

AXCELIS TECHNOLOGIES INC
Form 10-K
March 03, 2014

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2013

☐ 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
of incorporation or organization)

34-1818596

(IRS Employer Identification No.)

**108 Cherry Hill Drive
Beverly, Massachusetts 01915**

(Address of principal executive offices) (zip code)

(978) 787-4000

(Registrant's telephone number, including area code)

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

| Title of each class | Name of each exchange on which registered |
|--------------------------------|---|
| Common Stock, \$.001 par value | The Nasdaq Stock Market LLC |

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

None

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

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

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

Indicate by checkmark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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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 a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated
filer ☐

Accelerated
filer ☐

Non-accelerated
filer ☐
(Do not check if a
smaller
reporting company)

Smaller reporting
company ☐

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

Aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2013: \$194,738,957

Number of shares outstanding of the registrant's Common Stock, \$0.001 par value, as of February 24, 2014: 110,711,182.

Documents incorporated by reference:

Portions of the definitive Proxy Statement for Axcelis Technologies, Inc.'s Annual Meeting of Stockholders to be held on May 13, 2014 are incorporated by reference into Part III of this Form 10-K.

PART I

Item 1. Business.

Overview of Our Business

Axcelis Technologies, Inc. ("Axcelis," the "Company," "we," "us," or "our") designs, manufactures and services ion implantation and other processing equipment used in the fabrication of semiconductor chips. We believe that our Purion family of products are the most innovative implanters available on the market today. We sell to leading semiconductor chip manufacturers worldwide. The ion implantation business comprised approximately 83.8% of our revenue in 2013 with the remaining 16.2% of revenue derived from our dry strip and other legacy processing systems. In addition to equipment, we provide extensive aftermarket lifecycle products and services, including used tools, spare parts, equipment upgrades, maintenance services and customer training.

Axcelis' business commenced in 1978 and its current corporate entity was incorporated in Delaware in 1995, headquartered in Beverly, Massachusetts. We maintain an internet site at www.axcelis.com. On or through our website, investors may access, free of charge, our annual reports 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 (logic devices which process information) and "system on chip" devices (which have both logic and memory features). Most semiconductor chips are built on a wafer of silicon of either 200mm (8 inches) or 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 in the formation of transistors are traditionally referred to as "front-end-of-line." The "back-end-of-line" process steps connect the transistors and other components together through several overlapping layers of metal wires, known as interconnect, creating a complete circuit. 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 equipment in the making of integrated circuits. Over 300 process steps utilizing over 50 different types of process tools are required to make a single device like a microprocessor. Semiconductor chip manufacturers seek device performance benefits through new products and technology enhancements and productivity 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 the semiconductor device 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. For example, the use of 200mm wafers in production began at the end of the 1980s. The migration from 200mm to 300mm began at the end of the 1990s. The majority of wafer fabrication facilities today are using wafers with a diameter of 300mm. In 2013, Axcelis derived 76.9% of total systems revenue (a

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component of product revenue) from sales of 300mm equipment. In 2011, industry participants began planning for the next wafer size transition, to 450mm diameter wafers. The schedule for this future transition will vary by customer.

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 can be over \$4.0 billion for a new 300mm fab, many customers are entering into partnerships to offset the cost of technology development and manufacturing. In addition, many chip developers outsource all or part of their chip manufacturing requirements to contract manufacturers, known as foundries. Foundries are significant purchasers of semiconductor manufacturing equipment.

The semiconductor capital equipment industry is highly cyclical, as global chip production capacities successively exceed, then lag behind, global chip demand. When chip demand is high, and inventories low, chip manufacturers add capacity through capital equipment purchases. Given the difficulties of forecasting and calibrating chip demand and production capacity, the industry periodically experiences excess chip inventories and softening chip prices. Device manufacturers react with muted capital spending, lowering the demand for capital equipment. Changes in consumer and business demand for products in which chips are used also affect the industry. 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 thrive during the inevitable low points in the cycle. The most recent cycle began with weak industry conditions in mid-2011 which continued through the first quarter of 2013. Beginning in the second quarter of 2013 the industry entered a period of gradual market improvement which continued during the third and fourth quarters.

Our financial results in 2013 reflect our investment of a significant portion of our resources in research and development programs related to our new leading edge Purion ion implantation platform and the market introduction and initial sales of Purion systems. These results also reflect our efforts to lower our breakeven revenue levels by maintaining tight control of discretionary spending. We expect customer demands for our products to continue to improve through 2014. Throughout 2014 we expect to continue to grow Purion system sales and maintain tight control of our cost structure in order to sustain profitability throughout the full industry cycle.

Axcelis' Strategy

Axcelis' 2014 strategic focus is to:

Penetrate additional customer fabs with Purion platform products (200mm and 300mm)

Protect and grow Global Service Solutions base business

Exceed our last peak cycle quarterly revenues

Sustain profitability on a quarterly basis

In December 2012, we sold to Lam Research Corporation ("Lam") the intellectual property rights and other assets relating to our dry strip systems product line. The sold intellectual property rights included, among other things, worldwide patent rights, patent applications, copyrights, industrial designs, know-how and related rights used by us in our dry strip business. As a result of this transaction, we ceased the sale of 300mm dry strip wafer processing equipment in September 2013. We will continue to sell dry strip systems for smaller wafers until December 2015 and support our installed base of dry strip systems indefinitely.

The transaction with Lam in December 2012 represents an important step in the execution of our strategy, allowing us to focus on ion implant. The collaboration with Lam will also allow us to identify value for our customers as we explore the interrelationships between implant, etch, deposition, dry strip

and clean applications. We expect that this partnership will enhance our ability to compete and gain implant market share.

We have continued to invest in research and development through the industry cycles to assure our products meet the needs of our customers. We take pride in our scientists and engineers who 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 strive for operational excellence by focusing on ways to lower our manufacturing and design costs and to improve our delivery times to our customers. Finally, we will use our Global Customer Teams and a focused account management structure to maintain and strengthen 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 system 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 electron-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. Typical process flows require twenty implant steps, with the most advanced processes requiring thirty or more. Each implant step is characterized by four key parameters: dopant type, dose (amount of dopant), energy (depth into the silicon) and tilt (angle of wafer relative to the ion beam).

In order to cover the wide range of implant steps, three different types of implanters have been developed, each designed to cover a specific range of applications, primarily defined by dose and energy. The three traditional implanter types are referred to as medium current, high current and high energy:

Medium current (mid dose) implanters are the original model of ion implanter, with mid to low-range energy and dose capability.

High current (high dose) implanters were the second type of implanter to emerge, having low energy capability and high dose range.

High energy implanters emerged to address the need for deeper implants with a high energy range and low dose.

The Purion Platform and Family of Ion Implanters

Axcelis offers a complete line of high energy, high current and medium current implanters for all application requirements. Our newest systems are all based on a common Purion platform which offers purity, precision and productivity by combining a high-speed, state-of-the-art single wafer end station, enabling unmatched throughput (500 wafer per hour), and an advanced spot beam that ensures that all points across the wafer see the same beam at the same beam angle, resulting in exceptional process control and maximum yield.

High Energy Implant. Purion XE, our high energy system, combines Axcelis' production-proven RF Linac high energy, spot beam technology with the Purion platform. Axcelis is a market leader in high energy ion implanters, and we expect to maintain our leadership in the high energy segment through sales of both our multi wafer high energy systems and the Purion XE.

Medium Current Implant. Our Purion M medium current system offers higher productivity and lower cost of ownership than competitive offerings, in addition to other advantages. In 2012 and 2013, three evaluation placements of the Purion M were shipped to customers. In 2013, the first evaluation system was purchased. In 2014, Axcelis expects to close the other two evaluation placements, receive follow-on orders from these evaluation customers and obtain new customer Purion M design-wins.

High Current Implant. In December 2013, we announced our new high current ion implanter, the Purion H. The Purion H fulfills all traditional high current requirements while extending beyond traditional high current energy and dose ranges. In order to maximize utilization and flexibility, the Purion H can process some traditional mid current implants. In addition, the Purion H is extendable into ultra-low energy applications to satisfy future process requirements including leakage current performance. In 2014, we expect to place Purion H evaluation systems in multiple customer fabs, and our goal over the next several years, is to regain leadership in the high current segment through sales of the Purion H.

We believe our ion implant products will continue to meet customer demand for advantages in productivity, process performance and technical extendibility.

Dry Strip

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. Once the subsequent implant processes and etch steps (in which the top layer of the surface of the wafer not covered by photoresist is removed) are completed, 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 radio frequency energy to turn process gases into plasma, which then acts to clean the surface of the wafer by removing the photoresist and unwanted residue.

Axcelis has offered a full line of dry strip tools that cover the entire range of customer applications. In December 2012, Lam purchased the intellectual property rights relating to our dry strip systems business. As a result of this transaction, we ceased the sale of 300mm dry strip wafer processing equipment in September 2013. We will continue to sell dry strip systems for smaller wafers until December 2015 and support our installed base of dry strip systems indefinitely.

Aftermarket Support and Services

Through our Global Service Solutions business, we offer our customers extensive aftermarket service and support throughout the lifecycle of the equipment we manufacture as well as equipment we previously manufactured. We believe that approximately 3,000 of our products are in use in 33 countries worldwide. The service and support that we provide include used tools, spare parts, equipment upgrades, and maintenance services. We provide varying levels of sales, service and applications support out of our field offices to customers located in 33 countries. Revenue generated through our service and support business represented about 61.6%, 61.0%, and 46.2% of revenue in 2013, 2012, and 2011, respectively.

To support our aftermarket business we have several hundred staff members, including sales and marketing personnel, field service engineers, and spare parts and applications engineers, as well as employees located at our manufacturing facilities who work with our customers to provide customer training and documentation, product, process and applications support. In 2012, Ulvac Techno, a Japanese company, began providing aftermarket services and support services for our products in Japan.

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Most of our customers maintain spare parts inventories for our machines. In addition to our web-based spare parts management and replenishment tracking program, we offer a number of Business-to-Business options to support our customers' parts management requirements. Our Axcelis Managed Inventory service offering, a parts consignment arrangement, provides the customer with full spares support, with Axcelis retaining responsibility for the complete supply chain. The expansion of these services provides ease of use alternatives that help us reduce order fulfillment costs and improve cycle time, resulting in an expanded customer base for this service offering.

Sales and Marketing

We primarily sell our equipment and services through our direct sales force. We conduct sales and marketing activities from our sales offices located in the United States, Taiwan, South Korea, China, Germany, Singapore and Italy.

Since March 2009, SEN Corporation, or "SEN" (our former Japanese joint venture, which was divested in 2009), has held a non-exclusive license to use certain patented and unpatented technology associated with legacy products owned by the Company. Axcelis holds a reciprocal license of implant technology from SEN. These royalty-free, perpetual cross licenses do not restrict our ability to sell any of our products in Japan or elsewhere in the world.

Concurrently with the sale of assets to Lam in December 2012, the Company and Lam entered into a Transition Agreement pursuant to which Lam granted us a worldwide, non-exclusive, non-transferable, royalty-free license to use the dry strip intellectual property rights sold by the Company. The license allows us to make and sell dry strip wafer processing equipment for semiconductor applications for a limited transition period after the closing and to support our installed base of dry strip equipment on a perpetual basis.

International revenue, including export sales from our U.S. manufacturing facilities to foreign customers, sales by foreign subsidiaries and branches, accounted for 76.4% of total revenue in 2013, 70.2% of total revenue in 2012, and 72.3% in 2011. Substantially all of our sales are denominated in U.S. dollars. See Note 17 to our Consolidated Financial Statements contained in Item 15 of this Form 10-K for a breakdown of our revenue and long-lived assets in the United States, Europe and Asia.

Customers

In 2013, the top 20 semiconductor manufacturers accounted for approximately 85.3% of total semiconductor industry capital spending, down from 85.6% in 2012. These manufacturers are from the largest semiconductor manufacturing regions in the world: the United States, Asia Pacific (Taiwan, South Korea, Singapore, and China), Japan and Europe. The Company serves all leading semiconductor manufacturers.

Revenue from our ten largest customers accounted for 69.1%, 70.6%, and 68.6%, of revenue in 2013, 2012, and 2011, respectively. 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 2013, one customer accounted for 15.5% of revenue. In 2012, one customer accounted for 18.2% of revenue. In 2011, one customer accounted for 21.2% of revenue.

Our Beverly, Massachusetts Advanced Technology Center houses a process development laboratory with 12,500 sq. ft. of class 10/100/1000 clean room for product demonstrations and process development and a 34,000 sq. ft. customer training center. The Advanced Technology Center provides infrastructure and process capabilities that allow customers to test their unique process steps on our systems under conditions that substantially replicate the customers' production environment. This facility also provides significant capability for our research and development efforts.

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.

Our expenses for research and development were \$34.8 million, \$40.4 million, and \$47.2 million in 2013, 2012, and 2011, respectively, or 17.8%, 19.9%, and 14.8% of revenue, respectively. We expect that research and development expenditures will continue to represent a similar level of investment in future years.

Manufacturing

We manufacture products at our 417,000 sq. ft. ISO 9001:2008, ISO 14001:2004 certified plant in Beverly, Massachusetts. Our facility employs best in class manufacturing techniques including lean manufacturing, six sigma controls and advanced inventory management, purchasing and quality systems.

Our clean manufacturing process uses class 1000/10,000 space to facilitate most of our manufacturing requirements.

