

Axcelis Annual Report 2004



Powered by Insight

axcelis



Letter to Shareholders:

2004 marked a year of solid financial performance and strong operational execution for Axcelis. We continued to make progress in areas critical to our future growth:

- Axcelis demonstrated significant operating leverage by delivering enhanced profitability and cash efficiency through improved margins, lower fixed costs and better working capital management. The measures we took to streamline the business model resulted in **financial performance in 2004 that was the second highest in the company's history.**
- **We advanced our leadership in ion implantation, maintaining our # 1 market share position.** We also strengthened our portfolio with the introduction of our next generation single wafer platform, the Optima™.
- We focused on introducing new technologies to drive profitable growth for Axcelis by enabling the next generation of semiconductor manufacturing. **We launched breakthrough products in low-k curing and cleaning** that are designed to meet the stringent demands of the sub-65nm era while delivering exceptional value to our customers.

Strong Financial Performance

Axcelis achieved several important financial and operational goals in fiscal year 2004. Revenue for the full year, which does not include SEN revenues, totaled \$508.0 million. Worldwide 2004 revenue, including record-breaking SEN revenues, reached \$837.7 million. Fiscal 2004 net income was \$74.2 million. Earnings per share, on a fully diluted basis, was \$0.73. We significantly enhanced our overall financial condition and completed the year with \$193.4 million in cash and investments, up \$78.8 million from \$114.6 million at year end 2003.

We generated record service revenues this year by providing best in class support to our customers worldwide while generating margins that were accretive to the business. We have concentrated on growing our Global Support Solutions business through expansion of our fab-wide service presence and our service product offerings. With an installed base of over 4000 systems worldwide, this represents a strong and stable revenue stream.

Axcelis increased gross margins in 2004 through improvements in manufacturing efficiencies and substantial reductions in warranty expenses, material costs and manufacturing cycle times. We also continue to reduce fixed costs through several strategic restructuring actions initiated in 2004, including the integration of our division in Rockville, Maryland into our operation in Beverly, Massachusetts and the consolidation of all product lines into one functional business. These initiatives eliminate redundancy and improve productivity. We expect to realize the full financial benefit of these restructurings in 2006.

We entered 2004 with strong momentum as the semiconductor market continued its upswing. Despite softening conditions at the close of the year, we delivered better results on lower revenues. By the end of 2004 we had lowered our quarterly breakeven level to approximately \$90 million in revenues. We remain focused on cost control in an effort to lower our breakeven revenue level even further.

Ion Implant Leadership

As the industry approaches the sub-65nm era, we remain steadfast in our goal to improve capital efficiency for our customers while meeting the demands of increased chip complexity.

In the area of ion implantation, Axcelis' product portfolio continues to be the leading choice in semiconductor fabs worldwide. To best meet chip manufacturers' productivity and process challenges, we offer a complete, comprehensive suite of products, including both multi and single wafer platforms. In 2004, we gained new customers in almost all geographic markets with our recently introduced multi wafer Ultra™ high dose and Paradigm™ high energy tools.

Axcelis also introduced the Optima, a revolutionary new platform designed to cover the full implant applications space. The Optima provides compelling advantages in the two most critical application areas: scaled HALO and high-tilt extension implants. The first tool in the series, the Optima MD™, is designed specifically for low energy, mid dose applications. The product is already demonstrating strong traction worldwide with strategic wins at two major customers, one logic and one DRAM device manufacturer. We also forged a strategic partnership with IMEC, one of the industry's leading research consortia, to develop next-generation device technologies on this platform. We believe the Optima secures Axcelis' enduring role as the leader in the ion implantation market.

Engine for Growth

Innovation has been a primary factor in our success over the past 30 years, and is critical to our growth in the future. We are committed to making intelligent investments in our core product areas, as well as expanding our portfolio in evolving high-growth applications, such as ultra low-k integration schemes. Our newest products offer customers differentiated value that is simply unmatched by competitors.

Axcelis has taken a leading role in the low-k arena, developing breakthrough solutions to facilitate the integration of both low-k and ultra low-k materials into 65nm production. Throughout 2004, Axcelis' RadiantStrip 320Lk continued to penetrate key customers around the globe. Our superior process performance for enabling new technologies was key to these design wins. We are pleased with our ability to both attract new customers and collaborate with major materials suppliers for innovative solutions in this market.

Low-k film curing represents a new untapped market for Axcelis. Our market-leading UV photostabilization technology is suited perfectly to address this application need. In the first half of 2005 we will place the first tools for UV film curing, designed for advanced interconnect stacks and emerging transistor formation applications. These new products, along with others to come, will provide us with strong growth opportunities in the future.

Powered by Insight™

We are proud of our accomplishments in 2004 and believe the changes we made to our business over the past two years are paying off in terms of both operational and financial metrics. Our employees worldwide work hard to deliver breakthrough technology that delivers productivity and strong ROI for our customers, and we continue to focus on achieving the highest levels of customer satisfaction.

Specifically, we would like to recognize Dr. John Poate, who was awarded the distinction of being the "2005 Axcelis Fellow". Since joining Axcelis in 2000, Dr. Poate, occupying the position of Chief Technology Officer, has contributed enormously to our understanding of the semiconductor industry roadmap and its implications for our customers and our product lines. Dr. Poate will retire at year-end 2005, becoming our CTO, Emeritus, and we look forward to maintaining a long-term relationship with him.

Our vision for the future is to be the company that best understands and delivers the product and service needs of chipmakers around the globe. These insights will allow us to capitalize on the unique competitive advantages of our products and the investments we've made in our global infrastructure over the past few years. This, in turn, will foster a sustainable business model that delivers value to our shareholders, employees and community.

The possibilities grow greater every day.

Sincerely,



Mary G. Puma
President
and Chief Executive Officer



Stephen G. Bassett
Senior Vice President
and Chief Financial Officer



Michael J. Luttati
Executive Vice President
and Chief Operating Officer

(This Page Intentionally Left Blank)

**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, 2004

- 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
(State or other jurisdiction
or incorporation or organization)

34-1818596
(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:

<u>Title of class</u>	<u>Name of each exchange on which registered</u>
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, 2004: \$1,234,768,164.

Number of shares outstanding of the registrant's Common Stock, \$.001 par value, as of March 4, 2005: 100,180,688

Documents incorporated by reference:

Portions of the definitive Proxy Statement for Axcelis Technologies, Inc.'s Annual Meeting of Stockholders to be held on May 12, 2005 are incorporated by reference into Part III of this Form 10-K.

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 99.1 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

Axcelis Technologies designs, manufactures and services ion implantation, dry strip, thermal processing and curing equipment used in the fabrication of semiconductor chips. We sell to all of the top 20 semiconductor chip manufacturers worldwide. Axcelis has been the market share leader in ion implantation equipment as reported by Gartner Dataquest, in 7 of the last 9 years (through December 31, 2003, the date of the most recent reported industry statistics). The ion implantation business comprised approximately 81.2% of our revenues in 2004 with the remaining 18.8% of revenues derived from dry strip, thermal processing and curing businesses. We believe that we have been the market share leader in the curing market every year since the market's inception in 1993. In addition to equipment, we provide extensive aftermarket service and support, including spare parts, equipment upgrades, maintenance services and customer training. We also own 50% of the equity of Sumitomo Eaton Nova Corporation, or SEN, the leading producer of ion implantation equipment in Japan, based on market data reported by Gartner Dataquest. SEN licenses technology from us for ion implantation and has exclusive rights to market these products in the territory of Japan. In 2003, according to Gartner Dataquest's most recent reported industry statistics, Axcelis, together with SEN, ranked 11th among semiconductor equipment manufacturers, based on aggregate system sales revenues.

Axcelis was incorporated in the state of Delaware in December 1995 as a subsidiary of Eaton Corporation. After Axcelis' initial public offering in July 2000, Eaton distributed the remaining shares of Axcelis common stock to the Eaton shareholders in December 2000. 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 300mm (12 inches) in diameter. Each semiconductor chip is made up of millions of tiny transistors or "switches" to control the functions of the device. Transistors are created in the silicon wafer by introducing various precisely placed impurities into the silicon in specific patterns. The process steps where transistors are formed are traditionally referred to as "Front-End-of-Line" (FEOL). The "Back-End-of-Line" (BEOL) process steps connect the transistors and other such components together through several overlapping layers of metal wires, known as interconnect. Each layer of metal interconnect must be separated by a non-conductive or insulating material called inter-level dielectric. Each layer that is added is selectively patterned to all previous layers through a process called photolithography.

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. 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 200mm (8 inches). Currently, the industry is in the midst of a transition to 300mm wafers. In 2004, orders received by Axcelis for 300mm equipment approximated those for 200mm.

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 300mm fab, many customers are entering into partnerships to offset the cost of technology development and manufacturing. In addition, some of the integrated device manufacturers are sourcing all or part of their chip manufacturing requirements from foundries, contract semiconductor manufacturers. 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 as more chip production is being outsourced. China is predicted to be one of the fastest growing regions for semiconductor manufacturing.

Traditionally, the semiconductor industry has grown about 10% annually. However, due to the nature of the industry, cyclic periods of high demand for equipment have resulted in overcapacity, excess chip inventories and softening chip prices. This in turn would result in low demand for equipment. Therefore, a successful semiconductor equipment manufacturer must not only provide some of the most technically complex products manufactured in the world, but also must design its business to cope and even thrive during the inevitable low points in the cycle.

Axcelis’ Strategy

Our mission and vision is to:

- Ensure our customers’ success by providing enabling semiconductor manufacturing solutions and services that deliver the best performance at the lowest total cost of ownership.
- Achieve and maintain market share leadership (#1 or #2) in all served product market segments.
- Deliver profitability and positive cash flow through the industry cycles to maximize shareholder and employee value.

During the last 10 years, Axcelis has expanded its product offering beyond implant, and we currently offer cleaning, curing, and thermal processing systems. Our revenues from these products and related services represented 18.8% of our total 2004 revenues. We intend to continue to optimize the opportunity for these additional product lines, while maintaining our leadership position in ion implantation. Our dry strip, curing and thermal processing products serve process steps in both the front-end-of-line and back-end-of line semiconductor manufacturing. 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 in improvements to 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 dopants such as arsenic, boron or phosphorus, into a silicon wafer. These dopants are ionized and therefore have electric charges. With an electric charge they can be manipulated, moved and accelerated with electric and magnetic fields. Ion implanters use these fields to create a beam of ions with a precisely defined amount of energy (ranging between several hundred and three million volts) and with a precisely defined amount of beam current (ranging from microamps to milliamps). 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.

Ion implantation systems are usually designed to meet specific energy and current (dose) specifications. Historically, implanters have been characterized as high energy, high current or medium current systems. High current and medium current implanters are defined by the dosage of ions injected, having the capability of injecting a high level or medium level of ions per area. High energy implanters are defined by the level of energy with which ions are injected, driving the ions deeper into the silicon. The manufacturing processes for virtually all types of chips require the use of all three types of ion implanters. Axcelis has observed that these traditional implant segments are now blurring due to shifting application requirements. More and more customers are running traditional medium current implants on high current tools and high energy tools and some high energy implants on medium current tools. In all likelihood the redefinition of the ion implant market segments will take 1 to 2 years to crystallize. 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. 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. High energy implanters 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. 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.

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 facilitate very shallow implants. 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.

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 steps that require the ion beam to be positioned at less than a 90 degree angle to the wafer. This high tilt feature enables dopant placement under plateau-like features on the wafer surface. 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. We are also seeing an increasing need for high tilt lower energy implants for advanced devices, as chips become more complex.

As the industry moves forward, the traditional implant segment definitions of high current, medium current and high energy will lose their meaning. Current product sets do not adequately address the requirements of emerging applications. In response Axcelis is introducing a new product platform, which is intended to meet the current and future application requirements of our customers. We believe the Optima single wafer family of ion implanters, introduced in the first quarter of 2005, will usher in advantages in productivity, simplicity and process performance that will be extendable for several technology nodes. The Optima family offers a level of differentiation that is not attainable with any currently available tool set. Axcelis has enjoyed leadership market share with its multi-wafer processing tools in the past. While multi-wafer tools will continue to be a valuable part of Axcelis' product portfolio, we expect the Optima family to insure Axcelis' market share leadership as we enter the next industry cycle.

Together with SEN, Axcelis is the only company to offer a complete line of high energy, high dose and high tilt/medium dose implanters for all application requirements.

Dry Strip and Curing Systems

Dry Strip and Curing Systems. We entered the cleaning (dry strip) and curing product markets through our acquisition of Fusion Systems Corporation in August 1997. Fusion pioneered the development of curing 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. Through a process known as photolithography, the photoresist is developed into a pattern like a stencil. Curing (also known as 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.

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. 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. 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, a process that traditionally used hazardous chemicals.

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 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.

We believe that Axcelis offers the only no damage low-k dry strip solution and that the advantages of our technology will drive growth for Axcelis' dry strip tools in this important application space.

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. Our front-end photo resist removal capabilities coupled with our technology for back-end photo resist removal provides a complete solution for our customers.

Axcelis' curing systems 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 curing systems also have been used for several applications in the interconnect processes such as for hardening and drying low-k dielectric materials. We believe that as the adoption rate for low-k accelerates, this film curing application provides a significant opportunity for Axcelis.

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 thermal processing through our 1996 acquisition of High Temperature Engineering Corporation. In 1999, we introduced our first thermal processing products. Our thermal processing 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 thermal processing system differs from most other thermal processing equipment, which regulates temperature through a lamp-based system.

Our Summit series of thermal processing 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 customers now are looking to migrate to nickel silicide processes from standard cobalt silicide processes over the next couple of years.

Aftermarket Support and Services

We offer our customers extensive aftermarket service and support throughout the lifecycle of the equipment we manufacture. We believe that more than 3,750 of our products, including products shipped by SEN, are in use in 50 countries worldwide. The service and support that we provide includes spare parts, equipment upgrades, and maintenance services. We offer service out of 29 field offices in nine countries. Revenues generated through our service and support business represented about 32.9% of revenue in 2004 and 38.7% of revenue in 2003.

Our customer support network consisting of over 650 staff includes over 500 sales and marketing personnel, field service engineers, and spare parts and applications engineers as well as an additional 150 persons located at our manufacturing facilities who work with our customers to provide customer training and documentation, product, process and applications support.

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 13 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 seven locations. Outside of the United States, our sales offices are located in Taiwan, South Korea, China, Germany, Singapore, France and Italy. In addition, isolated sales are made in smaller markets through distributors and manufacturing representatives.

In Japan, we exclusively license our ion implant technology to our unconsolidated joint venture, Sumitomo Eaton Nova Corporation, which manufactures and sells its machines and services directly to semiconductor manufacturers (see "Sumitomo Eaton Nova Corporation" below). We sell our curing systems, dry strip and thermal processing products in Japan through Toda Technologies Service Co., Ltd., an unaffiliated company, which provides sales and support services for these products in the Japanese market.

