of the Company. Incorporated by reference from Exhibit 3.1 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
3.2	Bylaws of the registrant, as amended as of January 23, 2002. Incorporated by reference from Exhibit 3.2 of the Company's Form 10-K for the year ended December 31, 2001, filed with the Commission on March 12, 2002.
3.3	Certificate of Designation of Series A Participating Preferred Stock, filed with the Secretary of State of Delaware on July 5, 2000. Incorporated by reference from Exhibit 3.3 of the Company's Form 10-K for the year ended December 31, 2000, filed with the Commission on March 30, 2001.
4.1	Specimen Stock Certificate. Incorporated by reference from Exhibit 4.1 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
4.2	Rights Agreement between the Company and EquiServe Trust Company, N.A. Incorporated by reference from Exhibit 4.1 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
4.3	Indenture between the Company and State Street Bank and Trust Company, as trustee, including the form of note, dated as of January 15, 2002. Incorporated by reference from Exhibit 4.1 to the Company's Report on Form 8-K filed with the Commission on January 15, 2002.
4.4	Registration Rights Agreement by and among the Company, Morgan Stanley & Co., Incorporated, Salomon Smith Barney Inc. and SG Cowen Securities Corporation, dated as of January 15, 2002. Incorporated by reference from Exhibit 4.2 to the Company's Report on Form 8-K filed with the Commission on January 15, 2002.
4.5	Revolving Credit Agreement dated as of October 3, 2003, among the Company, ABN Amro Bank N.V. and the other lenders named therein, as amended. Pursuant to Regulation S-K, Item 601(b)(4)(iii), this exhibit has not been filed, since the total amount of the facility does not exceed 10% of the Company's total assets at this time. The Company will furnish a copy of the Credit Agreement to the Commission on request.
10.1*	2000 Stock Plan, as amended on December 18, 2003. Filed herewith.
10.2*	Employee Stock Purchase Plan. Incorporated by reference from Exhibit 10.2 of the Company's Report on Form 10-Q filed with the Commission on November 14, 2000.
10.3	Form of Indemnification Agreement entered into by the Company with each of its directors and executive officers. Incorporated by reference from Exhibit 10.2 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.4*	Form of Change in Control Agreement between the registrant and certain of its executive officers. Incorporated by reference from Exhibit 10.3 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.5	Intentionally omitted.
10.6	Intentionally omitted.
10.7*	Employment Agreement between the Company and Mary G. Puma. Incorporated by reference from Exhibit 10.5 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).

Exhibit No.	Description
10.8**	Organization Agreement dated December 3, 1982 between Eaton Corporation and Sumitomo Heavy Industries, Ltd. relating to Sumitomo Eaton Nova Corporation, as amended. Incorporated by reference from Exhibit 10.6 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.9**	Master License Agreement dated January 16, 1996 between Eaton Corporation and Sumitomo Eaton Nova Corporation. Incorporated by reference from Exhibit 10.7 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.10*	Executive Officer Agreement dated as of December 18, 2003 between the Company and Stephen G. Bassett. Filed herewith.
14.1	Ethical Business Conduct at Axcelis, revised through January 2003. Incorporated by reference from Exhibit 14.1 of the Company's report on Form 10-K filed with the Commission on March 28, 2003.
21.1	Subsidiaries of the Company. Filed herewith.
23.1	Consent of Ernst & Young LLP, Independent Auditors. Filed herewith.
31.1	Certification of the Chief Executive Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated March 8, 2004. Filed herewith.
31.2	Certification of the Chief Financial Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated March 8, 2004. Filed herewith.
32.1	Certification of the Chief Executive Officer pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code (Section 906 of the Sarbanes-Oxley Act), dated March 8, 2004. Filed herewith.
32.2	Certification of the Chief Financial Officer pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code (Section 906 of the Sarbanes-Oxley Act), dated March 8, 2003. Filed herewith.
99.1	Factors affecting future operating results as of December 31, 2003. Filed herewith.
99.2	Charter of the Audit Committee of the Board of Directors of Axcelis, as adopted on January 23, 2003. Incorporated by reference to Exhibit 99.4 of the Company's report on Form 10-K filed with the Commission on March 28, 2003.
99.3	Governance Policies adopted by the Board of Directors of Axcelis on September 26, 2002 and amended on October 22, 2003. Filed herewith.
99.4	Charter of the Nominating and Governance Committee of the Board of Directors, as adopted on September 26, 2002. Incorporated by reference to Exhibit 99.6 of the Company's report on Form 10-K filed with the Commission on March 28, 2003.
99.5	Charter of the Compensation Committee of the Board of Directors of Axcelis, as adopted on January 23, 2003. Incorporated by reference to Exhibit 99.7 of the Company's report on Form 10-K filed with the Commission on March 28, 2003.