The Company's core manufacturing competency is built around system assembly and test which remains an in house capability due to the high degree of expertise and intellectual property associated with the process and design. Non-core work is sourced to one of several global partners and includes items such as power distribution, vacuum systems, wafer handling and commodity level components. We continuously pursue outsourcing opportunities where the economics are justified, with a goal of enabling quality and margin improvement. Our supply chain team is globally focused and is located in Beverly and Singapore. Customized and commercially available software solutions drive our planning, purchasing and inventory tracking process.

Our products are designed to be assembled and tested in a modular fashion, which facilitates our industry-recognized "ship-from-cell" process. Specially developed test stands, software and tooling provide the framework for this accelerated delivery process. Customers that choose ship-from-cell substantially improve their delivery times while receiving the same high level of quality provided by more traditional longer cycle integration techniques. Product margins and inventory turns also improve as a result of shorter factory cycle times and increased labor productivity.

Installation of our equipment is provided by factory and field teams. The process includes assembling the equipment at its installation site and after it has been connected, recalibrating it to specifications that had previously been met during factory testing.

Competition

The semiconductor wafer fabrication equipment industry is highly competitive and is characterized by a small number of participants ranging in size. Significant competitive factors in the semiconductor equipment market include price, cost of ownership, equipment performance, customer support, capabilities and breadth of product line.

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We have competed in two principal product markets of the semiconductor wafer fabrication process: ion implantation and dry strip. In December 2012, we divested our dry strip intellectual property and ceased selling 300mm dry strip systems in September 2013.

In ion implantation, we mainly compete against Applied Materials, Inc. The Company and Applied Materials are the only ion implant manufacturers with a full range of implant products, and service and support infrastructures able to service our customers globally. Three other niche players we compete with from time to time include Nissin Ion Implantation Co., Ltd., Advanced Ion Beam Technology, Inc. and SEN.

Intellectual Property

We rely on patent, copyright, trademark and trade secret protection, in the United States and in other countries, as well as contractual restrictions, to protect our proprietary rights in our products and our business. As of January 1, 2014, we had 295 active patents issued in the United States and 387 active patents granted in other countries, as well as 282 patent applications (32 in the United States and 250 in other countries) on file with various patent agencies worldwide. Patents are generally in effect for up to 20 years from the filing of the application.

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. Trademark registrations generally remain in effect as long as the trademarks are in use. 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 and our license from Lam (described above under "Sales and Marketing"), we do not believe that any of our licenses are currently material to us. 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 us to pay substantial damages or remove certain features from our products or both.

Backlog

Systems backlog including deferred systems revenue was \$9.3 million and \$18.5 million as of December 31, 2013 and 2012, 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 six months. All orders are subject to cancellations or rescheduling by customers with limited or no penalties.

Backlog does not include orders received and fulfilled within a quarter. Our backlog at the beginning of a quarter typically does not include all orders required to achieve our sales objectives for that quarter. Because orders for services or parts received during the quarter are performed or shipped within the same quarter, backlog is not necessarily an indicator of future business trends.

Bookings in the quarter ended December 31, 2013 were \$16.8 million compared to \$17.3 million in the quarter ended December 31, 2012.

Employees

As of December 31, 2013, we had 826 employees and 37 temporary staff worldwide, of which 646 work in North America, 164 in Asia and 53 in Europe. We consider our relationship with our

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employees to be good. Our employees are not represented by a labor union and are not subject to a collective bargaining agreement. One of our European locations has formed a work council, which has certain information and discussion rights under applicable law.

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 are proud of our commitment to improving our environment. We believe 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 at our Beverly, MA facility.

Executive Officers of the Registrant

Mary G. Puma, 56, has been our President and Chief Executive Officer since January 2002 and Chairman since 2005. From May 2000 until January 2002, Ms. Puma was our President and Chief Operating Officer. 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, North Shore Medical Center and Semiconductor Equipment and Materials International (SEMI).

Kevin J. Brewer, 55, became our interim Chief Financial Officer in June 2013 and our Executive Vice President and Chief Financial Officer in September 2013. Mr. Brewer also manages our Information Technology and Global Operations. Mr. Brewer had been our Executive Vice President, Global Operations since 2008 and our Senior Vice President, Manufacturing Operations since May 2005, prior to which he had been Vice President of Manufacturing Operations since October 2002 and Director of Operations from 1999 to 2002. 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.

Lynnette C. Fallon, 54, is our Executive Vice President, Human Resources/Legal and General Counsel, a position she has held since May 2005. Prior to that, Ms. Fallon was Senior Vice President HR/Legal and General Counsel since 2002, and Senior Vice President and General Counsel since 2001. Ms. Fallon has also been our corporate Secretary since 2001. Before joining Axcelis, 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.

William Bintz, 57, has been our Executive Vice President, Product Development, Engineering and Marketing since 2011. Prior to that, he was our Senior Vice President, Marketing since September 2007, after joining Axcelis in early 2006 as Director of Marketing for curing and cleaning products and shortly thereafter becoming Vice President of Product Marketing. Prior to joining Axcelis, from 2002 Mr. Bintz was Product Director for Medium Current and High Energy Ion Implant System at Varian Semiconductor Equipment Associates, Inc. Before that, he was General Manager of the Materials

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Delivery Products Group at MKS Instruments, beginning in 1999, and General Manager of the Thermal Processing Systems Division at Eaton Corporation (now Axcelis) beginning in 1995.

John E. Aldeborgh, 57, has been our Executive Vice President, Customer Operations since February 2013, having joined Axcelis in January 2013 as our Senior Vice President, Customer Operations. Prior to joining Axcelis, Mr. Aldeborgh served as the Chief Executive Officer and President, and as a Director, of innoPad, Inc., a privately held manufacturer of Chemical Mechanical Planarization pads, since 2006. Mr. Aldeborgh served in various marketing and sales position at Varian Semiconductor Equipment Associates Inc. from 2002 to 2005, including Vice President of Sales and Marketing. Prior to Varian, Mr. Aldeborgh served as President and Chief Operating Officer of Ebara Technologies, Inc., from 1998 to 2002. Mr. Aldeborgh also held various positions, at Genus, Inc. from 1989 to 1998, including Executive Vice President and Chief Operating Officer.

Douglas A. Lawson, 53, has been our Executive Vice President, Corporate Marketing and Strategy since November 2013, having joined Axcelis as Vice President Business Development in 2010, and holding the position of Senior Vice President of Strategic Initiatives beginning in 2011. Prior to joining the company in 2010, he held the position of General Manager of Luminus Devices from 2009 to 2010. He has over 30 years of experience in the technology industry, and has held numerous executive and technical positions at BTU International, PRI Automation, Digital Equipment and Intel.

Item 1A. Risk Factors.

Risks Related to Our Business and Industry

Set forth below and elsewhere in this Form 10-K and in other documents we file with the SEC are risks and uncertainties that could cause actual results to differ materially from the results contemplated by the forward-looking statements contained in this Form 10-K. We note that factors set forth below, individually or in the aggregate, may cause our actual results to differ materially from expected and historical results. We note these factors for investors as permitted by the Private Securities Litigation Reform Act of 1995. You should understand that it is not possible to predict or identify all such factors. Consequently, you should not consider the following to be a complete discussion of all potential risks or uncertainties.

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

New systems orders will depend upon demand from semiconductor manufacturers who build or expand fabrication facilities. When the rate of construction or expansion of fabrication facilities declines, demand for our systems will decline, reducing our revenue. Revenue decline also hurts our profitability because our established 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.

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. This will depend upon a variety of factors, including new product selection, timely and efficient completion of product design and development

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and of manufacturing and assembly processes, product performance in the field and effective sales and marketing. In particular:

We must continue to develop competitive technical specifications of 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.

Our financial results may fluctuate significantly.

We derive our new systems revenue from the sale of a relatively small number of expensive products to a small number of customers. We also sell used equipment in our aftermarket business. The list prices on these systems range from \$0.4 million to \$5.0 million. At our current sales level, each sale, or failure to make a sale, has a material effect on us in a particular quarter. In a given quarter, a number of factors can adversely affect our revenue 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. Our financial results also fluctuate based on gross profit realized on sales. A variety of factors may cause gross profit as a percentage of revenue to vary, including the mix and average selling prices of products sold, costs to manufacture and customize systems and warranty costs. New product introductions may also affect our gross margins. Fluctuations in our financial results may have an adverse effect on the price of our common stock.

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

Management may from time to time provide financial forecasts. These forecasts are based on assumptions, believed to be reasonable when made, of fab utilization, shipment timing and system acceptance timing. Any of these assumptions can prove erroneous and the level of revenue 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 revenue and operating results for a quarter depend on our shipping orders as scheduled during that quarter, receiving customer acceptance of previously shipped products, and obtaining new orders for products to be shipped in that same quarter. Any delay in, or cancellation of, scheduled shipments and customer acceptances or in shipments from new orders could materially and adversely affect our financial results.

Accounting rules addressing revenue recognition have added additional complexity in forecasting quarterly revenue 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 forecasted financial performance may have an adverse effect on the price of our common stock.

We may be unable to obtain needed additional capital to finance our operations.

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. We believe that our existing cash and cash equivalents will be sufficient to satisfy our anticipated cash requirements through the end of 2014 and beyond, but this, of course, depends on the accuracy of our assumptions about levels of sales and expenses. A number of factors, including those described in these "Risk Factors," could prove our assumptions wrong and cause us to require additional capital from external sources. 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.

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 when the demand for our products is high and downturns when our customers are not investing in new or expanded fabrication facilities. From time to time, inventory buildups in the semiconductor industry, resulting in part from periodic downturns, 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 industries that use semiconductors, which we cannot accurately predict, our sales and profitability will be harmed. Our revenue can vary significantly from one point in the cycle to another, making it difficult to manage the business, both when revenue is increasing and when it is decreasing. In addition, a substantial portion of our operating expenses do not fluctuate with changes in volume. Significant decreases in revenue can therefore have a disproportionate effect on 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 some 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 could provide innovative systems with technology that may have performance advantages over our systems. We expect our competitors 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. Finally, if we must lower prices to remain 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 portion of our products and services to a limited number of fabricators of semiconductor products. For example, in 2013, our top ten customers accounted for 69.1% 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

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varied from year to year, the loss of a significant customer or any reduction or delays in orders from any significant customer could adversely affect us. The ongoing consolidation of semiconductor manufacturers may also increase the harmful effect of losing one or more significant customers.

Axcelis is subject to the risks of operating internationally and we derive a substantial portion of our revenue 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 76.4% of total revenue in 2013 in comparison to 70.2% in 2012 and 72.3% in 2011. System shipments to Asian customers represented 77.8% of total shipment dollars in 2013 in comparison to 71.3% in 2012 and 60% in 2011. 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;

difficulties in accounts receivable collections;

extended payment terms beyond those customarily offered in the United States;

difficulties in managing suppliers, service providers 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. 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 sub-assemblies of our products. We obtain many of these components and sub-assemblies from either a sole source or a limited group of suppliers. Accordingly, 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

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before purchasing components and sub-assemblies from our suppliers. If our suppliers increase the cost of components or sub-assemblies, 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, negatively impacting our gross margins.

The manufacture of some of these components and sub-assemblies 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 sub-assemblies, 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 our 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, 2013, approximately 32.9% of our revenue was derived from foreign operations with this inherent risk. In addition, at December 31, 2013, our operations outside of the United States accounted for approximately 39.6% of our total assets, the majority of which was denominated in currencies other than the U.S. dollar.

We are subject to cyber security risks, which could adversely affect our business.

We and certain of our third-party vendors receive and store personal information in connection with our human resources operations and other aspects of our business. Despite our implementation of security measures, our IT systems are vulnerable to damages from computer viruses, natural disasters, unauthorized access, cyber-attack and other similar disruptions. Any system failure, accident or security breach could result in disruptions to our operations. A material network breach in the security of our IT systems could include the theft of our intellectual property or trade secrets. To the extent that any disruptions or security breach results in a loss or damage to our data, or in inappropriate disclosure of confidential information, it could cause significant damage to our reputation, affect our relationships with our customers, lead to claims against us and ultimately harm our business. In addition, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future.

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

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 has experienced extreme price fluctuations.

Our proprietary technology 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 with Axcelis as the licensor or the licensee. 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. We typically agree to indemnify our customers from liability to third parties for intellectual property infringement arising from the use of our products in their intended manner. Therefore, we occasionally receive notification from customers who believe that we owe 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. Its operations could be 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, which could seriously harm our business.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

We own one property and lease 40 properties, of which 13 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, and Germany.

We own our principal facility in Beverly, Massachusetts, which comprises 417,000 square feet. The facility is principally used for manufacturing, research and development, sales/marketing, customer support, advanced process development, product demonstration, customer-training center and corporate headquarters.

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 facility is ISO 9001:2008 and ISO 14001:2004 and our European office is ISO 9001:2008 certified.

Item 3. Legal Proceedings.

The Company is not presently a party to any litigation that it believes might have a material adverse effect on its business operations. The Company is, from time to time, a party to litigation that arises in the normal course of its business operations.

Item 4. Mine Safety Disclosures.

Not applicable.