International revenues, including export sales from our U.S. manufacturing facilities to foreign customers, sales by foreign subsidiaries and branches, and royalties accounted for 77.0% of total revenue in 2004, 65.3% in 2003, and 53.3% in 2002. Substantially all of our sales are denominated in U.S. dollars. SEN's sales are denominated in Japanese yen. See Note 17 to our Consolidated Financial Statements contained in Item 15 of this Form 10-K for a breakdown of our revenues and long-lived assets in the United States, Europe and Asia.

Customers

In 2004, the top 20 semiconductor manufacturers accounted for approximately 71.6% of total semiconductor industry capital spending, down from 73.2% in 2003. 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. The Company and SEN together serve all of the 20 largest semiconductor manufacturers. We believe that more than 3,750 of our products, including products shipped by SEN, are in use worldwide.

Revenues from our ten largest customers accounted for 55.4%, 65.6%, and 61.8% of revenue, respectively, in 2004, 2003, and 2002. We expect that sales of our products to relatively few customers will continue to account for a high percentage of revenue for the foreseeable future. In 2004, one customer, ST Microelectronics, accounted for 14.9% of revenue. In 2003, two customers, Samsung and Micron, individually accounted for 11.7% and 10.9% of revenue respectively. In 2002, one customer, IBM, individually accounted for 13.8% of revenue.

Sumitomo Eaton Nova Corporation

For more than 20 years, we have exclusively licensed our ion implantation technology in Japan to Sumitomo Eaton Nova Corporation. SEN has 795 employees based in Tokyo and Toyo, Japan and manufactures, sells and services ion implanters in Japan. Axcelis owns 50% of the equity of SEN and Axcelis senior managers serve as half of the members of SEN's Board of Directors. Sumitomo Heavy Industries, Ltd., a Japanese corporation, holds the other 50% of the equity of SEN. Axcelis has granted to SEN an exclusive license to use Axcelis' patented and unpatented technology to manufacture, use and sell specified ion implant products in Japan. SEN has granted us a royalty-free worldwide (except for Japan) license to use any technology SEN develops that is an improvement to our technology.

SEN pays royalties on its net sales of ion implantation products in accordance with the rates set forth in the license agreement between SEN and Axcelis. The royalty rates vary depending on the type of implanter sold. These royalty amounts were \$13.0 million in 2004, \$5.9 million in 2003, and \$8.3 million in 2002. In 2003, both SEN and Axcelis elected to enter into a one-year period of negotiating modifications to the agreement. As of December 31, 2004, SEN and Axcelis have not agreed to modifications to the license agreement. Accordingly, 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, on twelve months notice. Axcelis does not expect to terminate the SEN license agreement. During 2005, Axcelis intends to continue to pursue agreement with SEN on amendments to the license agreement to add additional licensed products and related royalty terms.

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 terminated on December 31, 2004, although SEN has not yet changed its corporate name. We expect to continue to receive royalties at least until a new name is implemented and new trademark license terms agreed.

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 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. In 2004, we announced that our Rockville engineering team would be relocated to our Beverly facility in 2005.

Our expenditures for research and development during 2004, 2003, and 2002, were \$63.2 million, \$63.3 million, and \$72.1 million respectively, or 12.4%, 19.3%, and 22.7%, of revenues, respectively. We expect in future years that research and development expenditures will continue to represent a substantial percentage of revenues.

Manufacturing

We manufacture ion implant, curing, dry strip and thermal processing products at our 417,000 sq. ft. facility in Beverly, Massachusetts. In addition, SEN manufactures ion implant and flat panel products at its 300,000 square foot facility in Toyo, Japan. 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 clean room environments that are similar to the clean rooms used by semiconductor manufacturers for wafer fabrication.

Our Beverly facility is also the location of our Advanced Technology Center that houses an advanced process development laboratory with 12,500 sq. ft of class 10/1000 clean room space for product demonstration and process development and a 34,000 sq. ft customer training center. These demonstration facilities are used to facilitate sales and to allow customers to test their processing steps on our systems 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.

Most ion implant systems are assembled 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. We refer to this process as "ship from cell." Ship from cell manufacturing allows us to more quickly and efficiently ship and install ion implant systems than the traditional manufacturing method involving a full integration of the system in our factory. Ship from cell saves an average of 4 weeks in our manufacturing cycle time, thus improving lead-times for our customers. In 2004, 71% 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. All of our 200mm and 300mm implanters are qualified for ship from cell manufacturing with the exception of two product lines (Paradigm and ParadigmXE), which we expect to be available for ship from cell during the first half of 2005. Ship from cell has become our standard method of implantation manufacturing.

Each system module is packaged to maintain clean room standards during shipment. Installation is itself not a complex process and does not require specialized skills. A team of assemblers from the customer and Axcelis typically performs the installation. The process 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 met during module testing.

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. Disruption to the Company's supply source could affect its ability to deliver products to its customers. 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.

Axcelis outsources 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 opportunities where the economics are justified, with a goal of enabling factory capacity and margin improvement. We outsource complex assemblies up to and including module build. 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, curing and thermal processing. We believe that 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 competitors are Varian Semiconductor Equipment Associates, Inc. and Applied Materials, Inc. In the high-energy equipment segment, where Axcelis holds a leading share, Varian also competes. In the high current segment, where Axcelis also holds a leading share, Axcelis mainly competes with Applied Materials, and to a lesser extent Varian. In the medium current

equipment segment, Axcelis competes with Nissin Electric Co., Ltd. and Varian. SEN faces the same competitors in the Japanese market.

Dry Strip and Curing Systems. Our principal competitors in the dry strip product market are Mattson Technology Inc. and Novellus Systems, Inc. Our principal competitor in curing is Ushio in Japan, to whom we have granted a royalty-bearing patent license in this field that expired at the end of 2004. Several other companies, including Novellus Systems, have indicated an interest in the curing market, and we expect competition in this area to increase.

Thermal Processing Systems. Our chief competitors in the 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 5, 2005, we had 236 patents issued in the United States and 486 patents granted in other countries, as well as 511 patent applications (75 in the United States and 436 in other countries) on file with various patent agencies worldwide.

We intend to file additional patent applications and grow our intellectual property portfolio 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 "Sumitomo Eaton Nova Corporation"), we do not believe that any of our licenses are currently material to us.

There has been substantial litigation regarding patent and other intellectual property rights in semiconductor-related industries. We do not have any currently pending patent litigation.

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. Likewise, we can give no assurance at this time as to whether we may have a patent infringement claim against one or more of our competitors, or that any such claims will be successful, leading to possible income for Axcelis by way of substantial damages or a substantial competitive advantage by way of product differentiation.

Backlog

As of December 31, 2004, our systems backlog (excluding deferred systems revenue) was \$78.0 million, as compared to \$97.7 million and \$60.0 million, respectively, for December 31, 2003 and 2002. Systems backlog including deferred systems revenue was \$118.4 million, \$113.4 million, and \$60.0 million for December 31, 2004, 2003, and 2002 respectively. We believe it is meaningful to investors to include deferred systems revenue as part of our backlog. Deferred systems revenue represents revenue that will be recognized in future periods based on prior shipments. 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, 2004, we had 1,595 full-time and 63 temporary employees worldwide, of which 1,316 were employed in North America, 237 in Asia and 105 in Europe. We consider our relationship with our employees to be good. Our employees are not represented by a labor union and are not subject to a collective bargaining agreement.

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.

Executive Officers and Key Management

Executive Officers

Mary G. Puma, 47, has been the Company's President and 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.

Michael J. Luttati, 49, 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, 57, has been the Company's Senior Vice President, Finance and Chief Financial Officer since April 2004. Prior to that, Mr. Bassett had served as interim Chief Financial Officer for the Company beginning in June 2003. From 1999 to 2002, Mr. Bassett served as chief financial officer of Ezenia! Inc. 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., 45, has been our Vice President, Product Development since January 2005. Prior to that, Dr. Duff was 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 1997, most recently, as Director of Marketing, Implant and Thermal Products. Prior to joining Axcelis, Dr. Duff worked in the capital equipment industry in a variety of marketing management positions and prior to that, worked as a research scientist.

Lynnette C. Fallon, 45, 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.

Donald W. Palette, 47, 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 Controller 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.

Matthew P. Flynn, 48, has been our Vice President Global Customer Operations since 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, 46, has been our Vice President of Manufacturing Operations since 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.

Key Management

Craig Halterman, 41, 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.

Mark J. Namaroff, 41, was promoted to Vice President of Marketing in January 2005. Mr. Namaroff was the Company's Director of Product Marketing for Ion Implantation products since September 2004, prior to which he was Director of Investor Relations and Corporate Development from May 2001. Mr. Namaroff also held various marketing positions since joining Axcelis in April of 1996. Before joining Axcelis, Mr. Namaroff held marketing and engineering positions at Materials Research Corporation, a manufacturer of semiconductor processing equipment, from 1990 - 1996.

John Poate, Ph.D. 64, has been Vice President and Chief Technology Officer since June 2000. Beginning April 2005, Dr. Poate will assume the title of Chief Technology Officer, Emeritus, and will continue to serve Axcelis as a part time employee. 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.

Item 2: Properties

We have a total of 36 properties, of which 17 are located in the United States and the remainder are 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 35 are leased.

Our principal facilities are listed below:

Facility Location	Principal Use	Square Footage (Owned/ Leased)
Beverly, Massachusetts	Manufacturing, research and development, sales/marketing, customer support, advanced process development, product demonstration, customer-training center and corporate headquarters.	417,000 (owned)
Rockville, Maryland	Research and development, marketing and customer support.	89,000 (leased)

Our Japanese joint venture manufactures ion implantation products in a 300,000 square foot owned facility located in Toyo, Japan.

In the fourth quarter of 2004, we announced the consolidation of the administrative offices, development, and customer support operations of our Cleaning and Curing product group, based in Rockville, Maryland, into our headquarters and manufacturing facility located in Beverly, Massachusetts. The Company expects to complete the relocation by the end of third quarter of 2005. The consolidation is part of the Company's ongoing initiative to reduce its fixed cost infrastructure and to enhance profitability and cash flow. The Company expects to continue to occupy approximately 22,000 square feet of the Rockville, Maryland facility once the consolidation is complete.

The Company believes that there is no 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 and all locations are ISO 9001 certified.

Item 3: Legal Proceedings

The Company is not a party to any material legal proceedings.

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

None

PART II

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

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 March 4, 2005, we had approximately 7,538 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
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
2004		
First quarter	\$13.22	\$ 9.50
Second quarter	12.44	9.97
Third quarter	11.91	7.26
Fourth quarter	9.12	6.59

We did not purchase any shares of Axcelis' common stock during the fourth quarter of 2004.

Item 6: Selected Financial Data

The following selected consolidated statements of operations data for each of the three years ended December 31, 2004, 2003 and 2002 and the consolidated balance sheet data as of December 31, 2004 and 2003 have been derived from the audited consolidated financial statements contained in Item 15 of Part IV of this Form 10-K. The selected consolidated balance sheet data as of December 31, 2002 has been derived from the audited financial statements contained in our Form 10-K filed on March 8, 2004. The selected consolidated statements of operations data for the year ended December 31, 2001 and 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 12, 2002.

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 Item 7 of Part II and Item 15 of Part IV, respectively of this Form 10-K.

	Years ended December 31,				
	2004	2003	2002	2001	2000
	(in thousands, except per share amounts)				
Consolidated statements of operations data					
Revenue	\$507,976	\$ 327,990	\$ 318,084	\$ 371,727	\$695,455
Gross profit	211,528	110,368	112,344	137,488	314,363
Income (loss) before income taxes	75,139	(44,341)	(49,743)	(40,401)	144,272
Net income (loss)	74,175	(113,876)	(26,150)	(20,163)	99,115
Net income (loss) per share					
Basic	\$ 0.75	\$ (1.16)	\$ (0.27)	\$ (0.21)	\$ 1.13
Diluted	\$ 0.73	\$ (1.16)	\$ (0.27)	\$ (0.21)	\$ 1.13
Shares used in computing basic and diluted per share amounts					
Basic	99,528	98,514	97,920	97,215	88,063
Diluted	101,205	98,514	97,920	97,215	88,063
Consolidated balance sheet data					
Cash and cash equivalents	\$168,495	\$ 93,249	\$ 146,298	\$ 122,200	\$168,157
Working capital	298,198	231,537	293,340	224,435	297,348
Total assets	688,876	585,244	668,752	551,001	672,213
Long-term liabilities	137,994	134,023	135,063	3,752	3,393
Stockholders’ equity	443,487	353,250	452,508	462,861	491,369

During 2000, the Company paid a dividend of \$300 million (\$3.75 per share) to Eaton Corporation. On June 30, 2000, in connection with the Company’s initial public offering, Eaton substantially completed the transfer of all the assets and related liabilities of its semiconductor equipment operations to the Company. Prior to the Company’s initial public offering in July 2000, 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 Axcelis’ consolidated financial position and operating results would have been during the periods presented prior to the initial public offering, if Axcelis 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 "Liquidity and Capital Resources" and "Risk Factors". 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, thermal processing and curing 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.

The semiconductor capital equipment industry is subject to significant cyclical swings in capital spending by semiconductor manufacturers. Capital spending is influenced by demand for semiconductors and the products using them, the utilization rate and capacity of existing semiconductor manufacturing facilities and changes in semiconductor technology, all of which are outside of the Company's control. As a result, the Company's revenues and gross margins, to the extent affected by increases or decreases in volume, can fluctuate significantly from year to year and period to period. Our gross margins also may be affected by the introduction of new products. We typically become more efficient in producing our products as they mature. For example, our gross margins in 2002, 2003 and 2004 were adversely affected in part as a result of the increased proportion of systems sold to process 300mm wafers. At December 31, 2004, gross margins on 300mm products were in-line with what we have realized historically on our 200mm products. The Company's expense base is largely fixed and does not vary significantly with changes in volume. Therefore, the Company expects to experience significant fluctuations in operating results and cash flows depending on the level of capital expenditures by semiconductor equipment manufacturers.

The substantial expense of building, upgrading or expanding a semiconductor fabrication facility is increasingly causing semiconductor companies to contract with foundries to manufacture their semiconductors. In addition, consolidation and joint venturing within the semiconductor manufacturing industry is increasing. We expect these trends to continue, which will reduce the number of our potential customers. This increased concentration of our customers potentially makes our revenues more volatile as higher percentages of our total revenues are tied to a particular customer's or a small number of customers' buying decisions.

Axcelis accesses the important Japanese market for ion implant through a joint venture that the Company does not control. The joint venture agreement gives both owners veto rights, so that neither of the owners alone can effectively control SEN. SEN's business is subject to the same risks as the Company's business. Royalties and equity income from SEN have made a substantial contribution to the Company's earnings, and a substantial decline in SEN's sales and net income could have a material adverse effect on the Company's operating results. As a result of this joint venture structure, the Company has less control over SEN management than over the Company's own management and may not have timely knowledge of

factors affecting SEN's business. In addition, given the equal balance of ownership, it is possible that the SEN Board may be unable to reach consensus on important matters from time to time which could delay important decisions.

Operating results for the years presented are not necessarily indicative of the results that may be expected for future years.