* Indicates a management contract or compensatory plan.

Certain confidential information contained in the document has been omitted and filed separately with the Securities and Exchange Commission pursuant to Rule 406 of the Securities Act of 1933, as amended, or Rule 24b-2 promulgated under the Securities and Exchange Act of 1934, as amended

BOARD OF DIRECTORS

Stephen R. Hardis
Chairman of the Board,
Axcelis Technologies, Inc.

Alexander M. Cutler
Chairman and Chief Executive Officer,
Eaton Corporation

William C. Jennings
Retired Partner, PriceWaterhouseCoopers LLP

Patrick H. Nettles
Executive Chairman of the Board of Directors,
CIENA Corporation

Mary G. Puma
President and Chief Executive Officer,
Axcelis Technologies, Inc.

Naoki Takahashi
Director, Sumitomo Heavy Industries, Ltd.

H. Brian Thompson
Chairman, Comsat International and
Chief Executive Officer,
Universal Telecommunications, Inc.

Gary L. Tooker
Former Chairman and Chief Executive Officer,
Motorola, Inc.

R. John Fletcher
Chief Executive Officer,
Fletcher Spaght, Inc.

EXECUTIVE OFFICERS

Mary G. Puma
President and Chief Executive Officer

Michael J. Luttati
Executive Vice President and Chief Operating Officer

Stephen G. Bassett
Acting Chief Financial Officer

David Duff, Ph.D.
Vice President and General Manager,
Ion Implant and Rapid Thermal Processing

Lynnette C. Fallon
Senior Vice President Human Resources and Legal,
General Counsel and Secretary

Jan-Paul van Maaren
Vice President and General Manager,
Curing and Cleaning

AUDIT COMMITTEE

Alexander M. Cutler, Chairman
H. Brian Thompson
Patrick H. Nettles
William C. Jennings

COMPENSATION COMMITTEE

H. Brian Thompson, Chairman
Stephen R. Hardis
Alexander M. Cutler
Gary L. Tooker

NOMINATING AND GOVERNANCE COMMITTEE

Patrick H. Nettles, Chairman
Stephen R. Hardis
Alexander M. Cutler

KEY MANAGEMENT

Kevin Brewer
Vice President of Manufacturing Operations

Matthew Flynn
Vice President, Global Customer Operations

Craig M. Halterman
Vice President and Chief Information Officer

John M. Poate Ph.D.
Vice President and Chief Technology Officer

Donald Palette
Vice President, Finance Controller

ANNUAL MEETING DATE & LOCATION

The annual meeting of stockholders will be held at 11:00 a.m. on Thursday, April 29, 2004 at the offices of Palmer & Dodge, LLP, 111 Huntington Avenue, Boston, Massachusetts.

CORPORATE HEADQUARTERS

108 Cherry Hill Drive
Beverly, MA 01950-1053
978-787-4000

INDEPENDENT AUDITORS

Ernst & Young LLP
200 Clarendon Street
Boston, MA 02116-5072

INVESTOR INFORMATION

Information on the Company, as well as Form 10-K Report and other SEC filings, can be obtained on our website at http://www.axcelis.com or by contacting our Investor Relations Manager at Axcelis Technologies, Inc., 108 Cherry Hill Drive, Beverly, MA 01950-1053. You can also E-mail investor relations at investor-relations@axcelis.com.

LEGAL COUNSEL

Palmer & Dodge LLP
111 Huntington Avenue at Prudential Center
Boston, MA 02108-3190

SEC FORM 10-K

Copies of the Company's 2003 Annual Report on Form 10-K as filed with the Securities and Exchange Commission may be obtained free of charge by writing to the Company at 108 Cherry Hill Drive, Beverly, Massachusetts, 01915, Attention: Lynnette C. Fallon, Corporate Secretary.

STOCK LISTING

The Company's common stock is traded on the Nasdaq Stock Market System under the symbol ACLS.

TRANSFER AGENT & REGISTRAR

For questions regarding misplaced stock certificates, changes of address, or the consolidation of accounts, please contact the Company's transfer agent:

Equiserve Trust Company, NA
Shareholder Services
P.O. Box 43010
Providence, RI 02940-3010
E-mail Address: equiserve@equiserve.com
http://www.equiserve.com

WEBSITE

http://www.axcelis.com

SAFE HARBOR STATEMENT

This document contains forward-looking statements under the SEC safe harbor provisions. These statements are based on management's current expectations and should be viewed with caution. They are subject to various risks and uncertainties, many of which are outside the control of the company, including our ability to implement successfully our profit plans, the continuing demand for semiconductor equipment, relative market growth, continuity of business relationships with and purchases by major customers, competitive pressure on sales and pricing, increases in material and other production costs that cannot be recouped in product pricing and global economic and financial conditions.

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