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 Global Select Market under the symbol ACLS. The following table sets forth the high and low closing sale prices as reported on the Nasdaq Global Select Market during each of the quarters for the two most recent years. As of February 24, 2014, we had approximately 4,500 stockholders of record. We have never paid any cash dividends to our shareholders and do not anticipate paying cash dividends in the future and in any event, we would be restricted from doing so by the terms of our bank credit agreement.

| | Common Stock Price | |
|----------------|--------------------|---------|
| | High | Low |
| <u>2012</u> | | |
| First Quarter | \$ 1.88 | \$ 1.36 |
| Second Quarter | \$ 1.76 | \$ 1.00 |
| Third Quarter | \$ 1.20 | \$ 0.78 |
| Fourth Quarter | \$ 1.40 | \$ 0.84 |
| <u>2013</u> | | |
| First Quarter | \$ 1.41 | \$ 1.09 |
| Second Quarter | \$ 1.82 | \$ 1.13 |
| Third Quarter | \$ 2.27 | \$ 1.79 |
| Fourth Quarter | \$ 2.49 | \$ 2.06 |

Item 6. Selected Financial Data.

The following selected consolidated statements of operations data for each of the three years ended December 31, 2013, 2012, and 2011 and the consolidated balance sheet data as of December 31, 2013 and 2012 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, 2011 and 2010, and the statement of operations data for the years ended December 31, 2010 and 2009, have been derived from the audited financial statements contained in our Form 10-K filed on February 29, 2012. The consolidated balance sheet data as of December 31, 2009 has been derived from the audited financial statements contained in our Form 10-K filed on March 14, 2011.

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 of Financial Condition and Results of Operations" 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, | | | | |
|---|--|------------|------------|------------|------------|
| | 2013 | 2012 | 2011 | 2010 | 2009 |
| | (In thousands, except per share amounts) | | | | |
| Consolidated statements of operations data: | | | | | |
| Revenue | \$ 195,632 | \$ 203,385 | \$ 319,416 | \$ 275,212 | \$ 133,022 |
| Gross profit | 67,935 | 58,171 | 114,737 | 85,838 | 28,064 |
| Equity loss of SEN | | | | | (3,238) |
| Income (loss) from operations | (14,618) | (30,938) | 7,132 | (13,367) | (69,434) |
| Income (loss) before income taxes | (16,104) | (32,388) | 7,471 | (17,261) | (76,603) |
| Net income (loss) | (17,144) | (34,034) | 5,077 | (17,573) | (77,468) |
| Net income (loss) per share: | | | | | |
| Basic | \$ (0.16) | \$ (0.32) | \$ 0.05 | \$ (0.17) | \$ (0.75) |
| Diluted | \$ (0.16) | \$ (0.32) | \$ 0.05 | \$ (0.17) | \$ (0.75) |
| Shares used in computing basic and diluted per share amounts: | | | | | |
| Basic | 108,869 | 107,619 | 106,234 | 104,522 | 103,586 |
| Diluted | 108,869 | 107,619 | 109,098 | 104,522 | 103,586 |
| Consolidated balance sheet data: | | | | | |
| Cash and cash equivalents | \$ 46,290 | \$ 44,986 | \$ 46,877 | \$ 45,743 | \$ 45,020 |
| Working capital | 149,448 | 145,443 | 164,561 | 160,501 | 163,849 |
| Total assets | 233,549 | 222,158 | 269,245 | 280,872 | 250,603 |
| Long-term liabilities | 22,087 | 6,300 | 7,218 | 7,176 | 4,447 |
| Stockholders' equity | 176,002 | 186,076 | 214,555 | 205,567 | 216,399 |

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" and others discussed elsewhere in this Form 10-K. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect management's analysis only as of the date hereof. We assume no obligation to update these forward-looking statements to reflect actual results or changes in factors or assumptions affecting forward-looking statements, except as may be required by law.

Overview

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 our control. As a result, our revenue and gross margins fluctuate from year to year and period to period. Our established cost structure does not vary significantly with changes in volume. We may experience fluctuations in operating results and cash flows depending on our revenue as driven by the level of capital expenditures by semiconductor manufacturers.

In December 2012, we sold to Lam Research Corporation the intellectual property rights and other assets relating to our dry strip systems product line. The sold intellectual property rights included, among other things, worldwide patent rights, patent applications, copyrights, industrial designs, know-how and related rights used by us in our dry strip products. As a result of this transaction, we ceased the sale of 300mm dry strip wafer processing equipment in September 2013. We can sell dry strip systems for smaller wafers until December 2015 and support our installed base of dry strip systems indefinitely. As a result of this continuing interest in the dry strip business, the sale of the intellectual property rights and other assets to Lam have been reported in continuing operations.

Consolidation and partnering within the semiconductor manufacturing industry has resulted in a smaller number of customers representing a substantial portion of our business. Our net revenue from our ten largest customers accounted for 69.1% of total revenue for the year ended December 31, 2013 compared to 70.6% and 68.6% of revenue for the years ended December 31, 2012 and 2011, respectively.

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 thrive during the inevitable low points in the cycle. The most recent cycle began with weak industry conditions in mid-2011 which continued through the first quarter of 2013. Beginning in the second quarter of 2013, we entered a period of gradual market improvement which continued during the third and fourth quarters. Our financial results in 2013 reflect our investment of a significant portion of our resources in research and development programs related to our new leading edge Purion ion implantation platform and the market introduction and initial sales of Purion systems. These results also reflect our efforts to lower our breakeven revenue levels by maintaining tight control of discretionary spending. We expect the market for our products to continue to improve through 2014. Throughout 2014 we expect to continue to grow Purion system sales and maintain tight control of our cost structure in order to sustain profitability throughout the full industry cycle. In the event that industry conditions cause the demand for our products to decline in future periods, we believe that we can align manufacturing and

operating expense levels to changing business conditions and provide sufficient liquidity to support operations.

Operating results for the years presented are not necessarily indicative of the results that may be expected for future interim periods or years as a whole.

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, revenue and expenses, and related disclosure of contingent assets and liabilities. On an on-going basis, we evaluate our estimates and assumptions. Management's estimates are based 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.

We believe 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. For additional accounting policies see Notes to Consolidated Financial Statements Note 2. Summary of Significant Accounting Policies.

Revenue Recognition

Our revenue recognition policy involves significant judgment by management. As described below, we consider a broad array of facts and circumstances in determining when to recognize revenue, including contractual future service 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, we may have to revise our revenue recognition policy, which could delay the timing of revenue recognition.

Our system sales transactions are made up of multiple elements, including the system itself and elements that are not delivered simultaneously with the system. These undelivered elements might include a combination of installation services, extended warranty and support and spare parts, all of which are generally covered by a single sales price.

Our system revenue arrangements with multiple elements are divided into separate units of accounting if specified criteria are met, including whether the delivered element has stand-alone value to the customer. If the criteria are met, then the consideration received is allocated among the separate units based on their relative selling price, and the revenue is recognized separately for each of the separate units.

We determine selling price for each unit of accounting (element) using vendor specific objective evidence ("VSOE") or third-party evidence ("TPE"), if they exist, otherwise, we use best estimated selling price ("BESP"). We generally expect that we will not be able to establish TPE due to the nature of our products, and, as such, we typically will determine selling price using VSOE or BESP.

Where required, we determine BESP for an individual element based on consideration of both market and Company-specific factors, including the selling price and profit margin for similar products, the cost to produce the deliverable and the anticipated margin on that deliverable and the characteristics of the varying markets in which the deliverable is sold.

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Systems are not sold separately and VSOE or TPE is not available for the systems element. Therefore the selling price associated with systems is based on BESP. The allocated value for installation in the arrangement includes the greater of (i) the relative selling price of the installation or (ii) the portion of the sales price that will not be received until the installation is completed (the "retention"). The selling price of installation is based upon the fair value of the service performed, including labor, which is based upon the estimated time to complete the installation at hourly rates, and material components, both of which are sold separately. The selling price of all other elements (extended warranty for support, spare parts, and labor) is based upon the price charged when these elements are sold separately, or VSOE.

Product revenue for products which have demonstrated market acceptance, is generally recognized upon shipment provided title and risk of loss has passed to the customer, evidence of an arrangement exists, prices are contractually fixed or determinable, collection 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 acceptance has occurred, as defined in the sales documentation, or, for certain customers, when both the acceptance has occurred and retention payment has been received. Revenue for other elements is recognized at the time products are shipped or the related services are performed.

We generally recognize product revenue for systems which have demonstrated market acceptance at the time of shipment because the customer's post-delivery acceptance provisions and installation process have been established to be routine, commercially inconsequential and perfunctory. We believe the risk of failure to complete a system installation is remote.

For initial shipments of systems with new technologies or in the small number of instances where we are unsure of meeting the customer's specifications or obtaining customer acceptance upon shipment of the system, we will defer the recognition of systems revenue and related costs until written customer acceptance of the system is obtained. This deferral period is generally within twelve months of shipment.

Impairment of Long-Lived Assets

We record impairment losses on long-lived assets when events and circumstances indicate that these assets might not be recoverable. Recoverability is measured by a comparison of the assets' carrying amount to their expected future undiscounted net cash flows. If such assets are considered to be impaired, the impairment is measured based on the amount by which the carrying value exceeds its fair value.

Future actual performance could be materially different from our current forecasts, which could impact future estimates of undiscounted cash flows and may result in the impairment of the carrying amount of the long-lived assets in the future. This could be caused by strategic decisions made in response to economic and competitive conditions, the impact of the economic environment on our customer base, or a material adverse change in our relationships with significant customers.

We did not record an impairment charge for the years ended December 31, 2013, 2012 or 2011.

Accounts Receivable Allowance for Doubtful Accounts

We record an allowance for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. Our allowance for doubtful accounts is established based on a specific assessment of collectability of our customer accounts. If the financial condition of our 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

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

Although we make every effort to ensure the accuracy of our forecasts or product demand and pricing assumptions, any significant unanticipated changes in demand, pricing, or technical developments would significantly impact the value of our inventory and our reported operating results. In the future, if we find that estimates are too optimistic and determine that inventory needs to be written down, the Company will recognize such costs in our cost of revenue at the time of such determination. Conversely, if we find our estimates are too pessimistic and we subsequently sell product that has previously been written down, our gross margin in that period will be favorably impacted.

In 2013, we recorded an \$8.5 million net decrease to our inventory reserves, primarily related to an \$8.7 million disposal of previously, fully reserved inventory in the fourth quarter of 2013.

Product Warranty

We generally offer a one year warranty for all of our systems, the terms and conditions of which vary depending upon the product sold. For all systems sold, we accrue a liability for the estimated cost of standard warranty at the time of system shipment and defer the portion of systems revenue attributable to the fair value of non-standard warranty. Costs for non-standard warranty are expensed as incurred. Factors that affect our warranty liability include the number of installed units, historical and anticipated product failure rates, material usage and service labor costs. We periodically assess the adequacy of our recorded liability and adjust the amount as necessary.

Share-Based Compensation

Stock-based compensation expense with time based conditions is estimated as of the grant date based on the fair value of the award and is recognized as expense over the requisite service period, which generally equals the vesting period, based on the number of awards that are expected to vest. Estimating the fair value for stock options requires judgment, including the expected term of our stock options, volatility of our stock, expected dividends, risk-free interest rates over the expected term of the options and the expected forfeiture rate.

We are responsible for estimating volatility and have considered a number of factors when estimating volatility. Our method of estimating expected volatility for all stock options granted relies on a combination of historical and implied volatility. We believe that this blended volatility results in a more accurate estimate of the grant-date fair value of employee stock options because it more appropriately reflects the market's current expectations of future volatility.

In limited circumstances, we also issue stock option grants with vesting based on performance conditions, such as the price of our common stock, or, a combination of time or performance conditions. The fair values and derived service periods for all grants that have vesting based on these performance conditions are estimated using the Monte Carlo valuation method. For each stock option grant with vesting based on a combination of time or performance conditions where vesting will occur if either condition is met, the related compensation costs are recognized over the shorter of the explicit service period or the derived service period.

We use the straight-line attribution method to recognize expense for stock-based awards such that the expense associated with awards is evenly recognized throughout the period.

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The amount of stock-based compensation recognized is based on the value of the portion of the awards that are ultimately expected to vest. We estimate forfeitures at the time of grant and revise them, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The term "forfeitures" is distinct from "cancellations" or "expirations" and represents only the unvested portion of the surrendered stock-based award.

The benefits of tax deductions in excess of recognized compensation cost is reported as a financing cash flow, rather than as an operating cash flow. Because the Company does not recognize the benefit of tax deductions in excess of recognized compensation cost due to its cumulative net operating loss position, this had no impact on the Company's consolidated statement of cash flows as of and for the years ended December 31, 2013, 2012 and 2011.

Income Taxes

We record income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and net operating loss and tax credit carryforwards.

Our consolidated financial statements contain certain deferred tax assets which have arisen primarily as a result of operating losses, as well as other temporary differences between financial and income tax accounting.

We establish a valuation allowance when it is more likely than not that some portion or all of the deferred tax assets will not be realized. Significant management judgment is required in determining our provision for income taxes, the deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets.

We evaluate the weight of all available evidence such as historical losses, projected future taxable income and the expected timing of the reversals of existing temporary differences to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

Based on our level of deferred tax assets as of December 31, 2013 and our level of historical U.S. losses, we have determined that the current uncertainty regarding the realization of these assets is sufficient to warrant the need for a full valuation allowance against our U.S. net deferred tax assets. We have also determined that a valuation allowance is required on a portion of our foreign deferred tax assets.

Our income tax expense includes the largest amount of tax benefit for an uncertain tax position that is more likely than not to be sustained upon audit based on the technical merits of the tax position. Settlements with tax authorities, the expiration of statutes of limitations for particular tax positions, or obtaining new information on particular tax positions may cause a change to the effective tax rate. The Company recognizes accrued interest related to unrecognized tax benefits as interest expense and penalties as operating expense.