Critical Accounting Estimates

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, the complexity of the customer's post delivery acceptance provisions, payment history, customer creditworthiness 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, 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. In addition, the standard and non-standard warranties were accrued at the time of shipment. The Company recognized the full sales price at the time of shipment as management believed 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 provided that the majority of the purchase price was payable upon shipment. Terms generally contained delayed payment arrangements for a portion of the purchase price which were 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.

In December 2003, the Securities and Exchange Commission (“SEC”) issued Staff Accounting Bulletin No. 104 (“SAB 104”), “Revenue Recognition.” SAB 104 supersedes Staff Accounting Bulletin No. 101, “Revenue Recognition in Financial Statements” (“SAB 101”). SAB 104’s primary purpose is to rescind accounting guidance contained in SAB 101 related to multiple element revenue arrangements, superseded as a result of the issuance of EITF 00-21. Additionally, SAB 104 rescinds the SEC’s Revenue Recognition in Financial Statements Frequently Asked Questions and Answers (“the FAQ”) issued with SAB 101 that had been codified in SEC Topic 13, Revenue Recognition. Selected portions of the FAQ have been incorporated into SAB 104. While the wording of SAB 104 has changed to reflect the issuance of EITF 00-21, the revenue recognition principles of SAB 101 remain largely unchanged by the issuance of SAB 104. As a result, the adoption of this pronouncement did not have any impact on the Company’s consolidated financial statements.

Axcelis’ revenue transactions include sales of systems under multiple element arrangements. Revenue under these arrangements is allocated to each element, except systems, based upon its 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, with the residual amount being allocated to systems revenue. The value of the undelivered elements includes (a) the greater of (i) the fair value of the installation or (ii) the portion of the sales price that will not be received until the installation is completed (the “retention”) plus (b) the fair value of all other undelivered elements. The amount allocated to installation is based upon the fair value of the service performed, including labor, which is based upon the estimated time to complete the installation and hourly rates, and material components. The fair value of all other undelivered 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 from installation services is recognized at the time formal acceptance is received from the customer or, for installation of certain systems to certain customers, when both the formal acceptance and retention payment have been received. 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. 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, which may be the Axcelis standard specification. To ensure that the customer’s specifications are satisfied, many customers request that newer systems 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. The Company believes the risk of failure to complete a system installation is remote. Should an installation not be completed successfully, 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 or obtaining customer acceptance upon shipment of the system or for initial shipments of systems with new technologies, Axcelis will defer the recognition of systems revenue until written customer acceptance of the system is obtained. This deferral period is generally within twelve months of shipment.

Services 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, or based on parts usage, where appropriate. Revenue related to time and material services is

recognized when the services are performed. Revenue related to spare parts sales and equipment upgrades is recognized upon the later of shipment or when the title and risk of loss passes to the customer.

Deferred Tax Assets

At December 31, 2004, the Company has \$90.9 million of deferred tax assets relating to net operating loss carryforwards, tax credit carryforwards and other temporary differences which are available to reduce income taxes in future years. 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.

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 to reduce the carrying value of deferred tax assets to zero.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability. However, going forward should the Company's return to profitability provide 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 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 other intangible assets have finite lives.

The Company performs an annual impairment review of goodwill. Impairment reviews may be performed 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, 2004, 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 materials usage, based on estimates of 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, non standard warranty, and product installation obligations 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 product installation or non standard warranty but defers the portion of systems revenue attributable to the fair value of future services to be delivered. 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 liability and adjusts the amount as necessary.

Results of Operations

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

	Years Ended December 31,		
	2004	2003	2002
Revenue			
Systems	64.3%	59.4%	60.6%
Services	32.9	38.8	36.8
Royalties, primarily from Sumitomo Eaton Nova Corporation	2.8	1.8	2.6
	100.0	100.0	100.0
Cost of revenue	58.4	66.4	64.7
Gross profit	41.6	33.6	35.3
Operating expenses			
Research & development	12.4	19.3	22.7
Selling	9.4	14.1	13.8
General & administrative	9.1	12.5	14.1
Amortization intangible assets	0.5	0.6	0.5
Restructuring	0.2	1.5	—
	31.6	48.0	51.0
Income (loss) from operations	10.1	(14.3)	(15.7)
Other income (expense)			
Equity income of Sumitomo Eaton Nova Corporation	6.0	2.7	1.5
Interest income	0.4	0.6	1.2
Interest expense	(1.3)	(1.9)	(1.8)
Other—net	(0.4)	(0.6)	(0.8)
	4.7	0.8	0.1
Income (loss) before income taxes	14.8	(13.5)	(15.6)
Income taxes (credit)	0.2	21.2	(7.4)
Net income (loss)	14.6%	(34.7)%	(8.2)%

Year ended December 31, 2004 in comparison to the year ended December 31, 2003

Revenue

Revenue from system sales was \$326.5 million or 64.3% of revenue in 2004, compared with \$194.9 million, or 59.4% of revenue, in 2003. The increase in sales of systems compared with 2003 was primarily attributable to strong market demand resulting from high levels of chip production by our semiconductor manufacturing customers.

On a product basis, approximately 61.6% of revenue from system sales for 2004 was from the sale of 200mm products and 38.4% was from the sale of 300mm products, compared with 64.6% and 35.4%, respectively, for 2003. Sales of 200mm products were strong during 2004 due to the expansion of existing 200mm production capacity that outpaced the investment in new 300mm fabrication facilities.

Services revenue, which includes spare parts, equipment upgrades, and maintenance services, was \$167.0 million, or 32.9% of revenue for 2004, compared with \$127.1 million, or 38.8% of revenue for 2003. The increase in the amount of service revenue in 2004 compared with 2003 was a result of increased capacity utilization by our customers which has a direct effect on demand for both spare parts and billable

labor. In addition, as the out of warranty installed base increased, demand for service maintenance contracts also increased.

As described above in "Revenue Recognition", a portion of the Company's revenue from system sales is deferred until installation and other services related to future deliverables are performed. The total amount of deferred revenue at December 31, 2004 and 2003 was \$41.7 million and \$16.5 million, respectively.

Of the Company's royalty revenue \$13.0 million is earned under the terms of the Company's license agreement with SEN. Approximately \$7.1 million of the \$8.4 million increase in royalties in 2004 as compared to 2003 is due to higher SEN sales volume reflecting growth in demand for equipment by Japanese semiconductor manufacturers.

Revenue from sales of ion implantation products and services for 2004 accounted for \$412.3 million, or 81.2%, of total revenue in 2004, compared with \$243.9 million, or 74.3%, of total revenue in 2003. The higher proportion of total revenue from the sale of ion implantation products and services in 2004 is primarily a result of capacity expansion by semiconductor manufacturers whereby capital spending for ion implantation products has outpaced increases in total wafer fabrication equipment spending.

Worldwide revenues including revenues of SEN for the years ending December 31, 2004 and 2003 were \$837.7 million and \$492.2 million, respectively. Worldwide revenues for 2004 increased by \$345.5 million compared to 2003 due to the growth in demand for equipment by semiconductor manufacturers discussed above. Axcelis believes that the information regarding the aggregate annual revenues of SEN, a 50% owned unconsolidated subsidiary of Axcelis, combined with Axcelis' own revenues for the year, is useful to investors. SEN's ion implant products are covered by a license from Axcelis and therefore the combined revenue of the two companies indicates the full market penetration of Axcelis' technology.

Gross Profit

Gross profit was 41.6% of revenue in 2004 compared with gross profit of 33.6% of revenue in 2003. The gross profit increase of 8.0 percentage points was primarily due to increased sales volume and the related increased absorption of fixed manufacturing costs (approximately 6 percentage points), reduced system warranty costs (approximately 1.5 percentage points) and improved pricing (approximately 1 percentage point) due to favorable market conditions which provided increased demand and an expanded customer base.

Research and Development

Research and development expense was \$63.2 million in 2004, a decrease of \$0.1 million, compared to \$63.3 million in 2003. While research and development expenses remained primarily flat year over year, the individual components varied. Increased variable compensation (\$2.9 million) and expenses associated with the timing of projects (\$2.4 million) were offset in part by lower amortization related to demo tools used in R&D (\$1.7 million), lower payroll and payroll related expense primarily due to headcount reductions (\$1.9 million), lower facility costs allocated to research and development (\$1.1 million), and lower fixed costs associated with depreciation and leased equipment (\$0.6 million).

Selling

Selling expense was \$47.6 million for 2004, an increase of \$1.4 million, or 3.0%, compared with \$46.2 million for 2003 primarily due to increased expenses for customer and evaluation tool support (\$1.1 million), travel associated with increased volume (\$0.8 million), and commissions (\$0.4 million). Cost increases were offset in part by lower payroll and payroll related expense primarily due to the Company's September 2003 restructuring (\$1.3 million).

General and Administrative

General and administrative expense was \$46.1 million in 2004, an increase of \$5.0 million, or 12.2%, as compared with \$41.1 million in 2003. General and administrative expense increased in 2004 primarily due to increased variable compensation (\$3.8 million), higher audit fees and costs related to compliance with section 404 of the Sarbanes-Oxley Act (\$1.6 million). In addition, general and administrative expense in 2003 was reduced by an adjustment of \$1.7 million to reflect a change in estimate relating to unfunded pension and other benefits recorded in prior years.

Amortization of Intangible Assets

Amortization of intangible assets was \$2.4 million in 2004, an increase of \$0.4 million, or 20%, as compared with \$2.0 million in 2003. The increase was due to a full year of amortization expense relating to the intangible assets acquired as part of the Matrix Integrated Systems, Inc. acquisition completed on July 3, 2003.

Restructuring

Restructuring expense of \$1.0 million in 2004 consists primarily of severance and other one-time termination benefits related to reduction in force actions and the consolidation of the Company's Rockville, Maryland operations into its headquarters and manufacturing facility located in Beverly, Massachusetts. The Company expects to incur approximately \$9.0 million related to both of these actions, of which \$7.0 to \$8.0 million is expected to be incurred over the first three quarters of 2005. Approximately \$6.0-\$7.0 million of this amount is expected to result in future cash expenditures.

Other Income (Expense)

Equity income attributable to SEN was \$30.5 million in 2004 compared to \$9.0 million in 2003. Fluctuations in equity contributions from SEN reflect changes in its sales volume and net income resulting from demand changes in the Japanese semiconductor market.

Interest income of \$2.0 million primarily relates to interest earned on cash, cash equivalents and short-term investments. Interest income increased by \$0.2 million from 2003 due primarily to increased levels of cash, cash equivalents and short-term investments in 2004, as well as higher interest rates.

Interest expense of \$6.7 million in 2004 primarily relates to the Company's long-term debt issued in January 2002. Interest expense increased by \$0.5 million compared with 2003 due primarily to the amortization of bank fees associated with the October 2003 renegotiation of the Company's revolving credit facility. See Note 12 to the Consolidated Financial Statements contained in Item 15 of this Form 10-K.

Income Taxes

Income tax expense for 2004 has been reduced by \$4.0 million from the reversal of income tax accruals recorded in prior years for certain tax matters that were resolved in the second quarter of 2004. Income tax expense relates principally to operating results of foreign entities in jurisdictions where the Company is taxable. Income tax expense attributable to U.S. operations is minimal because taxable income derived from the current year operating results is substantially offset by available net operating loss carryforwards.

Income taxes in 2003 consisted 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.

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

Revenue

Revenue from system sales was \$194.9 million or 59.4% of revenue in 2003, compared with \$192.8 million, or 60.6% of revenue, 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.

On a product basis, approximately 64.6% of revenue from system sales for 2003 was from the sale of 200mm products and 35.4% was from the sale of 300mm products compared with 58.8% and 41.2%, respectively, for 2002.

Services revenue, which includes spare parts, equipment upgrades, and maintenance services, was \$127.1 million, or 38.8% of revenue for 2003, compared with \$116.9 million, or 36.8% of revenue for 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). Deferred revenue at December 31, 2003 amounted to \$16.5 million.

Royalties were \$6.0 million, or 1.8% of revenue, for 2003, compared with \$8.4 million, or 2.6% of revenue, in 2002. Royalties decreased by \$2.4 million in 2003 compared with 2002. The decrease is primarily due to the changes in the Japanese semiconductor market and the adoption of EITF 00-21 which had the effect of reducing royalties attributable to deferred revenue in 2003 by \$1.5 million. SEN previously recorded revenue based on system shipments; however, with the adoption of EITF 00-21 SEN now records revenue based on final acceptance from the customer. Royalty income is based on a percentage of SEN's net sales recognized.

Revenue from sales of ion implantation products and services for 2003 accounted for \$243.9 million, or 74.3%, of total revenue in the 2003, compared with \$243.4 million, or 76.5%, of total revenue 2002.

Worldwide revenues including revenues of SEN for the years ending December 31, 2003 and 2002 were \$492.2 million and \$456.8 million, respectively. Worldwide revenues for 2003 increased by \$35.4 million compared to 2002 due to the growth in demand for equipment by semiconductor manufacturers discussed above. Axcelis believes that the information regarding the aggregate annual revenues of SEN, a 50% owned unconsolidated subsidiary of Axcelis, combined with Axcelis' own revenues for the year, is useful to investors. SEN's ion implant products are covered by a license from Axcelis and therefore the combined revenue of the two companies indicates the full market penetration of Axcelis' technology.

Gross Profit

Gross profit was 33.6% of net sales in 2003 compared to gross profit of 35.3% in 2002. The decrease in gross profit was due to higher warranty costs associated with 300mm product shipments (approximately 1.5 percentage points); the Company's implementation of a revised revenue recognition policy to comply with the provisions of EITF 00-21 (approximately 1.5 percentage points); and a reduction in average selling prices discussed above (approximately 1.1 percentage points). 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 \$8.8 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 multi-wafer 300mm product development efforts and a

corresponding reduction in headcount by approximately 18% from December 31, 2002 to December 31, 2003. Final completion and release of 300mm products was accomplished in the second half of 2002.

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 8.1%, as compared with \$44.7 million in 2002. The decrease in general and administrative expense was attributable to lower costs associated with 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 \$0.5 million, or 33.3%, 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. As of December 31, 2003, \$4.0 million had been paid. The Company estimates the annual savings from the restructuring to approximate \$18.5 million.

Other Income (Expense)

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 equity income from SEN by approximately \$3.8 million for 2003. Other fluctuations in equity contributions from SEN reflect changes in SEN's sales volume and net income resulting from demand 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. Interest expense increased by \$0.4 million from 2002 primarily due to interest expense and amortization of bank fees related to the Company's revolving credit facility as well as a full year of interest expense associated with the Company's convertible debt issuance. See Note 12 to the Consolidated Financial Statements contained in Item 15 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."

Liquidity and Capital Resources

Cash and cash equivalents, and short-term investments at December 31, 2004 were \$187.0 million, compared to \$108.2 million at December 31, 2003. The \$78.8 million increase in cash and cash equivalents, and short-term investments is mainly attributable to \$71.6 million in cash generated by operations, \$6.0 million in net proceeds from the sale of a building located in Beverly, Massachusetts in January 2004 and \$4.9 million in proceeds from the exercise of stock options and stock purchases under the Employee Stock Purchase Plan which were partially offset by \$5.5 million in capital expenditures.