Change in Accounting Estimate

Effective October 1, 2013, we changed our estimate of the useful life of our assets manufactured for internal use (which are amortized on a straight-line basis) from five years to ten years. This change in estimate resulted from the evaluation of the life cycle of our assets manufactured for internal use and the conclusion, that based on recent experience these products consistently have a longer life than previously estimated. We believe that this change in estimate more accurately reflects the productive life of these assets. The change in useful life has been accounted for as a change in accounting

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estimate, and will be effective on new assets manufactured for internal use, on a prospective basis beginning October 1, 2013.

As a result of the change in the estimated life of assets manufactured for internal use, profit before tax and net profit were approximately \$0.1 million higher, for both the fourth quarter and the full year ended December 31, 2013. The change in estimated useful life of assets did not have an impact on the earnings per share disclosed in the consolidated statements of operations.

Results of Operations

The following table sets forth our results of operations as a percentage of total revenue:

| | Years Ended December 31, | | |
|--|--------------------------|-------------|-----------|
| | 2013 | 2012 | 2011 |
| Revenue: | | | |
| Product | 86.7% | 85.7% | 90.0% |
| Services | 13.3 | 14.3 | 10.0 |
| Total revenue | 100.0 | 100.0 | 100.0 |
| Cost of revenue: | | | |
| Product | 54.5 | 60.8 | 56.8 |
| Services | 10.8 | 10.6 | 7.3 |
| Total cost of revenue | 65.3 | 71.4 | 64.1 |
| Gross profit | 34.7 | 28.6 | 35.9 |
| Operating expenses: | | | |
| Research and development | 17.8 | 19.9 | 14.8 |
| Sales and marketing | 10.8 | 12.7 | 9.1 |
| General and administrative | 13.0 | 13.1 | 9.8 |
| Gain on sale of dry strip systems assets and intellectual property | (0.6) | (3.9) | |
| Restructuring charges | 1.2 | 2.0 | |
| Total operating expenses | 42.2 | 43.8 | 33.7 |
| Income (loss) from operations: | (7.5) | (15.2) | 2.2 |
| Other income (expense): | | | |
| Interest income | | | |
| Interest expense | (0.3) | | |
| Other, net | (0.5) | (0.7) | 0.1 |
| Total other income (expense) | (0.8) | (0.7) | 0.1 |
| Income (loss) before income taxes | (8.3) | (15.9) | 2.3 |
| Income taxes | 0.5 | 0.8 | 0.7 |
| Net income (loss) | (8.8)% | (16.7)% | 1.6% |

Revenue

The following table sets forth our revenues.

| | Years ended December 31, | | Period-to-Period Change | | Years ended December 31, | | Period-to-Period Change | |
|---------------------------|-----------------------------|------------|----------------------------|---------|-----------------------------|------------|----------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| (dollars in thousands) | | | | | | | | |
| Revenues: | | | | | | | | |
| Product | \$ 169,587 | \$ 174,309 | \$ (4,722) | (2.7)% | \$ 174,309 | \$ 287,324 | \$ (113,015) | (39.3)% |
| Percentage of revenues | 86.7% | 85.7% | | | 85.7% | 90.0% | | |
| Services | 26,045 | 29,076 | (3,031) | (10.4)% | 29,076 | 32,092 | (3,016) | (9.4)% |
| Percentage of revenues | 13.3% | 14.3% | | | 14.3% | 10.0% | | |
| Total revenues | \$ 195,632 | \$ 203,385 | \$ (7,753) | (3.8)% | \$ 203,385 | \$ 319,416 | \$ (116,031) | (36.3)% |

2013 Compared with 2012

Product

Product revenue which includes new system sales, sales of spare parts, product upgrades and used system sales was \$169.6 million or 86.7% of revenue in 2013, compared with \$174.3 million, or 85.7% of revenue in 2012. The decrease in product revenue in 2013 is attributable to the weak semiconductor market and a related decrease in capital spending by semiconductor manufacturers early in 2013. Weak sales of our ion implant systems combined with our customers' suspended spending for consumables, spare parts and upgrades resulted in this decline in product revenue in 2013 compared with 2012.

Approximately 23.1% of systems revenue in 2013 was from sales of 200mm products and 76.9% was from sales of 300mm products, compared with 23.4% and 76.6% for sales of 200mm products and 300mm products in 2012, respectively.

A portion of our 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, 2013 and 2012 was \$4.7 million and \$6.9 million, respectively. The decrease was mainly due to the decrease in systems sales in 2013 and the timing of acceptance of deferred system sales.

Services

Service revenue, which includes the labor component of maintenance and service contracts and fees for service hours provided by on-site service personnel, was \$26.0 million, or 13.3% of revenue for 2013, compared with \$29.1 million, or 14.3% of revenue for 2012. Although service revenue should increase with the expansion of the installed base of systems, it can fluctuate from period to period based on capacity utilization at customers' manufacturing facilities, which affects the need for equipment service. The decrease during 2013 was primarily due to a decrease in fabrication utilization in the semiconductor industry during 2013.

2012 Compared with 2011

Product

Product revenue was \$174.3 million or 85.7% of revenue in 2012, compared with \$287.3 million, or 90.0% of revenue in 2011. The decrease in product revenue in 2012 is attributable to the continued weak semiconductor market and a related decrease in capital spending by semiconductor manufacturers during 2012. Ongoing weak sales of our ion implant and dry strip systems combined with our

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customers' suspended spending for consumables, spare parts and upgrades resulted in this decline in product revenue in 2012 compared with 2011.

Approximately 23.4% of systems revenue in 2012 was from sales of 200mm products and 76.6% was from sales of 300mm products, compared with 24.9% and 75.1% for sales of 200mm products and 300mm products in 2011, respectively.

The total amount of deferred revenue at December 31, 2012 and 2011 was \$6.9 million and \$12.3 million, respectively. The decrease was mainly due to the decrease in systems sales in 2012 and the timing of acceptance of deferred system sales.

Services

Service revenue was \$29.1 million, or 14.3% of revenue for 2012, compared with \$32.1 million, or 10.0% of revenue for 2011. The decrease during 2012 was primarily due to a decrease in fabrication utilization in the semiconductor industry during 2012.

Revenue Categories used by Management

In addition to the line item revenue categories discussed above, management also uses revenue categorizations which look at revenue by product line (the most significant of which is ion implant) and by aftermarket, as described below.

2013 Compared with 2012

Ion Implant

Included in total revenue of \$195.6 million in 2013 is revenue from sales of ion implantation products and related service of \$164.0 million, or 83.8% of total revenue, compared with \$156.1 million, or 76.7%, of total revenue in 2012. The increase in ion implant's share of total revenue for 2013 reflects a reduction in dry strip revenue following the sale of assets relating to the dry strip product line in December 2012 as discussed in the Overview. Total revenue in ion implant increased slightly as the market improved in 2013.

Aftermarket

We refer to the business of selling spare parts, product upgrades, and used systems combined with the sale of maintenance labor and service contracts and service hours, as the "aftermarket" business. Included in total revenue of \$195.6 million in 2013 is revenue from our aftermarket business of \$120.6 million, compared to \$124.1 million for 2012. Aftermarket revenue generally increases with the expansion of the installed base of systems but can fluctuate from period to period based on capacity utilization at customers' manufacturing facilities which affects the sale of spare parts and demand for equipment service. The decrease in aftermarket revenue in 2013 compared to 2012 was due to a decrease in fabrication utilization in the semiconductor industry during 2013.

2012 Compared with 2011

Ion Implant

Included in total revenue of \$203.4 million in 2012 is revenue from sales of ion implantation products and related service of \$156.1 million, or 76.7% of total revenue, compared with \$237.9 million, or 74.5%, of total revenue in 2011. The dollar decrease was due to the factors discussed above for product revenue. Annual revenue from the sale of ion implantation products and service typically averages from 70.0% to 80.0% of total revenue.

Aftermarket

Included in total revenue of \$203.4 million in 2012 is revenue from our aftermarket business of \$124.1 million, compared to \$147.6 million for 2011. The decrease in aftermarket revenue in 2012 compared to 2011 was due to a decrease in fabrication utilization in the semiconductor industry during 2012.

Gross Profit / Gross Margin

The following table sets forth our gross profit.

| | Years ended December 31, | | Period-to-Period Change | | Years ended December 31, | | Period-to-Period Change | |
|------------------------|-----------------------------|-----------|----------------------------|---------|-----------------------------|------------|----------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| (dollars in thousands) | | | | | | | | |
| Gross Profit: | | | | | | | | |
| Product | \$ 62,909 | \$ 50,716 | \$ 12,193 | 24.0% | \$ 50,716 | \$ 106,083 | \$ (55,367) | (52.2)% |
| Product gross margin | 37.1% | 29.1% | | | 29.1% | 36.9% | | |
| Services | 5,026 | 7,455 | (2,429) | (32.6)% | 7,455 | \$ 8,654 | (1,199) | (13.9)% |
| Services gross margin | 19.3% | 25.6% | | | 25.6% | 27.0% | | |
| Total gross profit | \$ 67,935 | \$ 58,171 | \$ 9,764 | 16.8% | \$ 58,171 | \$ 114,737 | \$ (56,566) | (49.3)% |

| | | | | |
|--------------|-------|-------|-------|-------|
| Gross margin | 34.7% | 28.6% | 28.6% | 35.9% |
|--------------|-------|-------|-------|-------|

2013 Compared with 2012

Product

Gross margin from product revenue was 37.1% for the twelve months ended December 31, 2013, compared to 29.1% for the twelve months ended December 31, 2012, an increase of 8.0 percentage points. Gross profit increased by 7.0 percentage points due to a lower excess inventory charge. A favorable mix of systems sales and lower warranty costs increased gross profit by 1.9 percentage points. These increases were partially offset by a 0.9 percentage point decrease in gross profit resulting from lower margins on parts and upgrade revenue.

Services

Gross margin from service revenue was 19.3% for the twelve months ended December 31, 2013, compared to 25.6% for the twelve months ended December 31, 2012. The decrease in gross profit is attributable to changes in the mix of service contracts and the unfavorable absorption of fixed service costs.

2012 Compared with 2011

Product

Gross margin from product revenue was 29.1% for the twelve months ended December 31, 2012, compared to 36.9% for the twelve months ended December 31, 2011, a decrease of 7.8 percentage points. Gross profit decreased by 7.7 percentage points due to a higher excess inventory charge of \$13.4 million recorded during the fourth quarter of 2012, as a result of our comprehensive review of our worldwide inventory levels. Lower systems sales volumes and the related unfavorable absorption of fixed overhead costs also contributed to the reduction in gross profit by 9.0 percentage points. These decreases were partially offset by an 8.9 percentage point increase in gross profit resulting from a higher margin mix of parts and upgrade revenue.

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Services

Gross margin from service revenue was 25.6% for the twelve months ended December 31, 2012, compared to 27.0% for the twelve months ended December 31, 2011. The decrease in gross profit is attributable to changes in the mix of service contracts and the unfavorable absorption of fixed service costs.

Operating Expenses

The following table sets forth our operating expenses:

| | Years ended December 31, | | Period-to-Period Change | | Years ended December 31, | | Period-to-Period Change | |
|--|-----------------------------|-----------|----------------------------|---------|-----------------------------|------------|----------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| (dollars in thousands) | | | | | | | | |
| Research and development | \$ 34,756 | \$ 40,401 | \$ (5,645) | (14.0)% | \$ 40,401 | \$ 47,176 | \$ (6,775) | (14.4)% |
| Percentage of revenues | 17.8% | 19.9% | | | 19.9% | 14.8% | | |
| Sales and marketing | 21,159 | 25,889 | (4,730) | (18.3)% | 25,889 | 29,255 | (3,366) | (11.5)% |
| Percentage of revenues | 10.8% | 12.7% | | | 12.7% | 9.1% | | |
| General and administrative | 25,471 | 26,554 | (1,083) | (4.1)% | 26,554 | 31,174 | (4,620) | (14.8)% |
| Percentage of revenues | 13.0% | 13.1% | | | 13.1% | 9.8% | | |
| Gain on sale of dry strip assets and intellectual property | (1,167) | (7,904) | 6,737 | 85.2% | (7,904) | | (7,904) | % |
| Percentage of revenues | (0.6)% | (3.9)% | | | (3.9)% | 0.0% | | |
| Restructuring charges | 2,334 | 4,169 | (1,835) | (44.0)% | 4,169 | | 4,169 | % |
| Percentage of revenues | 1.2% | 2.0% | | | 2.0% | 0.0% | | |
| Total operating expenses | \$ 82,553 | \$ 89,109 | \$ (6,556) | (7.4)% | \$ 89,109 | \$ 107,605 | \$ (18,496) | (17.2)% |

Percentage of revenues 42.2% 43.8% 43.8% 33.7%

Our operating expenses consist primarily of personnel costs, including salaries, commissions, bonuses, share-based compensation and related benefits and taxes; project material costs related to the design and development of new products and enhancement of existing products; and professional fees, travel and depreciation expenses. Personnel costs are our largest expense, representing \$47.3 million, or 58.1% of our total operating expenses, excluding the gain on sale of the dry strip assets and intellectual property of \$1.2 million and restructuring charges of \$2.3 million, for the year ended December 31, 2013; \$52.5 million, or 56.5%, of our total operating expenses, excluding the gain on sale of the dry strip assets and intellectual property of \$7.9 million and restructuring charges of \$4.2 million for the year ended December 31, 2012; and \$62.5 million, or 58.1%, of our total operating expenses for the year ended December 31, 2011. In general, operating expenses declined from 2011 to 2013 as a result of our efforts to maintain tight control of discretionary spending.