Net working capital was \$298.2 million at December 31, 2004 as compared to net working capital of \$231.5 million at December 31, 2003. The \$66.7 million increase in net working capital is attributable principally to the Company's higher levels of profitable operations.

Capital expenditures were \$5.5 million and \$5.0 million for the years ended December 31, 2004 and 2003, respectively. The Company has no significant capital projects planned for 2005 and total capital expenditures for 2005 are projected to be less than \$10.0 million. Future capital expenditures beyond 2005 will depend on a number of factors, including the timing and rate of expansion of our business.

Expenditures for demo tools, used in-house for research and development and training, and evaluation tools, which are located at customers' sites and are being evaluated for potential purchase, were approximately \$23.7 million and \$21.2 million for 2004 and 2003, respectively. Demo and evaluation tools are included in amounts reported as other assets.

The Company has no off-balance sheet arrangements other than foreign exchange contracts used to hedge the Company's royalty receivable from SEN (\$1.6 million at December 31, 2004).

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 (excluding the Company's investment in SEN) and contains certain financial and other restrictive covenants including restrictions on the payment of dividends, minimum levels of tangible net worth, liquidity and profitability as well as maximum levels of indebtedness and capital spending. At December 31, 2004, the Company was in compliance with all covenants. The Company incurs an annual commitment fee based on an EBITDA formula outlined in the agreement applied to the full commitment.

The Company has standby letters of credit in the amount of \$3.5 million to support certain operating lease obligations, workers' compensation insurance, and certain value added tax claims in Europe. Guarantees (of which \$2.8 million are cash collateralized) relate to value added tax refunds in Europe.

The following represents the contractual obligations and commercial commitments of the Company as of December 31, 2004 (in thousands):

Contractual Obligations	Total	Payments Due by Period			
		2005	2006-2007	2008-2009	Thereafter
Long-term debt (including interest)	\$138,283	\$ 5,313	\$132,970	\$ —	\$ —
Purchase order commitments	23,832	23,832	—	—	—
Operating leases	12,536	5,269	6,085	706	476
	<u>\$174,651</u>	<u>\$34,414</u>	<u>\$139,055</u>	<u>\$ 706</u>	<u>\$476</u>

Other Commercial Commitments	Total	Amount of Commitment Expiration by Period			
		2005	2006-2007	2008-2009	Thereafter
Unused line of credit	\$ 50,000	\$ —	\$ 50,000	\$ —	\$ —
Standby letters of credit	3,498	3,498	—	—	—
Guarantees	9,150	—	5,682	3,468	—
	<u>\$ 62,648</u>	<u>\$ 3,498</u>	<u>\$ 55,682</u>	<u>\$3,468</u>	<u>\$ —</u>

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.

Recent Accounting Pronouncements

FIN 46R

In December 2003, the Financial Accounting Standards Board ("FASB") issued Interpretation No. 46R "Consolidation of Variable Interest Entities, an Interpretation of Accounting Research Bulletin No. 51" (FIN 46R). FIN 46R provides a new consolidation model that determines control and consolidation based on potential variability in gains and losses. The provisions of FIN 46R are effective for enterprises with variable interests in variable interest entities created after December 31, 2003. For public companies with variable interests in variable interest entities created before December 31, 2003, the provisions of FIN 46R 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 46R did not have any impact on the Company's consolidated financial statements.

SFAS 151

In November 2004 the FASB issued Statement of Financial Accounting Standards No. 151 ("SFAS 151") "Inventory Costs, an amendment of ARB 43, Chapter 4". SFAS 151 amends the guidance in ARB No. 43, Chapter 4, "Inventory Pricing" to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs, and wasted material (spoilage). SFAS 151 requires that idle facility expense, excessive spoilage, double freight, and rehandling costs be recognized as current period charges. In addition, SFAS 151 requires that allocation of fixed production overheads to the costs of conversion be based on the normal capacity of the production facilities. SFAS 151 is effective for inventory costs incurred during fiscal years beginning after June 15, 2005, however early adoption is permitted for inventory costs incurred during fiscal years beginning after November 2004. The Company plans to adopt SFAS 151 on January 1, 2006. The Company is assessing what effect, if any, adopting SFAS 151 will have on its financial position or results of operations.

SFAS 123R

On December 16, 2004 the FASB issued SFAS No. 123 (revised 2004), "Share-Based Payment" (SFAS 123(R)), which is a revision of SFAS No. 123, "Accounting for Stock-based Compensation". SFAS 123(R) supersedes APB Opinion No. 25, "Accounting for Stock Issued to Employees" and Amends SFAS No. 95, "Statement of Cash Flows". Generally, the approach in SFAS 123(R) is similar to the approach described in Statement 123. However, SFAS 123(R) requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is not an alternative.

SFAS 123(R) must be adopted no later than July 1, 2005. The Company plans to adopt SFAS 123(R) effective July 1, 2005.

SFAS 123(R) permits public companies to adopt its requirements using one of two methods: (1) a "modified prospective" approach or (2) a "modified retrospective" approach. Under the modified prospective approach, compensation cost is recognized beginning with the effective date based on (a) the requirements of SFAS 123(R) for all share based payments granted after the effective date and (b) the requirements of SFAS 123(R) for all awards granted to employees prior to the effective date of SFAS 123(R) that remain unvested on the effective date. The modified retrospective approach, includes the requirements of the modified prospective approach, but also permits entities to restate based on the amounts previously recognized under SFAS 123 for purposes of pro forma disclosures either all prior periods presented or prior interim periods of the year of adoption.

The Company is evaluating which method to adopt.

As permitted by SFAS 123, the Company currently accounts for share-based payments to employees using APB Opinion No. 25's intrinsic value method, and, as such, generally recognizes no compensation cost for employee stock options. Accordingly, the adoption of the fair value method will have a significant impact on our results of operations, although it will have no impact on our overall financial position. The impact of adoption of SFAS 123(R) cannot be predicted at this time because it will depend on levels of share-based payments granted in the future. However, had we adopted SFAS 123(R) in prior periods, the impact of that standard would have approximated the impact of SFAS 123 as described in the disclosure of pro forma net income (loss) and net income (loss) per share in Note 2 to our consolidated financial statements.

SFAS 123(R) also requires the benefits of tax deductions in excess of recognized compensation cost to be reported as a financing cash flow, rather than as an operating cash flow under current literature. Since the Company does not have the benefit of tax deductions in excess of recognized compensation cost, because of the Company's net operating loss position, this change will have no immediate impact on the Company's consolidated financial statements.

Outlook

The Company's performance is directly related to semiconductor manufacturers' levels of capital expenditures to open new fabrication facilities and expand existing ones, as well as operational improvements implemented by the Company in recent quarters. 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.

During September 2004, the Company started to see a slowdown in capital spending by semiconductor manufacturers and pushouts of anticipated shipments to customers and customer orders to at least the first half of 2005. The Company, based on ongoing discussions with its customers of their future plans and requirements, is currently forecasting that revenues will remain flat in the first quarter of 2005 as compared to the quarter ended December 31, 2004.

On February 3, 2005, the Company announced that net revenues (excluding SEN) for the first quarter of 2005 are forecast in the range of \$95 million to \$105 million. Gross margins are projected in the range of 42% to 43%. The Company expects to earn between \$0.01 and \$0.05 per share. Results for the first quarter will be impacted negatively by restructuring and relocation costs of \$2 to \$3 million (\$0.02 to \$0.03 per share).

The Company also expects the contribution from SEN for the quarter to decrease significantly due to the declining market in Japan.

It is difficult to predict the Company's customers' capital spending plans since they can change very quickly. At the Company's current sales level, each sale, or failure to make a sale, could have a material effect on the Company's results of operations 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, 2004. 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, limiting exposure to any one issue or issuer and restricting term to maturity. 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, 2004 and 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, 2004 and 2003, approximately 13% and 10% of the Company's revenues, respectively, were derived from foreign operations with this inherent risk. In addition, at December 31, 2004 and 2003, the Company's operations outside of the United States accounted for approximately 29% and 25% of the Company's total assets, respectively, the majority of which was denominated in currencies other than the U.S. dollar.

Our investment in SEN and our royalty and equity income from SEN are subject to foreign currency exchange risks. For royalties to be received in cash (\$1.6 million at December 31, 2004) the Company hedges its exposure to currency fluctuation through the use of forward contracts. 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 \$9.9 million at December 31, 2004.

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

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 our disclosure controls and procedures (as defined in Rules 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this annual report (the "Evaluation Date"). Based on this evaluation, our principal executive officer and principal financial officer concluded that, as of the Evaluation Date, 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 Exchange Act is recorded, processed, summarized and reported within the requisite time periods.

Internal Control Over Financial Reporting

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Exchange Act.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. A control system, no matter how well designed and operated, can provide only reasonable assurance with respect to financial statement preparation and presentation. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2004. In making this assessment, management used the criteria set forth in the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Internal Control-Integrated Framework.

Based on this assessment, management has concluded that, as of December 31, 2004, the Company's internal control over financial reporting is effective based on those criteria.

Ernst & Young LLP, an independent registered public accounting firm that audited the Company's financial statements for the year ended December 31, 2004 and included in this annual report, has issued an attestation report on management's assessment of the Company's internal control over financial reporting. This report is provided as follows:

Report of Independent Registered Public Accounting Firm on Internal Control over Financial Reporting

The Board of Directors and Stockholders of Axcelis Technologies, Inc.

We have audited management's assessment, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting, that Axcelis Technologies, Inc. (the Company) maintained effective internal control over financial reporting as of December 31, 2004, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the COSO criteria). Axcelis Technologies, Inc.'s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express an opinion on management's assessment and an opinion on the effectiveness of the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, evaluating management's assessment, testing and evaluating the design and operating effectiveness of internal control, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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

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

In our opinion, management's assessment that Axcelis Technologies, Inc. maintained effective internal control over financial reporting as of December 31, 2004, is fairly stated, in all material respects, based on the COSO criteria. Also, in our opinion, Axcelis Technologies, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2004 based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets as of December 31, 2004 and 2003 and the related consolidated statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2004 of Axcelis Technologies, Inc. and our report dated March 11, 2005 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Boston, Massachusetts
March 11, 2005

Changes in Internal Control over Financial Reporting

Except as set forth below, there was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) under the Exchange Act 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.

In the fourth quarter of 2004, the Company implemented certain enhancements in internal control related to the separation of duties between the development and production environments in the information technology group.

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 registered public accounting firm, advised the Audit Committee and management of reportable conditions with respect to revenue recognition transactions. Specifically, the reportable conditions related to the Company's processes over evaluation of revenue recognition criteria in accordance with SAB 104, identification and accounting for multiple deliverables and the timing of revenue recognition of certain elements in revenue transactions. While the reportable conditions were addressed by the Company during the first half of 2004, the Company further improved its revenue recognition control processes in these areas during the third and fourth quarters.

Item 9B: Other Information

The following information is not required disclosure under Form 8-K but is additional information provided for investors:

During the quarter ended December 31, 2004, the Company's independent registered public accounting firm, Ernst & Young LLP ("E&Y"), advised the Company's Audit Committee that an entity controlled by E&Y's affiliate in Korea had provided certain services to the Company's Korean operations that involved the holding of income tax payments received directly from the Company related to the Company's Employee Stock Purchase Plan.

The Company's Audit Committee and E&Y have discussed E&Y's independence with respect to Axcelis. E&Y has informed the Audit Committee that it does not believe that the holding of these funds impaired E&Y's independence with respect to Axcelis. Given the facts, and in light of the small amount of funds involved and the small amount of the fees associated with the services, the Company's Audit Committee has concluded that it concurs with E&Y's assessment regarding its independence. Other than the matters disclosed in Item 5 of the Company's Form 10-Q for the quarter ended September 30, 2004, the Company is unaware, and E&Y has informed the Audit Committee that it is unaware, of any similar instance in which E&Y has held custody of Axcelis funds in a manner raising questions regarding E&Y's independence. E&Y has informed the Company that it has adopted procedures aimed at preventing similar occurrences in the future. The Company has also adopted procedures directed at preventing a reoccurrence.

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 in Axcelis' Proxy Statement for the Annual Meeting of Stockholders to be held May 12, 2005 (the "Proxy Statement") captioned:

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

The remainder of such information is set forth under the heading "Executive Officers and Key Management" at the end of Item 1 in 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."

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 the "Independent Registered Public Accounting Firm" in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules

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

1) Financial Statements:

Report of Independent Registered Public Accounting Firm	34
Consolidated Statements of Operations—For the years ended December 31, 2004, 2003 and 2002	35
Consolidated Balance Sheets—December 31, 2004 and 2003	36
Consolidated Statements of Stockholders' Equity—For the years ended December 31, 2004, 2003 and 2002	37
Consolidated Statements of Cash Flows—For the years ended December 31, 2004, 2003 and 2002	38
Notes to Consolidated Financial Statements	39

2) Financial Statement Schedules:

Schedule II—Valuation and Qualifying Accounts for the years ended December 31, 2004, 2003 and 2002

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) 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.

(c) Financial Statement Schedules

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

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of Axcelis Technologies, Inc.

We have audited the accompanying consolidated balance sheets of Axcelis Technologies, Inc. (the Company) as of December 31, 2004 and 2003 and the related consolidated statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2004. Our audits also included the financial statement schedule listed in the Index at Item 15(a). 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 the standards of the Public Company Accounting Oversight Board (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, 2004 and 2003 and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2004, in conformity with U.S. generally accepted accounting principles. 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 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."

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the effectiveness of Axcelis Technologies, Inc.'s internal control over financial reporting as of December 31, 2004, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 11, 2005 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Boston, Massachusetts
March 11, 2005

Axcelis Technologies, Inc.
Consolidated Statements of Operations
(In thousands, except per share amounts)

	<u>Year Ended December 31,</u>		
	<u>2004</u>	<u>2003</u>	<u>2002</u>
Revenue			
Systems	\$326,521	\$ 194,889	\$192,780
Services	167,027	127,084	116,925
Royalties, primarily from Sumitomo Eaton Nova Corporation	14,428	6,017	8,379
	<u>507,976</u>	<u>327,990</u>	<u>318,084</u>
Costs of revenue	296,448	217,622	205,740
Gross profit	211,528	110,368	112,344
Operating expenses			
Research & development	63,209	63,284	72,069
Selling	47,593	46,202	44,038
General & administrative	46,149	41,057	44,716
Amortization of intangible assets	2,448	1,955	1,460
Restructuring	994	4,907	—
	<u>160,393</u>	<u>157,405</u>	<u>162,283</u>
Income (loss) from operations	51,135	(47,037)	(49,939)
Other income (expense)			
Equity income of Sumitomo Eaton Nova Corporation	30,531	8,954	4,806
Interest income	2,032	1,807	3,691
Interest expense	(6,673)	(6,229)	(5,803)
Other—net	(1,886)	(1,836)	(2,498)
	<u>24,004</u>	<u>2,696</u>	<u>196</u>
Income (loss) before income taxes	75,139	(44,341)	(49,743)
Income taxes (credit)	964	69,535	(23,593)
Net income (loss)	<u>\$ 74,175</u>	<u>\$(113,876)</u>	<u>\$(26,150)</u>
Net income (loss) per share			
Basic	\$ 0.75	\$ (1.16)	\$ (0.27)
Diluted	\$ 0.73	\$ (1.16)	\$ (0.27)
Shares used in computing basic and diluted net income (loss) per share			
Basic	99,528	98,514	97,920
Diluted	101,205	98,514	97,920

See accompanying Notes to Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Balance Sheets
(In thousands, except per share amounts)

	December 31,	
	2004	2003
ASSETS		
Current assets		
Cash & cash equivalents	\$168,495	\$ 93,249
Restricted cash	3,498	3,800
Short-term investments	18,517	14,972
Accounts receivable, net	83,767	73,751
Inventories	116,330	123,985
Other current assets	14,986	19,751
Total current assets	405,593	329,508
Property, plant & equipment, net	75,275	80,927
Investment in Sumitomo Eaton Nova Corporation	109,095	73,327
Goodwill	46,773	46,774
Intangible assets	17,671	20,119
Restricted cash, long-term portion	2,841	2,616
Other assets	31,628	31,973
	\$688,876	\$585,244
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable	\$ 24,278	\$ 35,787
Accrued compensation	27,030	15,061
Warranty	9,218	13,648
Income taxes	4,530	7,109
Deferred revenue	34,050	14,441
Other current liabilities	8,289	11,925
Total current liabilities	107,395	97,971
Long-term debt	125,000	125,000
Long-term deferred revenue	7,697	2,094
Other long-term liabilities	5,297	6,929
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; 100,110 shares issued and 99,990 shares outstanding at December 31, 2004; 99,114 shares issued and 98,994 shares outstanding at December 31, 2003	100	99
Additional paid-in capital	457,335	451,389
Deferred compensation	(566)	(811)
Treasury stock, 120 shares at December 31, 2004 and 2003	(1,218)	(1,218)
Retained earnings deficit	(27,332)	(101,507)
Accumulated other comprehensive income—foreign currency translation adjustments	15,168	5,298
	443,487	353,250
	\$688,876	\$585,244

See accompanying Notes to Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Statements of Stockholders' Equity
(In thousands)

	Common Stock		Additional Paid-in Capital	Deferred Compensation	Treasury Stock	Retained Earnings (Deficit)	Accumulated Other Comprehensive Income (Loss)	Total
	Shares	Amount						
Balance at December 31, 2001 . .	97,495	\$ 97	\$440,638	—	\$(1,218)	\$ 38,519	\$ (15,175)	\$ 462,861
Comprehensive loss								
Net loss	—	—	—	—	—	(26,150)	—	(26,150)
Foreign currency translation adjustments	—	—	—	—	—	—	9,683	9,683
Total comprehensive loss	—	—	—	—	—	—	—	(16,467)
Exercise of stock options	23	—	152	—	—	—	—	152
Issuance of shares under Employee Stock Purchase Plan	735	1	5,621	—	—	—	—	5,622
Issuance of restricted common shares	106	—	1,122	\$(1,122)	—	—	—	—
Deferred stock-based compensation expense	—	—	—	340	—	—	—	340
Balance at December 31, 2002 . .	98,359	98	447,533	(782)	(1,218)	12,369	(5,492)	452,508
Comprehensive loss								
Net loss	—	—	—	—	—	(113,876)	—	(113,876)
Foreign currency translation adjustments	—	—	—	—	—	—	10,790	10,790
Total comprehensive loss	—	—	—	—	—	—	—	(103,086)
Exercise of stock options	105	—	760	—	—	—	—	760
Issuance of shares under Employee Stock Purchase Plan	582	1	2,878	—	—	—	—	2,879
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
Comprehensive income								
Net income	—	—	—	—	—	74,175	—	74,175
Foreign currency translation adjustments	—	—	—	—	—	—	9,870	9,870
Total comprehensive income . .	—	—	—	—	—	—	—	84,045
Exercise of stock options	245	—	1,743	—	—	—	—	1,743
Issuance of shares under Employee Stock Purchase Plan	774	1	4,338	—	—	—	—	4,339
Forfeiture of restricted common shares	(23)	—	(135)	135	—	—	—	—
Deferred stock-based compensation expense	—	—	—	110	—	—	—	110
Balance at December 31, 2004 . .	<u>100,110</u>	<u>\$100</u>	<u>\$457,335</u>	<u>\$ (566)</u>	<u>\$(1,218)</u>	<u>\$ (27,332)</u>	<u>\$ 15,168</u>	<u>\$ 443,487</u>

See accompanying Notes to Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2004	2003	2002
Operating activities			
Net income (loss)	\$ 74,175	\$(113,876)	\$(26,150)
Adjustments to reconcile to net cash provided by (used for) operating activities			
Depreciation & amortization	20,533	22,875	22,172
Amortization of intangible assets	2,448	1,955	1,460
Stock compensation expense	110	189	340
Deferred income taxes	(4,974)	68,902	(39,648)
Undistributed income of Sumitomo Eaton Nova Corporation	(30,531)	(8,954)	(4,806)
Changes in operating assets & liabilities			
Accounts receivable	(8,655)	(16,713)	6,196
Inventories	9,896	(4,264)	(7,327)
Other current assets	(794)	(3,926)	(1,283)
Accounts payable & other current liabilities	(7,004)	754	(10,476)
Deferred revenue	25,152	16,299	(254)
Income taxes	2,987	(1,045)	12,563
Other assets and liabilities	12,020	2,139	12,352
Expenditures for demo and evaluation tools	(23,730)	(21,234)	(19,152)
Net cash provided by (used for) operating activities	71,633	(56,899)	(54,013)
Investing activities			
Sales (purchases) of short-term investments, net	(3,545)	20,020	(34,992)
Proceeds from sale of building	5,958	—	—
Expenditures for property, plant & equipment	(5,541)	(4,993)	(11,751)
Acquisition of Matrix Integrated Systems, net of cash acquired of \$400	—	(14,572)	—
Decrease (increase) in restricted cash	77	(2,063)	(2,376)
Other—net	—	575	(260)
Net cash used for investing activities	(3,051)	(1,033)	(49,379)
Financing activities			
Proceeds from the exercise of stock options	1,743	760	152
Proceeds from Employee Stock Purchase Plan	3,129	4,095	3,654
Proceeds from long-term debt, net	—	—	121,578
Net cash provided by financing activities	4,872	4,855	125,384
Effect of exchange rate changes on cash	1,792	28	2,106
Net increase (decrease) in cash & cash equivalents	75,246	(53,049)	24,098
Cash & cash equivalents at beginning of period	93,249	146,298	122,200
Cash & cash equivalents at end of period	\$168,495	\$ 93,249	\$146,298
Cash paid for interest	\$ 5,597	\$ 6,298	\$ 2,656
Cash paid for income taxes	3,066	666	269

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, thermal processing and curing 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.

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 during the year 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.

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 materials usage, based on estimates of 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 using the straight-line method. 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. Expenditures 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 (primarily sustained losses from operations or a significant change in the use of an asset) indicate the carrying amount may not be recoverable. An impairment loss would be recognized based on the amount by which the carrying value of the asset exceeds its fair value.

Intangible Assets

Intangible assets are amortized on a straight-line basis over their estimated useful lives, five to ten years.

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, 2004, 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 55.4%, 65.6%, and 61.8% of revenue in 2004, 2003, and 2002, 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 cash equivalents and short-term investments. The primary objective of the Company's investment activities is to preserve principal while maximizing yields without significantly increasing risk. This is accomplished by investing in marketable high investment grade securities, limiting exposure to any one issue or issuer, and restricting term to maturity. The Company does not use derivative financial instruments to manage its investment portfolio and does not expect operating results or cash flows to be affected to any significant degree by any change in market interest rates. As of December 31, 2004, all investments mature within 90 days and are carried at cost, which approximates fair value.

Axcelis accesses the important Japanese market for ion implant through a joint venture that the Company does not control. The joint venture agreement gives both owners veto rights, so that neither of the owners alone can effectively control SEN. SEN's business is subject to the same risks as the Company's business. Royalties and equity income from SEN have made been a substantial contribution to the Company's earnings, and a substantial decline in SEN's sales and net income could have a material adverse

effect on the Company's operating results. As a result of this joint venture structure, the Company has less control over SEN management than over the Company's own management and may not have timely knowledge of factors affecting SEN's business. In addition, given the equal balance of ownership, it is possible that the SEN Board may be unable to reach consensus on important matters from time to time which could delay important decisions.

Some of the components and subassemblies included in the Company's products are obtained either from a sole source or a limited group of suppliers. Disruption to the Company's supply source could affect its ability to deliver products to its customers.

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, 2004. The fair value of the Company's convertible subordinated notes at December 31, 2004, estimated based on quoted market prices, approximated \$123.8 million.

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, payment history, customer creditworthiness 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, 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. In addition, the standard and non-standard warranties were accrued at the time of shipment. The Company recognized the full sales price at the time of shipment as management believed 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 provided that the majority of the purchase price was payable upon shipment. Terms generally contained delayed payment arrangements for a portion of the purchase price which were 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.

In December 2003, the Securities and Exchange Commission ("SEC") issued Staff Accounting Bulletin No. 104 ("SAB 104"), "Revenue Recognition." SAB 104 supersedes Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements" ("SAB 101"). SAB 104's primary purpose is to rescind accounting guidance contained in SAB 101 related to multiple element revenue arrangements, superseded as a result of the issuance of EITF 00-21. Additionally, SAB 104 rescinds the SEC's Revenue Recognition in Financial Statements Frequently Asked Questions and Answers ("the FAQ") issued with SAB 101 that had been codified in SEC Topic 13, Revenue Recognition. Selected portions of the FAQ have been incorporated into SAB 104. While the wording of SAB 104 has changed to reflect the issuance of

EITF 00-21, the revenue recognition principles of SAB 101 remain largely unchanged by the issuance of SAB 104. As a result, the adoption of this pronouncement did not have any impact on the Company's consolidated financial statements.

Axcelis' revenue transactions include sales of systems under multiple element arrangements. Revenue under these arrangements is allocated to each element, except systems, based upon its 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, with the residual amount being allocated to systems revenue. The value of the undelivered elements includes (a) the greater of (i) the fair value of the installation or (ii) the portion of the sales price that will not be received until the installation is completed (the "retention") plus (b) the fair value of all other undelivered elements. The amount allocated to installation is based upon the fair value of the service performed, including labor, which is based upon the estimated time to complete the installation and hourly rates, and material components. The fair value of all other undelivered 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, collectability is reasonably assured through historical collection results and regular credit evaluations, and there are no uncertainties regarding customer acceptance. Revenue from installation services is recognized at the time formal acceptance is received from the customer or, for installation of certain systems to certain customers, when both the formal acceptance and retention payment have been received. 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. 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, which may be the Axcelis standard specification. To ensure that the customer's specifications are satisfied, many customers request that newer systems 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. The Company believes the risk of failure to complete a system installation is remote. Should an installation not be completed successfully, 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 or obtaining customer acceptance upon shipment of the system or for initial shipments of systems with new technologies, Axcelis will defer the recognition of systems revenue until written customer acceptance of the system is obtained. This deferral period is generally within twelve months of shipment.

Services 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, or based on parts usage, where appropriate. Revenue related to time and material services is recognized when the services are performed. Revenue related to spare parts sales and equipment upgrades 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 revenue.

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 was equal to or greater than the market value of the underlying common shares.

As required by SFAS No. 123 the following pro forma 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		
	2004	2003	2002
Dividend yield	0%	0%	0%
Expected volatility	70%	74%	80%
Risk-free interest rate	2.6% to 3.5%	2.5% to 3.6%	2.8% to 4.5%
Expected option life in years	4	4	4
Weighted average fair value per share of options granted during the year	\$5.49	\$4.77	\$6.08

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 vesting periods.

	Year Ended December 31,		
	2004	2003	2002
Net income (loss), as reported	\$ 74,175	\$(113,876)	\$(26,150)
Deduct: Total stock-based employee compensation expense determined under fair value based method for all awards, net of related income tax effect	(21,610)	(22,525)	(29,892)
Pro forma net income (loss)	<u>\$ 52,565</u>	<u>\$(136,401)</u>	<u>\$(56,042)</u>
Net income (loss) per share as reported			
Basic	\$ 0.75	\$ (1.16)	\$ (0.27)
Diluted	\$ 0.73	\$ (1.16)	\$ (0.27)
Pro forma net income (loss) per share			
Basic	\$ 0.53	\$ (1.38)	\$ (0.57)
Diluted	\$ 0.52	\$ (1.38)	\$ (0.57)

Deferred Income Taxes

At December 31, 2004, the Company has \$90.9 million of deferred tax assets relating to net operating loss carryforwards, tax credit carryforwards and other temporary differences which are available to reduce income taxes in future years. 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.

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 to reduce the carrying value of deferred tax assets to zero.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability. However, going forward should the Company's return to profitability provide 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.

The Company has excluded 6,250, 8,179, and 6,960 incremental shares 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 2004, 2003, and 2002, respectively, because the effect is anti-dilutive.

The following table sets forth basic and diluted net income per share computational data for the years ended December 31, 2004, 2003 and 2002 (in thousands, except per share amounts):

	<u>2004</u>	<u>2003</u>	<u>2002</u>
Income (loss) available to common stockholders . . .	\$ 74,175	\$(113,876)	\$(26,150)
Weighted average common shares outstanding used in computing basic net income (loss) per share	99,528	98,514	97,920
Incremental shares	1,677	—	—
Weighted average common shares outstanding used in computing diluted net income (loss) per share	<u>101,205</u>	<u>98,514</u>	<u>97,920</u>
Basic net income (loss) per share	\$ 0.75	\$ (1.16)	\$ (0.27)
Diluted net income (loss) per share	\$ 0.73	\$ (1.16)	\$ (0.27)

Reclassifications

Certain amounts in prior years have been reclassified to conform to the current year presentation.

Recent Accounting Pronouncements

FIN 46R

In December 2003, the Financial Accounting Standards Board (“FASB”) issued Interpretation No. 46R “Consolidation of Variable Interest Entities, an Interpretation of Accounting Research Bulletin No. 51” (FIN 46R). FIN 46R provides a new consolidation model that determines control and consolidation based on potential variability in gains and losses. The provisions of FIN 46R are effective for enterprises with variable interests in variable interest entities created after December 31, 2003. For public companies with variable interests in variable interest entities created before December 31, 2003, the provisions of FIN 46R 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 46R did not have any impact on the Company’s consolidated financial statements.

SFAS 151

In November 2004 the FASB issued Statement of Financial Accounting Standards No. 151 (“SFAS 151”) “Inventory Costs, an amendment of ARB 43, Chapter 4”. SFAS 151 amends the guidance in ARB No. 43, Chapter 4, “Inventory Pricing” to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs, and wasted material (spoilage). SFAS 151 requires that idle facility expense, excessive spoilage, double freight, and rehandling costs be recognized as current period charges. In addition, SFAS 151 requires that allocation of fixed production overheads to the costs of conversion be based on the normal capacity of the production facilities. SFAS 151 is effective for inventory costs incurred during fiscal years beginning after June 15, 2005, however early adoption is permitted for inventory costs incurred during fiscal years beginning after November 2004. The Company plans to adopt SFAS 151 on January 1, 2006. The Company is assessing what effect, if any, adopting SFAS 151 will have on its financial position or results of operations.