Research and Development

| | Years ended December 31, | | Period-to-Period Change | | Years ended December 31, | | Period-to-Period Change | |
|--------------------------|-----------------------------|-----------|----------------------------|---------|-----------------------------|-----------|----------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| (dollars in thousands) | | | | | | | | |
| Research and development | \$ 34,756 | \$ 40,401 | \$ (5,645) | (14.0)% | \$ 40,401 | \$ 47,176 | \$ (6,775) | (14.4)% |
| Percentage of revenues | 17.8% | 19.9% | | | 19.9% | 14.8% | | |

Our ability to remain competitive depends largely on continuously developing innovative technology, with new and enhanced features and systems and introducing them at competitive prices on

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a timely basis. Accordingly, based on our strategic plan, we establish annual R&D budgets to fund programs that we expect will drive competitive advantages.

2013 Compared with 2012

Research and development expense was \$34.8 million in 2013, a decrease of approximately \$5.6 million, or 14.0%, compared with \$40.4 million in 2012. The decrease was primarily due to the reduction in payroll costs of \$3.2 million as a result of lowering our headcount through reductions in force. As we focused our R&D spend on critical programs, consulting, project material and related costs decreased by \$0.5 million and depreciation expense for internal use assets used as demonstration and/or test systems decreased by \$1.5 million.

2012 Compared with 2011

Research and development expense was \$40.4 million in 2012, a decrease of approximately \$6.8 million, or 14.4%, compared with \$47.2 million in 2011. The decrease was primarily due to the reduction in payroll costs of \$2.4 million as a result of lowering our headcount through reductions in force and the cost savings realized by three weeks of unpaid furloughs taken by our employees. As we focused our R&D spend on critical programs, consulting and project material costs decreased by \$2.6 million and depreciation expense for internal use assets used as demonstration and/or test systems decreased by \$1.4 million.

Sales and Marketing

| | Years ended December 31, | | Period-to- Period Change | | Years ended December 31, | | Period-to- Period Change | |
|------------------------|-----------------------------|-----------|--------------------------------|---------|-----------------------------|-----------|--------------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| | (dollars in thousands) | | | | | | | |
| Sales and marketing | \$ 21,159 | \$ 25,889 | \$ (4,730) | (18.3)% | \$ 25,889 | \$ 29,255 | \$ (3,366) | (11.5)% |
| Percentage of revenues | 10.8% | 12.7% | | | 12.7% | 9.1% | | |

Our sales and marketing expenses result primarily from the sale of our equipment and services through our direct sales force.

2013 Compared with 2012

Sales and marketing expense was \$21.2 million in 2013, a decrease of \$4.7 million, or 18.3%, compared with \$25.9 million in 2012. The decrease was primarily due to the reduction in payroll costs of \$1.6 million as a result of lowering our headcount through reductions in force. In addition, consulting and project material costs decreased by \$0.3 million and travel costs decreased by \$0.3 million due to reduced travel. In addition, there was a one-time marketing expense of \$2.1 million associated with our evaluation programs in 2012.

2012 Compared with 2011

Sales and marketing expense was \$25.9 million in 2012, a decrease of \$3.4 million, or 11.5%, compared with \$29.3 million in 2011. The decrease was primarily due to the reduction in payroll costs of \$5.0 million as a result of lowering our headcount through reductions in force and the cost savings realized by three weeks of unpaid furloughs taken by our employees. In addition, freight expenses decreased by \$0.5 million due to lower shipments and travel costs decreased by \$0.8 million due to reduced travel. The decreases in expenses were partially offset by a one-time marketing expense of \$2.1 million associated with our evaluation programs and an increase in consulting expenses of \$0.4 million.

General and Administrative

| | Years ended December 31, | | Period-to- Period Change | | Years ended December 31, | | Period-to- Period Change | |
|----------------------------|-----------------------------|-----------|--------------------------------|--------|-----------------------------|-----------|--------------------------------|---------|
| | 2013 | 2012 | \$ | % | 2012 | 2011 | \$ | % |
| | (dollars in thousands) | | | | | | | |
| General and administrative | \$ 25,471 | \$ 26,554 | \$ (1,083) | (4.1)% | \$ 26,554 | \$ 31,174 | \$ (4,620) | (14.8)% |
| Percentage of revenues | 13.0% | 13.1% | | | 13.1% | 9.8% | | |

2013 Compared with 2012

General and administrative expense was \$25.5 million in 2013, a decrease of \$1.1 million, or 4.1% compared with \$26.6 million in 2012. The decrease was due to the reduction in payroll costs of \$0.4 million as a result of lower headcount, lower legal fees of \$0.5 million associated with patents related to our dry strip product line which was sold in 2012, and lower facility related costs.

2012 Compared with 2011

General and administrative expense was \$26.6 million in 2012, a decrease of \$4.6 million, or 14.8% compared with \$31.2 million in 2011. The decrease was due to the reduction in payroll costs of \$2.6 million as a result of lowering our headcount through reductions in force and the cost savings realized by three weeks of unpaid furloughs taken by our employees, lower facility related costs of \$1.1 million, which were partially due to the three weeks of plant shutdowns, lower professional fees of \$0.3 million and lower consulting costs of \$0.6 million.

Gain on Sale of Dry Strip Assets and Intellectual Property

On December 3, 2012, we sold our dry strip system assets and intellectual property to Lam Research.

2013 Compared with 2012

The \$1.2 million gain on sale of dry strip assets and intellectual property in 2013 was related to the achievement of reaching certain milestones with Lam in 2013.

2012 Compared with 2011

The \$7.9 million gain on sale of dry strip assets and intellectual property in 2012 was comprised of \$8.7 million in proceeds received for the sale, offset by approximately \$0.8 million of product and material costs related to the lab system and other components purchased by Lam.

Restructuring

During 2012 and 2013, we implemented multiple reductions in force to improve the focus of our operations, control costs to achieve future profitability and conserve cash.

2013 Compared with 2012

In 2013, we recorded \$2.3 million in restructuring expense for severance and related costs as a result of this reduction in force as compared to \$4.2 million in restructuring expense for severance and related costs during the twelve months ended December 31, 2012.

2012 Compared with 2011

In 2012, we recorded a restructuring expense for severance and related costs of \$4.2 million, which included a \$0.1 million non-cash charge related to the modification of a share-based award during twelve months ended December 31, 2012. Approximately \$0.5 million of the restructuring costs were associated with the sale of the dry strip assets and intellectual property.

Other Income (Expense)

2013 Compared with 2012

Other expense was \$1.5 million for the twelve months ended December 31, 2013 compared to other expense of \$1.5 million for the twelve months ended December 31, 2012. Other income (expense) consists primarily of foreign exchange gains and losses attributable to fluctuations of the U.S. dollar against the local currencies of certain of the countries in which we operate, interest earned on our invested cash balances, bank fees associated with our financing arrangements and interest expense related to our term loan.

2012 Compared with 2011

Other expense was \$1.5 million for the twelve months ended December 31, 2012 compared to other income of \$0.3 million for the twelve months ended December 31, 2011. Other income (expense) consists primarily of foreign exchange gains and losses attributable to fluctuations of the U.S. dollar against the local currencies of certain of the countries in which we operate, interest earned on our invested cash balances and bank fees associated with maintaining our credit facility.

During the years ended December 31, 2013, 2012 and 2011, we had no significant off-balance-sheet risk such as foreign exchange contracts, option contracts or other foreign hedging arrangements

Income Taxes

Income tax expense was \$1.0 million, \$1.6 million and \$2.4 million for the twelve months ended December 31, 2013, 2012 and 2011, respectively. Our income tax expense is due primarily to operating results of foreign entities in jurisdictions in Europe and Asia, where we earn taxable income. We have significant net operating loss carryforwards in the United States and certain European jurisdictions, and, as a result, we do not currently pay significant income taxes in those jurisdictions. Additionally, we do not recognize the tax benefit for such losses in the United States and certain European taxing jurisdictions.

During 2013, the statute of limitations expired for an uncertain tax position for \$0.4 million in a foreign jurisdiction that was reserved for in 2008. This resulted in a benefit to tax expense of \$0.3 million and a reduction to interest expense of \$0.1 million. The expiration of the statute of limitations did not have a significant impact on our results of operations or cash flows for the twelve months ended December 31, 2013.

During the year ended December 31, 2013, we incurred charges related to the write-off of deferred tax assets in certain foreign jurisdictions that were no longer realizable, which resulted in a non-cash tax expense of \$0.4 million. The charge did not have a significant impact on our results of operations or cash flows for the twelve months ended December 31, 2013.

Liquidity and Capital Resources

Our liquidity is affected by many factors. Some of these relate specifically to the operations of our business, for example, the rate of sale of our product lines, and others relate to the uncertainties of global economies, including the availability of credit and the condition of the overall semiconductor

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equipment industry. Our established cost structure does not vary significantly with changes in volume. We have reduced operating expense to achieve profitability towards the lower end of our quarterly revenue swings. We experience fluctuations in operating results and cash flows depending on our revenue as driven by the level of capital expenditures by semiconductor manufacturers.

For the full year 2013, \$15.0 million of cash was used to support operating activities. This compares to cash used to support operations of \$10.6 million in 2012. The \$4.4 million increase in cash used by operations in 2013 was predominately driven by the decrease in the Company's loss from operations excluding non-cash charges for depreciation and amortization and stock based compensation expense. We received \$1.2 million in cash in 2013 for the achievement of milestones associated with the Lam transaction, which was partially offset by \$0.8 million in capital expenditures. Cash also had a net increase from financing activities of \$15.7 million, driven by the \$15.0 million proceeds from the issuance of our term loan and \$1.7 million of proceeds from the exercise of stock options partially off-set by \$0.8 million of long-term restricted cash related to our term loan. Cash and cash equivalents at December 31, 2013 are \$46.3 million, compared to \$45.0 million at December 31, 2012. Working capital at December 31, 2013 was \$149.4 million. Approximately \$23.0 million of cash was located in foreign jurisdictions as of December 31, 2013.

Capital expenditures were \$0.8 million and \$0.6 million for the years ended December 31, 2013 and 2012, respectively. Total capital expenditures for 2014 are projected to be slightly higher than in 2013. Future capital expenditures beyond 2014 will depend on a number of factors, including the timing and rate of expansion of our business and our ability to generate cash to fund them.

We have an interest reserve account, outstanding standby letters of credit and surety bonds in the amount of \$4.7 million to support our term loan as well as specified operating and insurance programs and certain value added tax claims in Europe.

The following represents our commercial commitments as of December 31, 2013 (in thousands):

| Other Commercial Commitments | Total | Amount of Commitment Expiration by Period | |
|------------------------------|----------|---|-----------|
| | | 2014 | 2015-2018 |
| Surety bonds | \$ 1,432 | \$ 172 | \$ 1,260 |
| Standby letters of credit | 2,473 | 2,473 | |
| Interest reserve escrow | 825 | | 825 |
| | \$ 4,730 | \$ 2,645 | \$ 2,085 |

The following represents our contractual obligations as of December 31, 2013 (in thousands):

| Contractual Obligations | Total | Payments Due by Period | | |
|----------------------------|-----------|------------------------|-----------|-----------|
| | | 2014 | 2015-2018 | 2018-2021 |
| Debt Obligations | \$ 15,000 | 471 | 14,529 | |
| Interest Payments | 2,045 | 808 | 1,237 | |
| Purchase order commitments | 24,468 | 24,238 | 230 | |
| Operating leases | 4,574 | 2,762 | 1,812 | |
| | \$ 46,087 | \$ 28,279 | 17,808 | |

We have no off-balance sheet arrangements at December 31, 2013, exclusive of operating leases.

We have net operating loss and tax credit carryforwards, the tax effect of which aggregate \$131.4 million at December 31, 2013. These carryforwards, which expire principally between 2014 and

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2032, are available to reduce future income tax liabilities in the United States and certain foreign jurisdictions.

It is Company policy to provide taxes for the total anticipated tax impact of the undistributed earnings of our wholly-owned foreign subsidiaries,' as such earnings are not expected to be reinvested indefinitely. The Company anticipates that U.S. tax resulting from remitting such earnings will be off-set by net operating loss or credit carryforwards to the extent available. In addition, the Company does not anticipate incurring a foreign withholding tax on remitting such earnings since it does not intend to remit the earnings as dividends.

On July 5, 2013, we entered into a Business Loan Agreement with Northern Bank & Trust Company (the "Bank"), which provides for a three year term loan of \$15.0 million, secured by our real estate in Beverly, Massachusetts (the "Term Loan"). The Term Loan bears interest at the rate of 5.5% per annum, with payments of principal beginning August 5, 2014 on a 10 year amortization schedule of the principal on a straight-line basis. Interest is payable monthly beginning on August 5, 2013. All outstanding principal and unpaid interest is due and payable on July 5, 2016. In addition, under the Term Loan, the Company must comply with financial covenants relating to debt service ratio, net worth and liquidity. As of December 31, 2013, we were in compliance with all covenant requirements of the Term Loan.