SFAS 123R

On December 16, 2004 the FASB issued SFAS No. 123 (revised 2004), “Share-Based Payment” (SFAS 123(R)), which is a revision of SFAS No. 123, “Accounting for Stock-based Compensation”. SFAS 123(R) supersedes APB Opinion No. 25, “Accounting for Stock Issued to Employees” and Amends SFAS No. 95, “Statement of Cash Flows”. Generally, the approach in SFAS 123(R) is similar to the approach described in Statement 123. However, SFAS 123(R) requires all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is not an alternative.

SFAS 123(R) must be adopted no later than July 1, 2005. The Company plans to adopt SFAS 123(R) effective July 1, 2005.

SFAS 123(R) permits public companies to adopt its requirements using one of two methods: (1) a “modified prospective” approach or (2) a “modified retrospective” approach. Under the modified prospective approach, compensation cost is recognized beginning with the effective date based on (a) the requirements of SFAS 123(R) for all share based payments granted after the effective date and (b) the requirements of SFAS 123(R) for all awards granted to employees prior to the effective date of SFAS 123(R) that remain unvested on the effective date. The modified retrospective approach, includes the requirements of the modified prospective approach, but also permits entities to restate based on the amounts previously recognized under SFAS 123 for purposes of pro forma disclosures either all prior periods presented or prior interim periods of the year of adoption.

The Company is evaluating which method to adopt.

As permitted by SFAS 123, the Company currently accounts for share-based payments to employees using APB Opinion No. 25's intrinsic value method, and, as such, generally recognizes no compensation cost for employee stock options. Accordingly, the adoption of the fair value method will have a significant impact on our results of operations, although it will have no impact on our overall financial position. The impact of adoption of SFAS 123(R) cannot be predicted at this time because it will depend on levels of share-based payments granted in the future. However, had we adopted SFAS 123(R) in prior periods, the impact of that standard would have approximated the impact of SFAS 123 as described above in the disclosure of pro forma net income (loss) and net income (loss) per share.

SFAS 123(R) also requires the benefits of tax deductions in excess of recognized compensation cost to be reported as a financing cash flow, rather than as an operating cash flow under current literature. Since the Company does not have the benefit of tax deductions in excess of recognized compensation cost, because of the Company's net operating loss position, this change will have no immediate impact on the Company's consolidated financial statements.

Note 3. Restricted Cash

The components of restricted cash follow:

	December 31,	
	2004	2003
Cash collateralizing standby letters of credit	\$ 3,498	\$ 3,800
Bank guarantees	2,841	2,616
	<u>\$ 6,339</u>	<u>\$ 6,416</u>

In addition to guarantees that are cash collateralized, the Company has guarantees related to value added tax claims and refunds in Europe of approximately \$6.3 million at December 31, 2004.

Note 4. Accounts Receivable

The components of accounts receivable follow:

	December 31,	
	2004	2003
Trade receivables	\$ 87,395	\$ 77,574
Allowance for doubtful accounts	(3,628)	(3,823)
	<u>\$ 83,767</u>	<u>\$ 73,751</u>

Note 5. Inventories

The components of inventories follow:

	December 31,	
	2004	2003
Raw materials	\$ 77,669	\$ 87,197
Work in process	29,134	32,724
Finished goods (completed systems)	9,527	4,064
	<u>\$116,330</u>	<u>\$123,985</u>

Note 6. Property, Plant & Equipment

The components of property, plant and equipment follow:

	December 31,	
	2004	2003
Land & buildings	\$ 72,283	\$ 69,058
Machinery & equipment	61,675	61,663
Construction in process	3,841	4,340
	137,799	135,061
Accumulated depreciation	(62,524)	(54,134)
	<u>\$ 75,275</u>	<u>\$ 80,927</u>

Depreciation expense (in millions) was \$10.8, \$11.3, and \$10.0 for the years ended December 31, 2004, 2003, and 2002 respectively. At December 31, 2003, a building held for sale (approximately \$5.9 million) was included in other current assets. The sale was finalized in January 2004.

Note 7. Goodwill and Intangible Assets

The components of intangible assets follow:

	December 31,	
	2004	2003
Developed technology	\$ 48,030	\$ 48,030
Customer-related	903	903
	48,933	48,933
Accumulated amortization	(31,262)	(28,814)
	<u>\$ 17,671</u>	<u>\$ 20,119</u>

Estimated amortization expense for the year ending December 31, 2005 and for each of the three succeeding years is \$2.4 million. Estimated amortization expense for each of the years 2009 through 2011 is \$2.3 million. Estimated amortization expense for 2012 is \$0.8 million and for 2013 is \$0.4 million.

In connection with the acquisition of Matrix Integrated Systems, Inc. on July 3, 2003, the Company recorded goodwill of \$6.1 million and other intangible assets of \$8.9 million.

Note 8. Demo and Evaluation Tools

Demo tools, used in-house for research and development and training, and evaluation tools, which are located at customers' sites and are being evaluated for potential purchase, included in amounts reported in other assets follow:

	December 31,	
	2004	2003
Demo and evaluation tools	\$ 62,715	\$ 62,486
Accumulated amortization	(34,437)	(35,274)
	<u>\$ 28,278</u>	<u>\$ 27,212</u>

The useful lives of demo and evaluation tools ranges from three to five years. Amortization expense in 2004, 2003, and 2002 (in millions) was \$9.3, \$11.2, and \$11.8, respectively.

Note 9. Acquisition of Matrix Integrated Systems

On July 3, 2003, the Company completed the acquisition of Matrix Integrated Systems, Inc. (“Matrix”), a dry strip equipment supplier based in Richmond, California for cash and acquisition expenses totaling \$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 10. Restructuring Charges

Restructuring expense of \$1.0 million in 2004 consists primarily of severance and other one-time termination benefits related to reduction in force actions and the consolidation of the Company’s Rockville, Maryland operations into its headquarters and manufacturing facility located in Beverly, Massachusetts. As of December 31, 2004, \$0.3 million had been paid, with the remaining balance of \$0.7 million expected to be paid in 2005. The Company expects to incur approximately \$9.0 million related to both of these actions, of which \$7.0 to \$8.0 million is expected to be incurred over the first three quarters of 2005. Approximately \$6.0-\$7.0 million of this amount is expected to result in future cash expenditures.

Restructuring expense of \$4.9 million in 2003 relates to severance and other benefits associated with reduction in force actions the Company took in 2003 to reduce headcount by approximately 200 permanent positions. As of December 31, 2004, \$4.9 million had been paid.

Note 11. 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, non standard warranty, and product installation obligations 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 product installation or non standard warranty but defers the portion of systems revenue attributable to the fair value of future services to be delivered. 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 liability and adjusts the amount as necessary.

Changes in the Company’s product warranty and installation liability for the years ended December 31, 2004, 2003, and 2002 follow:

	December 31,		
	2004	2003	2002
Beginning balance	\$ 17,197	\$ 16,625	\$ 24,218
Warranties and installations issued during the period	10,438	22,292	19,079
Settlements made during the period	(16,226)	(22,314)	(25,936)
Changes in liability for pre-existing warranties and installations during the period	(485)	594	(736)
Balance at December 31	<u>\$ 10,924</u>	<u>\$ 17,197</u>	<u>\$ 16,625</u>
Amount classified as current	\$ 9,218	\$ 13,648	\$ 11,466
Amount classified as long-term	1,706	3,549	5,159
	<u>\$ 10,924</u>	<u>\$ 17,197</u>	<u>\$ 16,625</u>

Note 12. 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 restrictions on the payment of dividends, minimum levels of tangible net worth, liquidity and profitability as well as maximum levels of indebtedness and capital spending. At December 31, 2004, the Company was in compliance with all covenants. The Company incurs an annual commitment fee based on an EBITDA formula outlined in the agreement applied to the full commitment. The commitment fee for the years ended December 31, 2004, 2003 and 2002 (in millions) was \$0.3, \$0.2, and \$0.2.

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. 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 over the term of the Notes to interest expense using the straight-line method, which approximates the effective interest method.

Note 13. 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 both 2004 and 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 one thousand dollars 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 one thousand dollars. Under this plan, approximately (in millions) \$2.5, \$2.3, and \$1.3 was recognized as expense in 2004, 2003 and 2002, respectively.

Note 14. Stock Award Plans

2000 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 future grant. The Plan provides that the 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 of Directors. 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, and 2002. In 2004, the Board of Directors elected not to increase the shares available for grant. The Plan expires in 2012. 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, 2004 and 2003 and 2002:

	2004		2003		2002	
	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price	Shares	Weighted-Average Exercise Price
Outstanding at beginning of year	14,171	\$12.10	13,016	\$13.13	9,364	\$15.05
Granted	2,157	10.05	3,353	8.27	4,973	10.04
Exercised	(245)	7.11	(105)	7.32	(23)	6.79
Cancellations	(483)	9.96	(1,337)	11.52	(924)	14.91
Expirations	(282)	14.86	(756)	14.46	(374)	16.57
Outstanding at end of year	<u>15,318</u>	\$11.91	<u>14,171</u>	\$12.10	<u>13,016</u>	\$13.12
Exercisable at end of year	<u>8,947</u>	\$13.48	<u>6,757</u>	\$14.18	<u>4,776</u>	\$14.02
Available for grant at end of year	<u>17,199</u>		<u>18,568</u>		<u>14,944</u>	

The following table summarizes information with respect to stock options outstanding and exercisable at December 31, 2004:

Range of Exercise Price	Outstanding at December 31, 2004	Weighted-Average Exercise Price	Exercisable at December 31, 2004	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life
\$ 4.97-\$ 7.25	2,875	\$ 5.84	1,208	\$ 5.96	7.6 Years
\$ 7.94-\$11.91	7,015	9.89	3,118	9.36	7.2
\$11.97-\$16.63	2,798	13.73	2,112	13.77	6.7
\$18.06-\$24.13	2,630	22.00	2,509	22.00	5.5
	<u>15,318</u>	\$11.91	<u>8,947</u>	\$13.48	6.9

There were (in thousands) 152 and 174 shares of restricted stock outstanding under the Plan at December 31, 2004 and 2003, respectively.

Note 15. Stockholders' Equity

Preferred Stock

The Company may issue up to 30.0 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 3.0 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, 2004 and 2003, 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 approximately 1.0 million in each of the years 2004, 2003 and 2002. The maximum shares that may be issued under the plan may not exceed 7.5 million. At December 31, 2004, there were 4.0 million shares of common stock reserved for issuance under this plan.

Other Reserved Shares

At December 31, 2004, there were 6,250 shares of common stock reserved for issuance upon conversion of the Notes.

Note 16. Commitments and Contingencies

Lease Commitments

Minimum rental commitments under noncancelable operating leases, which expire at various dates and in most cases contain renewal options, are as follows (in millions): 2005, \$5.3; 2006, \$3.5; 2007, \$2.6; 2008, \$0.4; 2009, \$0.3; thereafter: \$0.5.

Rental expense in 2004, 2003, and 2002 (in millions) was \$7.7, \$8.5, and \$9.2, respectively.

Litigation

From time to time, the Company may be subject to legal proceedings and claims arising from the conduct of its business including litigation related to intellectual property matters, customer contract

matters, employment claims and environmental matters. At December 31, 2004, the Company is not a party to any material legal proceedings.

Indemnifications

The Company's system sales agreements typically include provisions under which the Company agrees to take certain actions, provide certain remedies and defend its customers against third-party claims of intellectual property infringement under specified conditions and to indemnify customers against any damage and costs awarded in connection with such claims. The Company has not incurred any material costs as a result of such indemnifications and has not accrued any liabilities related to such obligations in the accompanying consolidated financial statements.

Note 17. 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, curing systems, and thermal processing systems. In addition to equipment, Axcelis provides post-sales equipment service and support, including spare parts, equipment upgrades, maintenance services and customer training.

Revenue by product line follow:

	Years ended, December 31,		
	2004	2003	2002
Ion implantation systems, services, and royalties . . .	\$412,311	\$243,850	\$243,432
Other products systems, services, and royalties	95,665	84,140	74,652
	<u>\$507,976</u>	<u>\$327,990</u>	<u>\$318,084</u>

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

	Revenue	Long-Lived Assets
2004		
United States	\$424,723	\$73,805
Europe	34,897	488
Asia Pacific	48,356	982
	<u>\$507,976</u>	<u>\$75,275</u>
2003		
United States	\$271,981	\$79,396
Europe	26,016	343
Asia Pacific	29,993	1,188
	<u>\$327,990</u>	<u>\$80,927</u>
2002		
United States	\$272,151	\$91,709
Europe	23,557	362
Asia Pacific	22,376	1,526
	<u>\$318,084</u>	<u>\$93,597</u>

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

International revenues, including export sales from U.S. manufacturing facilities to foreign customers, sales by foreign subsidiaries and branches, and royalties were (in millions) \$390.9 (77.0%) in 2004, \$214.1 (65.3%), in 2003, and \$169.5 (53.3%) in 2002.

Note 18. Income Taxes

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

	Years ended, December 31,		
	2004	2003	2002
United States	\$33,877	\$(55,810)	\$(55,038)
Foreign	10,731	2,515	489
Equity income of Sumitomo Eaton Nova Corporation	30,531	8,954	4,806
	<u>\$75,139</u>	<u>\$(44,341)</u>	<u>\$(49,743)</u>

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

	Years ended, December 31,		
	2004	2003	2002
Current			
United States			
Federal	\$ 648	—	\$ 8,683
State	310	\$ 378	2,929
Foreign	4,980	255	4,443
Total current	5,938	633	16,055
Deferred			
United States	(3,986)	66,102	(37,093)
Foreign	(988)	2,800	(2,555)
Total deferred	(4,974)	68,902	(39,648)
Income taxes (credit)	<u>\$ 964</u>	<u>\$69,535</u>	<u>\$(23,593)</u>

Income tax expense for 2004 has been reduced by \$4.0 million from the reversal of income tax accruals recorded in prior years related to certain income tax matters that were resolved in the second quarter.