In connection with closing the term loan with Northern Bank & Trust Company, we terminated our revolving credit facility with Silicon Valley Bank, which had provided for borrowings of up to \$30.0 million. We paid a \$0.3 million early termination fee to Silicon Valley Bank. In the fourth quarter, we reinstated a revolving credit facility with Silicon Valley Bank pursuant to a Loan and Security Agreement dated October 31, 2013. The facility provides for borrowings up to \$10.0 million, based primarily on accounts receivable, and is subject to certain financial covenants requiring us to maintain minimum levels of operating results and liquidity. The agreement will terminate on October 31, 2015. The Company uses the facility to support letters of credit and for short term borrowing as needed. At December 31, 2013, our available borrowing capacity under this revolving credit facility was \$7.5 million and we were compliant with all covenants of the credit facility. There were no borrowings against this facility during the year-ended December 31, 2013.

We believe that based on our current market, revenue, expense and cash flow forecasts, our existing cash, cash equivalents and borrowing capacity will be sufficient to satisfy our anticipated cash requirements for the short and long-term. In the event that demand for our products declines in future periods, we believe we can align manufacturing and operating spending levels to the changing business conditions and provide sufficient liquidity to support operations.

Related-Party Transactions

There are no significant related-party transactions that require disclosure in the consolidated financial statements for the year ended December 31, 2013, or in this Annual Report on Form 10-K.

Recent Accounting Pronouncements

A discussion of recent accounting pronouncements is included in Note 2 to the consolidated financial statements for the year ended December 31, 2013 included in this Annual Report on Form 10-K.

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

Interest Rate Sensitivity

Our exposure to market risk for changes in interest rates relates primarily to our investment portfolio, which consists entirely of cash-equivalents at December 31, 2013. 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. We do not use derivative financial instruments in managing our investment portfolio. 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. We incur interest expense on borrowings outstanding under our term loan which bears interest at the fixed rate.

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 years ended December 31, 2013 and 2012, approximately 32.9% and 29% of our revenue were derived from foreign operations with this inherent risk. In addition, at both December 31, 2013 and 2012, our operations outside of the United States accounted for approximately 39.6% and 42% of our total assets, respectively, the majority of which was denominated in currencies other than the U.S. dollar. We do not use derivative financial instruments in managing our foreign currency exchange risk.

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 Rule 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.

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 all 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 our internal control over financial reporting as of December 31, 2013. 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, 2013, our internal control over financial reporting is effective based on those criteria.

The independent registered public accounting firm of Ernst & Young LLP, as auditors of our consolidated financial statements, has issued an attestation report on its assessment of our internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

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

We have audited Axcelis Technologies, Inc.'s internal control over financial reporting as of December 31, 2013, based on criteria established in Internal Control Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (1992 framework) (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 included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

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

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, Axcelis Technologies, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2013, 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 of Axcelis Technologies, Inc. as of December 31, 2013 and 2012, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2013 of Axcelis Technologies, Inc. and our report dated March 3, 2014 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Boston, Massachusetts
March 3, 2014

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) identified in connection with the evaluation of our internal control that occurred during our fourth quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

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 13, 2014 (the "Proxy Statement") captioned:

"Proposal 1: Election of Directors,"

"Corporate Governance," and

"Other Matters Section 16(a) Beneficial Ownership Reporting Compliance."

The remainder of such information is set forth under the heading "Executive Officers of the Registrant" 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 sections in the Proxy Statement captioned:

"Executive Compensation," and

"Other Matters Compensation Committee Interlocks and Insider Participation."

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

"Proposal 3: Approval of Amendment to the 2012 Equity Incentive Plan Current Equity Compensation Plan Information."

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

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 Compensation,"

"Corporate Governance Board of Directors Independence and Meetings," and

"Corporate Governance Certain Relationships and Related Transactions."

Item 14. Principal Accounting 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 our Independent Registered Public Accounting Firm" in the Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a)

The following documents are filed as part of this Report:

1)

Financial Statements:

| | |
|--|------------|
| <u>Report of Independent Registered Public Accounting Firm</u> | <u>F-1</u> |
| <u>Consolidated Statements of Operations For the years ended December 31, 2013, 2012 and 2011</u> | <u>F-2</u> |
| <u>Consolidated Statements of Comprehensive Income (Loss) For the years ended December 31, 2013, 2012 and 2011</u> | <u>F-3</u> |
| <u>Consolidated Balance Sheets December 31, 2013 and 2012</u> | <u>F-4</u> |
| <u>Consolidated Statements of Stockholders' Equity For the years ended December 31, 2013, 2012 and 2011</u> | <u>F-5</u> |
| <u>Consolidated Statements of Cash Flows For the years ended December 31, 2013, 2012 and 2011</u> | <u>F-6</u> |
| <u>Notes to Consolidated Financial Statements</u> | <u>F-7</u> |

2)

Financial Statement Schedules:

Schedule II Valuation and Qualifying Accounts for the years ended December 31, 2013, 2012 and 2011.

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.

3)

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.

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. as of December 31, 2013 and 2012, and the related consolidated statements of operations, comprehensive income (loss), changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2013. Our audits also include the financial statement schedule listed in the Index at Item 15(a). These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements 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, 2013 and 2012, and the consolidated results of their operations and their cash flows for each of the three years in the period ended December 31, 2013, 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 to the information set forth therein.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Axcelis Technologies, Inc.'s internal control over financial reporting as of December 31, 2013, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (1992 framework) and our report dated March 3, 2014 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Boston, Massachusetts
March 3, 2014

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

| | Twelve months ended December 31, | | |
|--|-------------------------------------|-------------|------------|
| | 2013 | 2012 | 2011 |
| Revenue | | | |
| Product | \$ 169,587 | \$ 174,309 | \$ 287,324 |
| Services | 26,045 | 29,076 | 32,092 |
| Total revenue | 195,632 | 203,385 | 319,416 |
| Cost of revenue | | | |
| Product | 106,678 | 123,593 | 181,241 |
| Services | 21,019 | 21,621 | 23,438 |
| Total cost of revenue | 127,697 | 145,214 | 204,679 |
| Gross profit | 67,935 | 58,171 | 114,737 |
| Operating expenses | | | |
| Research and development | 34,756 | 40,401 | 47,176 |
| Sales and marketing | 21,159 | 25,889 | 29,255 |
| General and administrative | 25,471 | 26,554 | 31,174 |
| Gain on sale of dry strip assets and intellectual property | (1,167) | (7,904) | |
| Restructuring charges | 2,334 | 4,169 | |
| Total operating expenses | 82,553 | 89,109 | 107,605 |
| Income (loss) from operations | (14,618) | (30,938) | 7,132 |
| Other income (expense) | | | |
| Interest income | 44 | 45 | 42 |
| Interest expense | (457) | | |
| Other, net | (1,073) | (1,495) | 297 |
| Total other income (expense) | (1,486) | (1,450) | 339 |
| Income (loss) before income taxes | (16,104) | (32,388) | 7,471 |
| Income taxes | 1,040 | 1,646 | 2,394 |
| Net income (loss) | \$ (17,144) | \$ (34,034) | \$ 5,077 |

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Net income (loss) per share

| | | | | | | |
|-------|----|--------|----|--------|----|------|
| Basic | \$ | (0.16) | \$ | (0.32) | \$ | 0.05 |
|-------|----|--------|----|--------|----|------|

| | | | | | | |
|---------|----|--------|----|--------|----|------|
| Diluted | \$ | (0.16) | \$ | (0.32) | \$ | 0.05 |
|---------|----|--------|----|--------|----|------|

Shares used in computing net income (loss) per share

| | | | |
|-------|---------|---------|---------|
| Basic | 108,869 | 107,619 | 106,234 |
|-------|---------|---------|---------|

| | | | |
|---------|---------|---------|---------|
| Diluted | 108,869 | 107,619 | 109,098 |
|---------|---------|---------|---------|

See accompanying Notes to these Consolidated Financial Statements

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Axcelis Technologies, Inc.
Consolidated Statements of Comprehensive Income (Loss)
(In thousands)

| | Twelve months ended December 31, | | |
|--|----------------------------------|-------------|----------|
| | 2013 | 2012 | 2011 |
| Net income (loss) | \$ (17,144) | \$ (34,034) | \$ 5,077 |
| Other comprehensive income: | | | |
| Foreign currency translation adjustments | 695 | 642 | (1,465) |
| Actuarial net (loss) gain from pension plan, net of benefit (taxes) of (\$15), \$178 and (\$4) | 24 | (399) | 10 |
| Comprehensive income (loss) | \$ (16,425) | \$ (33,791) | \$ 3,622 |

See accompanying Notes to these Consolidated Financial Statements

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

| | December 31, 2013 | December 31, 2012 |
|--|----------------------|----------------------|
| ASSETS | | |
| Current assets | | |
| Cash and cash equivalents | \$ 46,290 | \$ 44,986 |
| Accounts receivable, net | 36,587 | 24,843 |
| Inventories, net | 95,789 | 100,234 |
| Restricted cash | | 106 |
| Prepaid expenses and other current assets | 6,242 | 5,056 |
| Total current assets | 184,908 | 175,225 |
| Property, plant and equipment, net | 32,006 | 34,413 |
| Long-term restricted cash | 825 | |
| Other assets | 15,810 | 12,520 |
| Total assets | \$ 233,549 | \$ 222,158 |
| LIABILITIES AND STOCKHOLDERS' EQUITY | | |
| Current liabilities | | |
| Accounts payable | \$ 19,451 | \$ 10,166 |
| Accrued compensation | 4,845 | 7,283 |
| Warranty | 1,316 | 1,700 |
| Income taxes | 417 | 278 |
| Deferred revenue | 4,387 | 6,423 |
| Current portion of long-term debt | 471 | |
| Other current liabilities | 4,573 | 3,932 |
| Total current liabilities | 35,460 | 29,782 |
| Long-term debt | 14,529 | |
| Long-term deferred revenue | 322 | 456 |
| Other long-term liabilities | 7,236 | 5,844 |
| Total liabilities | 57,547 | 36,082 |
| Commitments and contingencies (Note 16) | | |
| 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; 110,225 shares issued and 110,105 shares outstanding at December 31, 2013; 108,293 shares issued and 108,173 shares outstanding at December 31, 2012 | 110 | 108 |
| Additional paid-in capital | 510,992 | 504,643 |
| Treasury stock, at cost, 120 shares at December 31, 2013 and 2012 | (1,218) | (1,218) |
| Accumulated deficit | (339,621) | (322,477) |
| Accumulated other comprehensive income | 5,739 | 5,020 |
| Total stockholders' equity | 176,002 | 186,076 |

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| | | | | |
|--|----|---------|----|---------|
| Total liabilities and stockholders' equity | \$ | 233,549 | \$ | 222,158 |
|--|----|---------|----|---------|

See accompanying Notes to these Consolidated Financial Statements

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

| | Common Stock | | Additional Paid-in Capital | Treasury Stock | Accumulated Deficit | Accumulated Other Comprehensive Income (Loss) | Total Stockholders' Equity |
|---|--------------|--------|----------------------------------|-------------------|------------------------|---|----------------------------------|
| | Shares | Amount | | | | | |
| Balance at December 31, 2010 | 105,906 | \$ 106 | \$ 493,967 | \$ (1,218) | \$ (293,520) | \$ 6,232 | \$ 205,567 |
| Net income | | | | | 5,077 | | 5,077 |
| Foreign currency translation adjustments | | | | | | (1,465) | (1,465) |
| Change in pension | | | | | | 10 | 10 |
| Exercise of stock options | 372 | | 288 | | | | 288 |
| Issuance of shares under Employee Stock Purchase Plan | 398 | 1 | 502 | | | | 503 |
| Issuance of restricted common shares | 133 | | (112) | | | | (112) |
| Stock-based compensation expense | | | 4,687 | | | | 4,687 |
| Balance at December 31, 2011 | 106,809 | 107 | 499,332 | (1,218) | (288,443) | 4,777 | 214,555 |
| Net loss | | | | | (34,034) | | (34,034) |
| Foreign currency translation adjustments | | | | | | 642 | 642 |
| Change in pension | | | | | | (399) | (399) |
| Exercise of stock options | 1,148 | 1 | 967 | | | | 968 |
| Issuance of shares under Employee Stock Purchase Plan | 306 | | 390 | | | | 390 |
| Issuance of restricted common shares | 30 | | (22) | | | | (22) |
| Stock-based compensation expense | | | 3,976 | | | | 3,976 |
| Balance at December 31, 2012 | 108,293 | 108 | 504,643 | (1,218) | (322,477) | 5,020 | 186,076 |
| Net loss | | | | | (17,144) | | (17,144) |
| Foreign currency translation adjustments | | | | | | 695 | 695 |
| Change in pension | | | | | | 24 | 24 |
| Exercise of stock options | 1,511 | 2 | 1,667 | | | | 1,669 |
| Issuance of shares under Employee Stock Purchase Plan | 206 | | 436 | | | | 436 |
| Issuance of restricted common shares | 215 | | (26) | | | | (26) |
| Stock-based compensation expense | | | 4,272 | | | | 4,272 |
| Balance at December 31, 2013 | 110,225 | \$ 110 | \$ 510,992 | \$ (1,218) | \$ (339,621) | \$ 5,739 | \$ 176,002 |