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:

	Years ended, December 31,		
	2004	2003	2002
Income taxes (credit) at the United States statutory rate	\$ 26,299	\$(15,520)	\$(17,410)
State income taxes, net of federal income tax benefit	201	378	(997)
Realized net operating loss carryforwards	(11,596)	—	—
Change in valuation allowance	—	80,999	900
Tax on unremitted earnings of foreign subsidiaries	—	9,007	—
Credit for increasing research activities	—	(4,698)	(5,791)
Foreign income tax rate differentials	(362)	(29)	(229)
Equity income of Sumitomo Eaton Nova Corporation	(10,686)	(3,134)	(1,682)
Reversal of income tax liabilities recorded in prior years	(3,986)	—	—
Other—net	1,094	2,532	1,616
	<u>\$ 964</u>	<u>\$ 69,535</u>	<u>\$(23,593)</u>

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

	December 31,			
	2004		2003	
	Current	Long-term	Current	Long-term
Inventories	\$ 12,730	—	\$ 11,119	—
Warranty	2,076	\$ 384	4,722	\$ 1,228
Deferred revenue	5,845	2,694	4,532	733
Property, plant & equipment	—	(1,892)	—	(5,279)
Intangible assets	—	(6,532)	—	(4,680)
Unremitted earnings of foreign subsidiaries	—	(8,513)	—	(9,007)
Net operating loss carryforwards	—	52,762	—	63,687
Tax credit carryforwards	—	28,194	—	22,410
Other	3,692	(512)	2,422	(274)
	<u>24,343</u>	<u>66,585</u>	<u>22,795</u>	<u>68,818</u>
Valuation allowance	(24,343)	(66,585)	(22,795)	(68,818)
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>

At December 31, 2004, the Company has \$90.9 million of deferred tax assets relating to net operating loss carryforwards, tax credit carryforwards and other temporary differences which are available to reduce income taxes in future years. 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.

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 to reduce the carrying value of deferred tax assets to zero.

The Company expects to record a full valuation allowance on future tax benefits until it can sustain an appropriate level of profitability. However, going forward should the Company’s return to profitability provide 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.

Changes in the valuation allowance in 2004 were attributable to changes in the composition of temporary differences and increases in tax credit carryforwards which were offset by realization of benefits from the use of net operating loss carryforwards to reduce taxable income. The valuation allowance was increased by \$90.7 million in 2003 of which \$81.0 million was charged to income tax expense, \$4.8 million was reclassified from current taxes payable, and \$4.9 million related to deferred tax assets obtained with the acquisition of Matrix in July 2003.

At December 31, 2004, the Company has federal, state, and foreign net operating loss carryforwards expiring principally between 2020 and 2024, the tax effect of which is approximately \$52.8 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 in the year the benefit is realized.

The Company has research and development and other tax credit carryforwards of approximately \$25.7 million at December 31, 2004 that can be used to reduce future income tax liabilities. The carryforwards expire principally between 2021 and 2024. In addition, the Company has foreign tax credit carryforwards of approximately \$2.5 million at December 31, 2004 that are available to reduce future U.S. income tax liabilities subject to certain limitations. These foreign tax credit carryforwards expire between 2011 and 2014.

Undistributed earnings of the Company's foreign subsidiaries on which it has not provided U.S. income taxes approximated \$4.8 million at December 31, 2004. In addition, the Company has not provided income taxes on \$106.3 million of 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.

Because of its current net operating loss carryforward position and the availability of significant income tax credit carryforwards, the Company does not believe the special one-time dividends received deduction introduced as part of the American Jobs Creation Act of 2004 presents an advantage at this time. Accordingly, the Company has no plans to repatriate earnings of its foreign subsidiaries.

Note 19. Significant Customers

In 2004, one customer, ST Microelectronics, accounted for 14.9% of revenue. In 2003, two customers, Samsung and Micron, individually accounted for 11.7% and 10.9% of revenue respectively. In 2002, one customer, IBM, individually accounted for 13.8% of revenue. Net sales to the Company's ten largest customers accounted for 55.4%, 65.6%, and 61.8%, of revenue, respectively, in 2004, 2003, and 2002.

Note 20. Sumitomo Eaton Nova Corporation (unaudited)

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:

	<u>2004</u>	<u>2003</u>	<u>2002</u>
Twelve months ended November 30:			
Net sales	\$329,744	\$164,179	\$138,690
Gross profit	165,683	78,132	62,483
Income from operations	100,090	32,573	15,510
Net income	61,063	17,908	9,611
November 30:			
Current assets	279,663	185,705	122,596
Noncurrent assets	40,245	34,560	36,955
Current liabilities	100,967	72,570	42,522
Noncurrent liabilities	496	800	952

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 and balances payable to or receivable from SEN follows:

	<u>2004</u>	<u>2003</u>	<u>2002</u>
Net sales	\$ 3,374	\$3,179	\$1,906
Royalty revenue	12,951	5,866	8,275
Dividends received	—	456	464
Axcelis' equity income of SEN	30,531	8,954	4,806
Accounts payable at December 31	162	2,623	339
Accounts receivable at December 31	1,816	495	695

Axcelis' retained earnings included \$67.6 million and \$37.1 million of undistributed earnings of SEN at December 31, 2004 and 2003, respectively.

Note 21. Quarterly Results of Operations (unaudited)

	<u>Dec. 31, 2004⁽¹⁾</u>	<u>Sept. 30, 2004</u>	<u>June 30, 2004</u>	<u>March 31, 2004</u>	<u>Dec. 31, 2003⁽²⁾</u>	<u>Sept. 30, 2003⁽³⁾</u>	<u>June 30, 2003⁽⁴⁾</u>	<u>March 31, 2003</u>
Revenue	\$94,508	\$127,896	\$151,348	\$134,224	\$98,619	\$59,272	\$85,929	\$84,170
Gross profit	38,873	54,079	68,400	50,176	38,490	14,164	28,274	29,440
Net income (loss)	7,041	19,082	34,471	13,581	3,270	(31,942)	(78,878)	(6,326)
Net income (loss) per share								
Basic	\$ 0.07	\$ 0.19	\$ 0.35	\$ 0.14	\$ 0.03	\$ (0.32)	\$ (0.80)	\$ (0.06)
Diluted	\$ 0.07	\$ 0.19	\$ 0.33	\$ 0.13	\$ 0.03	\$ (0.32)	\$ (0.80)	\$ (0.06)

(1) Includes restructuring cost of \$1.0 million.

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

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

(4) 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: March 11, 2005

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.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ MARY G. PUMA</u> Mary G. Puma	Director and Principal Executive Officer	March 11, 2005
<u>/s/ STEPHEN G. BASSETT</u> Stephen G. Bassett	Principal Accounting and Financial Officer	March 11, 2005
<u>/s/ ALEXANDER M. CUTLER</u> Alexander M. Cutler	Director	March 11, 2005
<u>/s/ R. JOHN FLETCHER</u> R. John Fletcher	Director	March 11, 2005
<u>/s/ STEPHEN R. HARDIS</u> Stephen R. Hardis	Director	March 11, 2005
<u>/s/ WILLIAM C. JENNINGS</u> William C. Jennings	Director	March 11, 2005
<u>/s/ PATRICK H. NETTLES</u> Patrick H. Nettles	Director	March 11, 2005
<u>/s/ H. BRIAN THOMPSON</u> H. Brian Thompson	Director	March 11, 2005
<u>/s/ GARY L. TOOKER</u> Gary L. Tooker	Director	March 11, 2005

Exhibit Index

<u>Exhibit No.</u>	<u>Description</u>
3.1	Amended and Restated Certificate of Incorporation of the Company. Incorporated by reference to 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 to 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 to 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 to 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 to 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 to Exhibit 4.1 of 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 to Exhibit 4.2 of 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. Incorporated by reference to Exhibit 10.1 of the Company's Report on Form 10-K for the year ended December 31, 2003 filed with the Commission on March 8, 2004.
10.2*	Employee Stock Purchase Plan, adopted by the Board of Directors on June 9, 2000. Incorporated by reference to Exhibit 10.2 of the Company's report on Form 10-Q for the quarter ended September 30, 2000 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 to 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 each of its executive officers, updated as of May 1, 2002. Filed herewith.
10.5*	Executive Separation Agreement between the Company and Jan Paul van Maaren. Incorporated by reference to Exhibit 10.1 of the Company's Report on Form 8-K filed with the Commission on February 3, 2005.

<u>Exhibit No.</u>	<u>Description</u>
10.6*	Form of Employee non-qualified stock option grant under the 2000 Stock Plan, updated as of April 5, 2002. Incorporated by reference to Exhibit 10.1 of the Company's report on Form 10-Q filed with the Commission on November 9, 2004.
10.7*	Form of Non-Employee Director stock non-qualified stock option grant under the 2000 Stock Plan, updated as of July 12, 2004. Incorporated by reference to Exhibit 10.2 of the Company's report on Form 10-Q filed with the Commission on November 9, 2004.
10.8*	Employment Agreement between the Company and Mary G. Puma. Incorporated by reference to Exhibit 10.5 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.9**	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 to Exhibit 10.6 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.10**	Master License Agreement dated January 16, 1996 between Eaton Corporation and Sumitomo Eaton Nova Corporation. Incorporated by reference to Exhibit 10.7 of the Company's Registration Statement on Form S-1 (Registration No. 333-36330).
10.11*	Executive Officer Agreement dated as of December 18, 2003 between the Company and Stephen G. Bassett. Incorporated by reference to Exhibit 10.2 of the Company's report on Form 10-K filed with the Commission on March 8, 2004.
10.12*	Axcelis Team Incentive Plan for executive officers, adopted by the Compensation Committee of the Board of Directors on January 26, 2005. Incorporated by reference to Exhibit 10.1 of the Company's Report on Form 8-K filed with the Commission on January 31, 2005.
10.13*	Employee Stock Purchase Plan, as amended by the Board of Directors on January 27, 2005, effective July 1, 2005. Filed herewith.
10.14*	Executive Officer Cash Compensation at March 1, 2005. Filed herewith.
10.15*	Director Compensation at March 1, 2005. Filed herewith.
14.1	Ethical Business Conduct at Axcelis, revised through January 2003. Incorporated by reference to 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 Registered Public Accounting Firm. 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 11, 2005. 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 11, 2005. 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 11, 2005. 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 11, 2005. Filed herewith.
99.1	Factors affecting future operating results as of December 31, 2004. Filed herewith.

<u>Exhibit No.</u>	<u>Description</u>
99.2	Charter of the Audit Committee of the Board of Directors of Axcelis, as adopted on April 29, 2004. Incorporated by reference to Exhibit 99.2 of the Company's report on Form 10-Q filed with the Commission on August 6, 2004.
99.3	Governance Policies adopted by the Board of Directors of Axcelis on September 26, 2002 and amended on October 22, 2003. Incorporated by reference to Exhibit 99.3 of the Company's report on Form 10-K filed with the Commission on March 8, 2004.
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.

Schedule II—Valuation and Qualifying Accounts
Axcelis Technologies, Inc.
(In thousands)

	<u>Balance at Beginning of Period</u>	<u>Charged to Costs and Expenses</u>	<u>Deductions</u>	<u>Other(*)</u>	<u>Balance at End of Period</u>
Year Ended December 31, 2004					
Allowance for doubtful accounts and returns . . .	\$ 3,823	\$ 82	\$ 277	—	\$ 3,628
Reserve for excess and obsolete inventory . . .	8,966	10,107	3,963	\$246	15,356
Year Ended December 31, 2003					
Allowance for doubtful accounts and returns . . .	\$ 3,644	\$ 318	\$ 139	—	\$ 3,823
Reserve for excess and obsolete inventory . . .	14,692	4,493	11,204	985	8,966
Year Ended December 31, 2002					
Allowance for doubtful accounts and returns . . .	\$ 4,102	(\$ 146)	\$ 312	—	\$ 3,644
Reserve for excess and obsolete inventory . . .	11,367	8,729	6,192	788	14,692

(*) represents foreign currency translation adjustments.

(This Page Intentionally Left Blank)

AXCELIS TECHNOLOGIES, INC.

Form 10-K for the year ended December 31, 2004

FACTORS AFFECTING FUTURE OPERATING RESULTS

From time to time, we may make forward-looking public statements, such as statements concerning our then expected future revenues or earnings or concerning the prospects for our markets or our product development, projected plans, performance, order procurement as well as other estimates relating to future operations. Forward-looking statements may be in reports filed under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), in registration statements filed under the Securities Act of 1933, as amended (the "Securities Act"), in press releases or informal statements made with the approval of an authorized executive officer. The words or phrases "will likely result," "are expected to," "will continue," "is anticipated," "estimate," "project," or similar expressions are intended to identify "forward-looking statements" within the meaning of Section 21E of the Exchange Act and Section 27A of the Securities Act, as enacted by the Private Securities Litigation Reform Act of 1995.

We wish to caution you not to place undue reliance on these forward-looking statements. These statements speak only as of the date on which they are made and represent management's expectations based on information available to them at that time. The factors listed below, as well as other factors that we may or may not have not currently identified, could affect our financial or other performance and could cause our actual results for future periods to differ materially from any opinions or statements expressed with respect to future periods or events in any current statement.

We will not undertake and specifically decline any obligation to publicly release revisions to these forward-looking statements to reflect either circumstances after the date of the statements or the occurrence of events that may cause us to re-evaluate our forward-looking statements.

In connection with the "safe harbor" provisions of the Private Securities Litigation Reform Act, we are hereby filing cautionary statements identifying important factors that could cause our actual results to differ materially from those projected in forward-looking statements made by us or on our behalf.

If semiconductor manufacturers do not make sufficient capital expenditures, our sales and profitability will be harmed.

Almost all of our new orders will depend upon demand from semiconductor manufacturers who build or expand fabrication facilities. If the rate of construction or expansion of fabrication facilities declines, demand for our systems will decline, reducing our revenues. This would also hurt our profitability, because of our high fixed cost structure and our continued investments in engineering, research and development and marketing necessary to develop new products and to maintain extensive customer service and support capabilities limit our ability to reduce expenses in proportion to declining sales.

Our quarterly financial results may fluctuate significantly.

We derive most of our revenues from the sale of a relatively small number of expensive products to a small number of customers. The list prices on these products range from \$200,000 to over \$4.0 million. At our current sales level, each sale, or failure to make a sale, could have a material effect on us in a particular quarter. In a given quarter, a number of factors can adversely affect our revenues and results, including changes in our product mix, increased fixed expenses per unit due to reductions in the number of products manufactured, and higher fixed costs due to increased levels of research and development and expansion of our worldwide sales and marketing organization. Axcelis' financial results also fluctuate based on gross profit realized on sales. Gross profit as a percentage of revenue may vary based on a variety of factors, including the mix and average selling prices of products sold, costs to manufacture and customize systems and warranty costs. Our gross margins also may be affected by the introduction of new products. Due to the foregoing factors, we believe that period-to-period comparisons of our operating results should not be relied upon as an indicator of our future performance.

Our quarterly financial results may fall short of anticipated levels; forecasting quarterly revenues and profitability is complex and may be inaccurate.

Management typically provides financial forecasts for the subsequent quarter in the earnings release for each quarter. These forecasts are based on assumptions believed to be reasonable when made of shipment timing and contract terms, but in some cases, at the time the forecast is made the final customer terms may not have been agreed and documented, so the level of revenues recognizable in a particular quarter may vary from the forecast. Our lengthy sales cycle, coupled with customers' competing capital budget considerations, make the timing of customer orders uneven and difficult to predict. 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. As a result, our revenues and operating results for a quarter depend on our shipping orders as scheduled during that quarter as well as obtaining new orders for products to be shipped in that same quarter. Any delay in, or cancellation of, scheduled shipments or in shipments from new orders could materially and adversely affect our financial results.

The SEC's Staff Accounting Bulletin 104, addressing revenue recognition, has added additional complexity in forecasting quarterly revenues and profitability. Orders for our products usually contain multiple delivery elements that result in revenue deferral under generally accepted accounting principles. Due to the foregoing factors, investors should understand that our actual financial results for a quarter may vary significantly from our forecasts of financial performance for that quarter. Failure to meet forecast financial performance may have an adverse effect on the price of our common stock.

The semiconductor industry is highly cyclical and we expect that demand for our products will regularly increase and decrease, making it difficult to manage the business and potentially causing harm to our sales and profitability.

The semiconductor business is highly cyclical, experiencing upturns where the demand for our products is high and downturns where our customers are not investing in new or expanded fabrication facilities. Our revenues can vary significantly from one point in the cycle to another, making it difficult to manage the business, both when revenues are increasing and when they are decreasing. In addition, a substantial portion of the Company's operating expenses are fixed and do not fluctuate with changes in volume. Significant decreases in revenues can therefore have a disproportionate effect on profitability.

Oversupply in the semiconductor industry reduces demand for capital equipment, including our products.

From time to time, inventory buildups in the semiconductor industry, resulting in part from the down cycle, produce an oversupply of semiconductors. This will cause semiconductor manufacturers to revise capital spending plans, resulting in reduced demand for capital equipment such as our products. If an oversupply is not reduced by increasing demand from the various electronics industries that use semiconductors, which we cannot accurately predict, our sales and profitability will be harmed.

If we fail to develop and introduce reliable new or enhanced products and services that meet the needs of semiconductor manufacturers, our results will suffer.

Rapid technological changes in semiconductor manufacturing processes require us to respond quickly to changing customer requirements. Our future success will depend in part upon our ability to develop, manufacture and successfully introduce new systems and product lines with improved capabilities and to continue to enhance existing products, including products that process 300 millimeter wafers using a single wafer platform. This will depend upon a variety of factors, including new product selection, timely and efficient completion of product design and development and of manufacturing and assembly processes, product performance in the field and effective sales and marketing. In particular:

- We must develop the technical specifications of competitive new systems, or enhancements to our existing systems, and manufacture and ship these systems or enhancements in volume in a timely manner.
- We will need to accurately predict the schedule on which our customers will be ready to transition to new products, in order to accurately forecast demand for new products while managing the transition from older products.
- We will need to effectively manage product reliability or quality problems that often exist with new systems, in order to avoid reduced orders, higher manufacturing costs, delays in acceptance and payment and additional service and warranty expenses.
- Our new products must be accepted in the marketplace.

Our failure to meet any of these requirements will have a material adverse effect on our operating results and profitability.

If we fail to compete successfully in the highly competitive semiconductor equipment industry, our sales and profitability will decline.

The market for semiconductor manufacturing equipment is highly competitive and includes companies with substantially greater financial, engineering, manufacturing, marketing and customer service and support resources than we have that may be better positioned to compete successfully in the industry. In addition, there are smaller, emerging semiconductor equipment companies that provide innovative systems with technology that may have performance advantages over our systems. Competitors are expected to continue to improve the design and performance of their existing products and processes and to introduce new products and processes with improved price and performance characteristics. If we are unable to improve or introduce competing products when demanded by the markets, our business will be harmed. In addition, if competitors enter into strategic relationships with leading semiconductor manufacturers covering products similar to those sold or being developed by us,

our ability to sell products to those manufacturers may be adversely affected. Finally, if we must lower prices to maintain competitive without commensurate cost of goods savings, our gross margins and profitability will be adversely affected.

We have been dependent on sales to a limited number of large customers; the loss of any of these customers or any reduction in orders from them could materially affect our sales.

Historically, we have sold a significant proportion of our products and services to a limited number of fabricators of semiconductor products. For example, in 2004, our customer, ST Microelectronics accounted for 14.9% of our net sales. Also, in 2004, our top ten customers accounted for 61% of our net sales. None of our customers has entered into a long-term agreement requiring it to purchase our products. Although the composition of the group comprising our largest customers has varied from year to year, the loss of a significant customer or any reduction or delays in orders from any significant customer, including reductions or delays due to customer departures from recent buying patterns, or market, economic or competitive conditions in the semiconductor industry, could adversely affect us. The ongoing consolidation of semiconductor manufacturers may also increase the harmful effect of losing one or more significant customers.

We access the important Japanese market for ion implant through a joint venture that we do not control.

We own 50% of the equity of a Japanese corporation called Sumitomo Eaton Nova Corporation or SEN, to which we have granted an exclusive license to manufacture and sell ion implanters in Japan. Historically, Japan has represented approximately 20% of the annual worldwide market for ion implanters. Sumitomo Heavy Industries, Ltd., a Japanese manufacturer of industrial machinery and ships, owns the remaining 50% of the equity. Neither Axcelis nor Sumitomo has the right to buy out the other's interest in SEN and the SEN joint venture is perpetual (although SEN's license to use our technology could be terminated, as described below). Our joint venture agreement with Sumitomo gives both owners veto rights, so that neither of us alone can effectively control SEN. SEN's business is subject to the same risks as our business. Royalties and income from SEN have been a substantial contribution to our earnings, and a substantial decline in SEN's sales and net income could have a material adverse effect on our net income. As a result of this joint venture structure, we have less control over SEN management than over our own management. In addition, given the equal balance of ownership, it is possible that the SEN Board may be unable to reach consensus from time to time, which could delay important decisions.

Although SEN and Axcelis triggered a provision requiring good faith negotiations on modifications to the license agreement, during 2004, no modifications were reached. The license agreement will continue in its existing form on a year-to-year basis, subject to the right of either party to terminate. Under the SEN bylaws, termination of the license agreement by SEN would be an important matter requiring approval of a majority of the SEN directors. Given Axcelis' 50% representation on the SEN Board, the license agreement will be perpetual until such time as Axcelis deems a termination to be in its interest. Axcelis does not expect to terminate the SEN license agreement. During 2005, Axcelis intends to continue to pursue agreement with SEN on amendments to the license agreement to add additional licensed products and related royalty terms.

We may occasionally allow SEN to sell implanters outside of Japan. We allow these sales when they are consistent with Axcelis' marketing policies and procedures. When these sales are allowed, we receive commissions in addition to royalties from SEN on these extra-territorial sales and assume most of the post-installation warranty responsibility. However, the financial benefit to Axcelis from the sale of a

SEN implant is less than the financial benefit of a sale of an Axcelis implant, so such extra-territorial sales may have an adverse effect on the Company's revenues.

Axcelis is subject to the risks of operating internationally and we derive a substantial portion of our revenues from outside the United States, especially from Asia.

We are substantially dependent on sales of our products and services to customers outside the United States. International sales, including export sales from our U.S. manufacturing facilities to non-U.S. customers and sales by our non-U.S. subsidiaries and branches, accounted for 77.0% of total revenue in 2004, 65.3% in 2003, and 53.3% in 2002. In recent years, the percentage of shipments to Asia has been increasing. System shipments to Asian customers represented 74% of total shipment dollars in 2004 in comparison to 60% of total shipment dollars in 2003. We anticipate that international sales will continue to account for a significant portion of our revenue. Because of our dependence upon international sales, our results and prospects may be adversely affected by a number of factors, including:

- unexpected changes in laws or regulations resulting in more burdensome governmental controls, tariffs, restrictions, embargoes or export license requirements;
- difficulties in obtaining required export licenses;
- volatility in currency exchange rates;
- political and economic instability, particularly in Asia;
- difficulties in accounts receivable collections;
- extended payment terms beyond those customarily offered in the United States;
- difficulties in managing distributors or representatives outside the United States;
- difficulties in staffing and managing foreign subsidiary and branch operations; and
- potentially adverse tax consequences.

We may not be able to maintain and expand our business if we are not able to hire, retain and integrate qualified personnel.

Our business depends on our ability to attract and retain qualified, experienced employees. There is substantial competition for experienced engineering, technical, financial, sales and marketing personnel in our industry. In particular, we must attract and retain highly skilled design and process engineers. Competition for such personnel is intense, particularly in the Boston metropolitan area, as well as in other locations around the world. In 2004, we announced the relocation of our Rockville, Maryland operations into our Beverly, Massachusetts headquarters. Although a number of employees will be relocating, we will need to hire to fill open positions in Beverly. If we are unable to retain our existing key personnel, or attract and retain additional qualified personnel, we may from time to time experience levels of staffing inadequate to develop, manufacture and market our products and perform services for our customers. As a result, our growth could be limited or we could fail to meet our delivery commitments or experience deterioration in service levels or decreased customer satisfaction, all of which could adversely affect our financial results.

Our dependence upon a limited number of suppliers for many components and sub-assemblies could result in increased costs or delays in the manufacture and sale of our products.

We rely to a substantial extent on outside vendors to manufacture many of the components and subassemblies of our products. We obtain many of these components and sub-assemblies from either a

sole source or a limited group of suppliers. Because of our reliance on outside vendors generally, and on a limited group of suppliers in particular, we may be unable to obtain an adequate supply of required components on a timely basis, on price and other terms acceptable to us, or at all.

In addition, we often quote prices to our customers and accept customer orders for our products before purchasing components and subassemblies from our suppliers. If our suppliers increase the cost of components or subassemblies, we may not have alternative sources of supply and may not be able to raise the price of our products to cover all or part of the increased cost of components.

The manufacture of some of these components and subassemblies is an extremely complex process and requires long lead times. As a result, we have in the past and may in the future experience delays or shortages. If we are unable to obtain adequate and timely deliveries of our required components or subassemblies, we may have to seek alternative sources of supply or manufacture these components internally. This could delay our ability to manufacture or to ship our systems on a timely basis, causing us to lose sales, incur additional costs, delay new product introductions and suffer harm to our reputation.

Our international operations involve currency 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, 2004, approximately 13% of the Company's revenues were derived from foreign operations with this inherent risk. In addition, at December 31, 2004, the Company's operations outside of the United States accounted for approximately 29% of the Company's total assets, the majority of which was denominated in currencies other than the U.S. dollar. Our investment in SEN and our royalty and equity income from SEN are subject to foreign currency exchange risks. The Company uses forward contracts to hedge the risk of currency fluctuation with respect to SEN royalties for which payment is received in Japanese yen.

In certain circumstances, we may need additional capital.

Our capital requirements may vary widely from quarter to quarter, depending on, among other things, capital expenditures, fluctuations in our operating results, financing activities, acquisitions and investments and inventory and receivables management. Our outstanding convertible debt in the principal amount of \$125 million becomes due in January 2007. 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. This, of course, depends on the accuracy of our assumptions about levels of sales and expenses, and a number of factors, including those described in these "Risk Factors," could cause us to require additional capital from external sources. In addition, in the future, we may require or choose to obtain additional debt or equity financing in order to finance acquisitions or other investments in our business. Depending on market conditions, future debt or equity financings may not be possible on attractive terms or at all. In addition, future debt or equity financings could be dilutive to the existing holders of our common stock and convertible notes. Moreover, our existing credit agreement contains restrictive covenants limiting our ability to engage in additional debt financings without the permission of the banks.

Our stock price could be volatile and you could lose the value of your investment.

Our stock price has been volatile and has fluctuated significantly to date. The trading price of our stock is likely to continue to be highly volatile and subject to wide fluctuations. Your investment in our stock

could lose value. Some of the factors that could significantly affect the market price of our stock include:

- actual or anticipated variations in results;
- analyst reports or recommendations;
- changes in interest rates; and
- other events and factors, many of which are beyond our control.

The stock market in general and Nasdaq and technology companies in particular have experienced extreme price fluctuation

We seek to protect our proprietary technology through patents and trade secrets that may be vulnerable to efforts by competitors to challenge or design around, potentially reducing our market share.

We rely on a combination of patents, copyrights, trademark and trade secret laws, non-disclosure agreements and other intellectual property protection methods to protect our proprietary technology. Despite our efforts to protect our intellectual property, our competitors may be able to legitimately ascertain the non-patented proprietary technology embedded in our systems. If this occurs, we may not be able to prevent their use of this technology. Our means of protecting our proprietary rights may not be adequate and our patents may not be sufficiently broad to prevent others from using technology that is similar to or the same as our technology. In addition, patents issued to us have been, or might be challenged, and might be invalidated or circumvented and any rights granted under our patents may not provide adequate protection to us. Our competitors may independently develop similar technology, duplicate features of our products or design around patents that may be issued to us. As a result of these threats to our proprietary technology, we may have to resort to costly litigation to enforce or defend our intellectual property rights. Finally, all patents expire after a period of time (in the U.S., patents expire 20 years from the date of filing of the patent application). Our market share could be negatively impacted by the expiration of a patent which had created a barrier for our competitors.

Axcelis also has agreements with third parties for licensing of patented or proprietary technology, both where Axcelis is the licensor and the licensee. These agreements include royalty-bearing licenses and technology cross-licenses. Termination of license agreements could have an adverse impact on our financial performance or ability to ship products with existing configurations.

We or customers that we indemnify might face intellectual property infringement claims or patent disputes that may be costly to resolve and, if resolved against us, could be very costly to us and prevent us from making and selling our systems.

From time to time, claims and proceedings have been or may be asserted against us relative to patent validity or infringement matters. Our system sales documentation typically includes an indemnification by Axcelis of our customers from liability to third parties for intellectual property infringement arising from the use of our products in their intended manner. Therefore, Axcelis on occasion receives notification from customers who believe that Axcelis owes them indemnification or other obligations related to infringement claims made against the customers by third parties. Our involvement in any patent dispute or other intellectual property dispute or action to protect trade secrets, even if the claims are without merit, could be very expensive to defend and could divert the attention of our management. Adverse determinations in any litigation could subject us to significant liabilities to third parties, require us to seek costly licenses from third parties and prevent us from manufacturing and selling our systems. In addition, infringement indemnification clauses in system sale agreements may require us to take other actions or require us to provide certain remedies to customers who are exposed to

indemnified liabilities. Any of these situations could have a material adverse effect on our business results.

If operations were disrupted at Axcelis' primary manufacturing facility it would have a negative impact on our business.

We have one primary manufacturing facility, located in Massachusetts, and its operations are subject to disruption for a variety of reasons, including, but not limited to natural disasters, work stoppages, operational facility constraints and terrorism. Such disruption could cause delays in shipments of products to our customers and could result in cancellation of orders or loss of customers and could seriously harm our business.

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.

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

Gary L. Tooker
Independent Business Consultant
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
Senior Vice President and Chief Financial Officer

Kevin Brewer
Vice President of Manufacturing Operations

David Duff, Ph.D.
Vice President of Product Development

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

Matthew Flynn
Vice President of Global Customer Operations

Donald Palette
Vice President, Corporate Controller

ANNUAL MEETING DATE & LOCATION

The annual meeting of stockholders will be held at 11:00 a.m. on Thursday, May 12, 2005 at Axcelis corporate headquarters.

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 Investor Relations 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 2004 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>

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

Craig M. Halterman
Vice President and Chief Information Officer

Mark Namaroff
Vice President of Marketing

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



Axcelis Technologies Inc.
108 Cherry Hill Drive
Beverly, MA 01915-1053
978.787.4000

www.axcelis.com