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

| | Twelve months ended December 31, | | |
|---|-------------------------------------|---------------|---------------|
| | 2013 | 2012 | 2011 |
| Cash flows from operating activities | | | |
| Net income (loss) | \$ (17,144) | \$ (34,034) | \$ 5,077 |
| Adjustments to reconcile net income (loss) to net cash (used for) provided by operating activities: | | | |
| Depreciation and amortization | 5,075 | 6,877 | 8,497 |
| Gain on sale of dry strip assets and intellectual property | (1,167) | (7,904) | |
| Deferred taxes | (1,465) | 826 | 585 |
| Other | | 186 | 28 |
| Stock-based compensation expense | 4,337 | 3,976 | 4,687 |
| Provision for excess inventory | 2,562 | 14,492 | 1,015 |
| Changes in operating assets & liabilities | | | |
| Accounts receivable | (11,528) | 10,478 | 22,692 |
| Inventories | 2,209 | 5,903 | (11,870) |
| Prepaid expenses and other current assets | 125 | 4,386 | 3,049 |
| Accounts payable and other current liabilities | 7,308 | (13,490) | (17,940) |
| Deferred revenue | (2,181) | (5,396) | (4,006) |
| Income taxes | 133 | (225) | 507 |
| Other assets and liabilities | (3,306) | 3,328 | (8,788) |
| Net cash (used for) provided by operating activities | (15,042) | (10,597) | 3,533 |
| Cash flows from investing activities | | | |
| Proceeds from sale of dry strip assets and intellectual property | 1,200 | 8,716 | |
| Expenditures for property, plant, and equipment | (821) | (591) | (2,124) |
| Decrease (increase) in restricted cash | 106 | (2) | 3 |
| Net cash provided by (used for) investing activities | 485 | 8,123 | (2,121) |
| Cash flows from financing activities | | | |
| Increase in restricted cash | (825) | | |
| Financing fees and other expenses | (560) | | (200) |
| Proceeds from exercise of stock options | 1,669 | 968 | 288 |
| Proceeds from Employee Stock Purchase Plan | 436 | 331 | 503 |
| Proceeds from issuance of Term Loan | 15,000 | | |
| Net cash provided by financing activities | 15,720 | 1,299 | 591 |
| Effect of exchange rate changes on cash | 141 | (716) | (869) |
| Net increase (decrease) in cash and cash equivalents | 1,304 | (1,891) | 1,134 |
| Cash and cash equivalents at beginning of period | 44,986 | 46,877 | 45,743 |
| Cash and cash equivalents at end of period | \$ 46,290 | \$ 44,986 | \$ 46,877 |

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| | | | | |
|----------------|----|-----|----|-----|
| Cash paid for: | | | | |
| Income taxes | \$ | 737 | \$ | 848 |
| Interest paid | \$ | 409 | | |

See accompanying Notes to these Consolidated Financial Statements

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Axcelis Technologies, Inc.
Notes to Consolidated Financial Statements

Note 1. Nature of Business

Axcelis Technologies, Inc. ("Axcelis" or the "Company") was incorporated in Delaware in 1995, and is a worldwide producer of ion implantation, dry strip and other processing equipment used in the fabrication of semiconductor chips in the United States, Europe and Asia. In addition, the Company provides extensive aftermarket service and support, including spare parts, equipment upgrades, used equipment and maintenance services to the semiconductor industry.

In December 2012, the Company sold its intellectual property rights and certain assets relating to the Company's dry strip product line for cash proceeds of \$8.7 million. These amounts were partially offset by additional costs associated with the lab system purchased by Lam. As a result of this transaction, the Company ceased the sale of 300mm dry strip wafer processing equipment in September 2013. The Company will be able to continue to sell dry strip systems for smaller wafers until December 2015 and to support its installed base of all dry strip systems indefinitely. A portion of the purchase consideration (up to \$2.0 million) was contingent upon the Company achieving certain milestones by June 30, 2013. The Company recorded \$1.2 million for the proceeds received based on its achievement of milestones during 2013. See Note 3 for additional information relating to the accounting for the sale of the dry strip assets and intellectual property.

Note 2. Summary of Significant Accounting Policies

The accompanying consolidated financial statements reflect the application of certain significant accounting policies as described in this note and elsewhere in the footnotes.

(a) Basis of Presentation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned, controlled subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Events occurring subsequent to December 31, 2013 have been evaluated for potential recognition or disclosure in the consolidated financial statements.

(b) Use of Estimates

The preparation of these consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of revenue and expenses during the reporting periods. On an ongoing basis, the Company evaluates its estimates and judgments, including those related to revenue recognition, the realizable value of inventories, valuing share-based compensation instruments and valuation allowances for deferred tax assets. Actual amounts could differ from these estimates. Changes in estimates are recorded in the period in which they become known.

(c) Foreign Currency

The Company has determined the functional currency for substantially 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 revenue and expenses. The resulting translation adjustments are recorded in stockholders' equity as

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an element of accumulated other comprehensive income (loss). Foreign currency transaction gains and losses are included in other income (expense) in the Consolidated Statements of Operations.

For the year ended December 31, 2013 the Company realized \$0.3 million of foreign exchange losses. For the year ended December 31, 2012 the Company realized \$0.9 million of foreign exchange losses. For the year ended December 31, 2011 the Company realized \$1.2 million of foreign exchange gains.

(d) Cash and Cash Equivalents

Cash and cash equivalents consist of cash on hand and highly liquid investments with original maturities of ninety days or less. Cash equivalents consist primarily of money market securities and certificates of deposit. Cash equivalents are carried on the balance sheet at fair market value.

(e) Inventories

Inventories are carried at lower of cost, determined using the first-in, first-out ("FIFO") method, or market. The Company periodically reviews its inventories and makes provisions as necessary for estimated obsolescence or damaged goods to ensure values approximate lower of cost or market. The amount of such markdowns is equal to the difference between cost of inventory and the estimated market value based upon assumptions about future demands, selling prices, and market conditions.

The Company records an allowance for estimated excess 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.

(f) Property, Plant and Equipment

Property and equipment are stated at cost, less accumulated depreciation and amortization.

Depreciation and amortization are recorded using the straight-line method over the estimated useful lives of the related assets as follows:

| Asset Classification | Estimated Useful Life |
|-------------------------|-----------------------|
| Buildings | 40 years |
| Machinery and equipment | 3 to 10 years |

Repairs and maintenance costs are expensed as incurred. Expenditures for renewals and betterments are capitalized.

(g) Impairment of Long-Lived Assets

The Company records impairment losses on long-lived assets when events and circumstances indicate that these assets might not be recoverable. Recoverability is measured by a comparison of the assets' carrying amount to their expected future undiscounted net cash flows. If such assets are considered to be impaired, the impairment is measured based on the amount by which the carrying value exceeds its fair value.

The Company completed a test for recoverability due to indicators of impairment present during interim periods in 2013. There were no indicators present at December 31, 2013 and therefore no test for recoverability was performed as of December 31, 2013. Results of tests for recoverability performed in 2013 indicated that the carrying value of the asset group was recoverable.

The Company completed a test for recoverability due to indicators present at December 31, 2012; specifically the carrying value of its net assets exceeded its current market capitalization. As of

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December 31, 2012, the undiscounted cash flows used in the analysis significantly exceeded the carrying value of the Company's assets. As a result no impairment was recorded. The undiscounted cash flows used in the analysis were derived from the Company's long-term strategic plan.

The Company did not record an impairment charge for the years ended December 31, 2013, 2012, or 2011.

Future actual performance could be materially different from our current forecasts, which could impact future estimates of undiscounted cash flows and may result in the impairment of the carrying amount of the long-lived assets in the future. This could be caused by strategic decisions made in response to economic and competitive conditions, the impact of the economic environment on our customer base, or a material adverse change in the Company's relationships with significant customers. The Company performs an impairment analysis when circumstances or events warrant.

(h) Concentration of Risk and Off-Balance Sheet Risk

Financial instruments that potentially subject the Company to concentrations of credit risk are principally cash equivalents and accounts receivable. The Company's cash equivalents are principally maintained in an investment grade money-market fund.

The Company has no significant off-balance-sheet risk such as foreign exchange contracts, option contracts or other foreign hedging arrangements.

The Company exposure to market risk for changes in interest rates relates primarily to cash equivalents. 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. 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.

The Company performs ongoing credit evaluations of its customers' financial condition and generally requires no collateral to secure accounts receivable. For selected overseas sales, the Company requires customers to obtain letters of credit before product is shipped. The Company maintains an allowance for doubtful accounts based on its assessment of the collectability of accounts receivable. The Company reviews the allowance for doubtful accounts monthly. The Company does not have any off-balance sheet credit exposure related to its customers.

The Company's customers consist of semiconductor manufacturers located throughout the world and net sales to its ten largest customers accounted for 69.1%, 70.6% and 68.6% of revenue in 2013, 2012 and 2011, respectively.

For the years ended December 31, 2013, 2012 and 2011, the Company had one customer represent 15.5%, 18.2% and 21.2% of total revenues, respectively, for each of the periods presented.

For the year ended December 31, 2013, the Company had three customers account for 23.2%, 14.2% and 13.6% of consolidated accounts receivable, respectively. For the year ended December 31, 2012, the Company had two customers account for 11.9% and 11.5% of consolidated accounts receivable, respectively.

Some of the components and sub-assemblies 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, resulting either from depressed economic conditions or other factors, could affect its ability to deliver products to its customers.

(i) Revenue Recognition

The Company's revenue recognition policy involves significant judgment by management. As described 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 delay the timing of revenue recognition.

The Company's system sales transactions are made up of multiple elements, including the system itself and elements that are not delivered simultaneously with the system. These undelivered elements might include a combination of installation services, extended warranty and support and spare parts, all of which are covered generally by a single sales price.

The Company's system revenue arrangements with multiple elements are divided into separate units of accounting if specified criteria are met, including whether the delivered element has stand-alone value to the customer. If the criteria are met, then the consideration received is allocated among the separate units based on their relative selling price, and the revenue is recognized separately for each of the separate units.

The Company determines selling price for each unit of accounting (element) using vendor specific objective evidence (VSOE) or third-party evidence (TPE), if they exist, otherwise, the Company uses best estimated selling price (BESP). The Company generally expects that it will not be able to establish TPE due to the nature of its products, and, as such, the Company typically will determine selling price using VSOE or BESP.

Where required, the Company determines BESP for an individual element based on consideration of both market and Company-specific factors, including the selling price and profit margin for similar products, the cost to produce the deliverable and the anticipated margin on that deliverable and the characteristics of the varying markets in which the deliverable is sold.

Systems are not sold separately and VSOE or TPE is not available for the systems element. Therefore the selling price associated with systems is based on BESP. The allocated value for installation in the arrangement includes the greater of (i) the relative selling price of the installation or (ii) the portion of the sales price that will not be received until the installation is completed (the "retention"). The selling price of installation is based upon the fair value of the service performed, including labor, which is based upon the estimated time to complete the installation at hourly rates, and material components, both of which are sold separately. The selling price of all other elements (extended warranty for support, spare parts, and labor) is based upon the price charged when these elements are sold separately, or VSOE.

Product revenue for products which have demonstrated market acceptance, is generally recognized upon shipment provided title and risk of loss has passed to the customer, evidence of an arrangement exists, prices 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 acceptance has occurred, as defined in the sales documentation or, for certain customers, when both acceptance has occurred and retention payment has been received. Revenue for other elements is recognized at the time products are shipped or the related services are performed.

The Company generally recognizes revenue for products which have demonstrated market acceptance at the time of shipment because the customer's post-delivery acceptance provisions and installation process have been established to be routine, commercially inconsequential and perfunctory. The Company believes the risk of failure to complete a system installation is remote.

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For initial shipments of systems with new technologies or in the small number of instances where the Company is unsure of meeting the customer's specifications or obtaining customer acceptance upon shipment of the system, it will defer the recognition of systems revenue and related costs until written customer acceptance of the system is obtained. This deferral period is generally within twelve months of shipment.

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 service hours is recognized when the services are performed.

Product revenue includes revenue from system sales, sales of spare parts, the spare parts component of maintenance and service contracts and product upgrades. Service revenue includes the labor component of maintenance and service contract amounts charged for on-site service personnel.

(j) Shipping and Handling Costs

Shipping and handling costs are included in cost of revenue.

(k) Stock-Based Compensation

The Company generally recognizes compensation expense for all share-based payments to employees and directors, including grants of employee stock options, based on the grant-date fair value of those share-based payments using the Black-Scholes option pricing model, adjusted for expected forfeitures. Other valuation models may be utilized in the limited circumstances where awards with performance-based vesting considerations such as the price of the Company's common stock are granted. Stock-based compensation expense is recognized ratably over the requisite service period.

See Note 13 for additional information relating to stock-based compensation.

(l) Income Taxes

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and operating loss and tax credit carryforwards.

The Company's consolidated financial statements contain certain deferred tax assets which have arisen primarily as a result of operating losses, as well as other temporary differences between financial and tax accounting. The Company establishes a valuation allowance if the likelihood of realization of the deferred tax assets is reduced based on an evaluation of objective verifiable evidence. Significant management judgment is required in determining the Company's provision for income taxes, the Company's deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets. The Company evaluates the weight of all available evidence to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

Income taxes include the largest amount of tax benefit for an uncertain tax position that is more likely than not to be sustained upon audit based on the technical merits of the tax position. Settlements with tax authorities, the expiration of statutes of limitations for particular tax positions, or obtaining new information on particular tax positions may cause a change to the effective tax rate. The Company recognizes accrued interest related to unrecognized tax benefits as interest expense and penalties as operating expense in the consolidated statements of operations.

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(m) Computation of Net Income (Loss) per Share

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, calculated using the treasury stock method.

The Company incurred net losses for the years ended December 31, 2013 and December 31, 2012, and has excluded 3,547,578 and 1,563,417 incremental shares attributable to outstanding stock options, restricted stock and restricted stock units from the calculation of net loss per share because the effect would have been anti-dilutive.

The components of net income (loss) per share are as follows:

| | Years Ended December 31, | | |
|--|---------------------------------------|-------------|----------|
| | 2013 | 2012 | 2011 |
| | (in thousands, except per share data) | | |
| Income (loss) available to common stockholders | \$ (17,144) | \$ (34,034) | \$ 5,077 |
| Weighted average common shares outstanding used in computing basic net income (loss) per share | 108,869 | 107,619 | 106,234 |
| Incremental shares | | | 2,864 |
| Weighted average common shares outstanding used in computing diluted net income (loss) per share | 108,869 | 107,619 | 109,098 |
| Net income (loss) per share | | | |
| Basic | \$ (0.16) | \$ (0.32) | \$ 0.05 |
| Diluted | \$ (0.16) | \$ (0.32) | \$ 0.05 |

(n) Accumulated Other Comprehensive Income

The following table presents the changes in accumulated other comprehensive income, net of tax, by component for the year ended December 31, 2013:

| | Foreign currency | Defined benefit pension plan | Total |
|---|---------------------|---------------------------------|----------|
| | (in thousands) | | |
| Balance at December 31, 2012 | \$ 5,375 | \$ (355) | \$ 5,020 |
| Other comprehensive loss before reclassifications | 695 | | 695 |
| Amounts reclassified from accumulated other comprehensive income(1) | | 24 | 24 |
| Net current-period other comprehensive income | 695 | 24 | 719 |
| Balance at December 31, 2013 | \$ 6,070 | \$ (331) | \$ 5,739 |

(1)

Amount presented before taxes as the tax effect is not material to the consolidated financial statements.

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(o) Recent Accounting Guidance

Accounting Standards or Updates Recently Adopted

On February 5, 2013, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2013-02, *Reporting of Amounts Reclassified Out of Accumulated Other Comprehensive Income*. The update requires that companies present either in a single note or parenthetically on the face of the financial statements, the effect of significant amounts reclassified from each component of accumulated other comprehensive income based on its source and the income statement line items affected by the reclassification. If a component is not required to be reclassified to net income in its entirety, companies would instead cross reference to the related footnote for additional information. This update is effective prospectively for annual and interim reporting periods beginning after December 15, 2012. As this update only requires enhanced disclosure, the adoption of this update will not impact our financial position or results of operations.

Accounting Standards or Updates Not Yet Effective

In July 2013, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2013-11, Presentation of an Unrecognized Tax Benefit When a Net Operating Loss Carryforward, a Similar Tax Loss, or a Tax Credit Carryforward Exist. ASU 2013-11 amends the presentation requirements of ASC 740, Income Taxes, and requires an unrecognized tax benefit to be presented in the financial statements as a reduction to a deferred tax asset for a net operating loss carryforward, similar tax loss, or a tax credit carryforward. To the extent the tax benefit is not available at the reporting date under the governing tax law or if the entity does not intend to use the deferred tax asset for such purpose, the unrecognized tax benefit should be presented as a liability and not combined with deferred tax assets. The ASU is effective for annual periods, and interim periods within those years, beginning after December 15, 2013, which is fiscal 2014 for the Company. The amendments are to be applied to all unrecognized tax benefits that exist as of the effective date and may be applied retrospectively to each prior reporting period presented. The Company is currently evaluating the impact of the adoption of ASU 2013-11 on its consolidated financial statements. We do not expect the adoption of this standard to have a significant impact on our consolidated financial statements.

Note 3. Gain on Sale of Dry Strip Assets and Intellectual Property

On December 3, 2012, the Company entered into a purchase agreement with Lam Research Corporation ("Lam"). As part of the agreement, the Company sold its dry strip system assets and intellectual property to Lam. The purchase price was \$10.7 million, of which \$2.0 million was contingent upon reaching certain milestones.

Lam granted the Company a worldwide, non-exclusive, non-transferable, royalty free license to use the intellectual property rights sold by the Company under the Asset Purchase Agreement. The perpetual license allowed the Company to make and sell 300mm dry strip wafer processing equipment for semiconductor applications through September 2013, make and sell 200mm products through December 2015 and to support the Company's installed base of all dry strip equipment on a perpetual basis. As a result of this continuing involvement, the transaction has been recorded in continuing operations.

The \$1.2 million gain on sale of dry strip assets and intellectual property for the year ended December 31, 2013 relates to the achievement of certain milestones met during 2013. No further milestones are expected to be met.

During 2012, the \$7.9 million gain on sale of dry strip assets and intellectual property was comprised of the \$8.7 million proceeds received for the sale, offset by approximately \$0.8 million of

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product and material costs related to the lab system and other components purchased by Lam during 2012.

Note 4. Restricted Cash

The components of restricted cash are as follows:

| | December 31, | |
|-----------------------------|----------------|--------|
| | 2013 | 2012 |
| | (in thousands) | |
| Statutory liability deposit | \$ | \$ 106 |
| Interest reserve escrow | | 825 |

The \$0.8 million interest reserve at December 31, 2013 was established in connection with the Company's outstanding Term Loan. The \$0.1 million statutory liability deposit at December 31, 2012 expired during the year and was subsequently released from restricted cash.

The Company has surety bonds related to value added tax claims and refunds in Europe of approximately \$1.4 million at December 31, 2013 (\$1.8 million at December 31, 2012) and two standby letters of credit issued under the Silicon Valley Bank credit facility of \$2.5 million (\$3.6 million at December 31, 2012).

Note 5. Accounts Receivable, net

The components of accounts receivable are as follows:

| | December 31, | |
|---------------------------------|----------------|-----------|
| | 2013 | 2012 |
| | (in thousands) | |
| Trade receivables | \$ 36,991 | \$ 25,148 |
| Allowance for doubtful accounts | (404) | (305) |
| | \$ 36,587 | \$ 24,843 |

Note 6. Inventories, net

The components of inventories are as follows:

| | December 31, | |
|------------------------------------|----------------|------------|
| | 2013 | 2012 |
| | (in thousands) | |
| Raw materials | \$ 56,942 | \$ 72,013 |
| Work in process | 27,462 | 12,253 |
| Finished goods (completed systems) | 11,385 | 15,968 |
| | \$ 95,789 | \$ 100,234 |

When recorded, inventory reserves are intended to reduce the carrying value of inventories to their net realizable value. The Company establishes inventory reserves when conditions exist that indicate inventory may be in excess of anticipated demand or is obsolete based upon assumptions about future demand for the Company's products or market conditions. The Company regularly evaluates the ability to realize the value of inventories based on a combination of factors including the following: forecasted sales or usage, estimated product end of life dates,

estimated current and future market value and new product introductions. Purchasing and usage alternatives are also explored to mitigate inventory

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exposure. As of December 31, 2013 and 2012, inventories are stated net of inventory reserves of \$25.1 million and \$33.6 million respectively.

In 2013, the Company recorded a \$2.6 million increase to its excess inventory reserves. During the three months ended March 31, 2013, the Company recorded a charge to cost of sales of \$2.1 million for 300mm dry strip components. Under the terms of the agreement with Lam, the Company was permitted to manufacture and sell dry strip products through September 2013. Due to changes in the forecasted sales of the Company's dry strip products that become known in the current period, a portion of the dry strip inventory components were determined to be non-recoverable. During the three months ended December 31, 2013, after reviewing all excess inventory levels, the Company disposed of \$8.7 million of previously reserved for inventory.

During 2013, the Company recorded a charge to cost of sales of \$0.6 million due to production levels below normal capacity. During 2012, the Company recorded a similar charge to cost of sales of \$2.6 million due to production levels below normal capacity.

Note 7. Property, Plant and Equipment, net

The components of property, plant and equipment are as follows:

| | December 31, | |
|--|-----------------------|---------------|
| | 2013 | 2012 |
| | (in thousands) | |
| Land and buildings | \$ 79,076 | \$ 78,954 |
| Machinery and equipment | 7,774 | 7,118 |
| Construction in process | 356 | 455 |
| Total cost | 87,206 | 86,527 |
| Accumulated depreciation | (55,200) | (52,114) |
| Property, plant and equipment, net | \$ 32,006 | \$ 34,413 |

Depreciation expense was \$3.2 million, \$3.3 million, and \$3.5 million, for the years ended December 31, 2013, 2012, and 2011, respectively.

Note 8. Assets Manufactured for Internal Use

The components of assets manufactured for internal use, included in amounts reported as other assets, are as follows:

| | December 31, | |
|--|-----------------------|--------------|
| | 2013 | 2012 |
| | (in thousands) | |
| Internal use assets | \$ 23,409 | \$ 21,904 |
| Construction in progress | 5,263 | 1,823 |
| Total cost | 28,672 | 23,727 |
| Accumulated depreciation | (15,774) | (13,948) |
| Assets manufactured for internal use | \$ 12,898 | \$ 9,779 |

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These products are used in-house for research and development, training, and customer demonstration purposes.

Effective October 1, 2013, the Company changed its estimate of the useful life of its assets manufactured for internal use (which are amortized on a straight-line basis) from five years to ten years. This change in estimate resulted from the evaluation of the life cycle of our assets manufactured

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for internal use and the conclusion, that based on recent experience these products consistently have a longer life than previously estimated. The change in useful life has been accounted for as a change in accounting estimate, and will be effective on new assets manufactured for internal use, on a prospective basis beginning October 1, 2013.

As a result of the change in the estimated life of assets manufactured for internal use, profit before tax and net profit were approximately \$0.1 million higher, for both the fourth quarter and the full year ended December 31, 2013. The change in estimated useful life of assets did not have an impact on the earnings per share disclosed in the Consolidated Statements of Operations.

Depreciation expense was \$1.8 million, \$3.4 million, and \$4.9 million, for the years ended December 31, 2013, 2012, and 2011, respectively.

Note 9. Restructuring Charges

The Company initiated reductions in force early in 2013 to control costs and improve the focus of its operations in order to sustain future profitability and conserve cash. As a result, the Company recorded a total restructuring charge of approximately \$2.3 million, for severance and related costs all of which was paid in 2013. The Company also incurred restructuring charges of \$4.2 million in 2012, most of which was paid in 2012. The Company did not incur restructuring charges for the year ended December 31, 2011.

The Company's restructuring liability for the years ended December 31, 2013, 2012 and 2011 are as follows:

| | Severance (In thousands) |
|------------------------------|-----------------------------|
| Balance at December 31, 2010 | \$ 171 |
| Cash payments | |
| Balance at December 31, 2011 | 171 |
| Severance and related costs | 4,169 |
| Cash payments | (3,551) |
| Non-cash items | (130) |
| Balance at December 31, 2012 | 659 |
| Severance and related costs | 2,334 |
| Cash payments | (2,950) |
| Balance at December 31, 2013 | \$ 43 |

Note 10. Product Warranty

The Company generally offers a one year warranty for all of its systems, the terms and conditions of which vary depending upon the product sold. For all systems sold, the Company accrues a liability for the estimated cost of standard warranty at the time of system shipment and defers the portion of systems revenue attributable to the fair value of non-standard warranty. Costs for non-standard warranty are expensed as incurred. Factors that affect the Company's warranty 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.

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The changes in the Company's product warranty liability are as follows:

| | Years Ended December 31, | | |
|--|--------------------------|--------------|--------------|
| | 2013 | 2012 | 2011 |
| | (in thousands) | | |
| Balance at January 1 (beginning of year) | \$ 1,801 | \$ 3,697 | \$ 2,713 |
| Warranties issued during the period | 2,240 | 3,042 | 4,772 |
| Settlements made during the period | (1,515) | (3,010) | (5,275) |
| Changes in estimate of liability for pre-existing warranties during the period | (1,098) | (1,928) | 1,487 |
| Balance at December 31 (end of year) | \$ 1,428 | \$ 1,801 | \$ 3,697 |
| Amount classified as current | \$ 1,316 | \$ 1,700 | \$ 3,556 |
| Amount classified as long-term | 112 | 101 | 141 |
| Total Warranty Liability | \$ 1,428 | \$ 1,801 | \$ 3,697 |

Note 11. Financing Arrangements

Term Loan

During the third quarter of 2013, the Company entered into a Business Loan Agreement with Northern Bank & Trust Company which provides for a three year term loan of \$15.0 million secured by the Company's real estate in Beverly, Massachusetts. \$0.8 million of the loan proceeds are held in a restricted interest reserve escrow account as shown under cash flows from financing activities in our Consolidated Statements of Cash Flows. The Bank will also maintain a reserve on the Company's loan account with the Bank for quarterly real estate taxes on the mortgaged property. The loan bears interest at 5.5% per annum, with payments of principal beginning August 5, 2014. Interest is payable monthly. All outstanding principal and interest is due and payable on July 5, 2016.

The Company's term loan contains certain customary covenants which limit the Company's ability, with certain exceptions, to dispose of assets, engage in a new line of business, make material changes to our executive management team, effect a change of control, acquire another business, incur additional indebtedness, incur liens, pay dividends and make other distributions, and make investments.

Furthermore, under the term loan, the Company is required to comply with certain financial covenants, including a Debt Service Ratio, Net Worth, and Liquidity. The Company was in compliance with all covenants associated with the term loan for the year-ended December 31, 2013.

The Company is subject to a 3% early termination fee on amounts prepaid prior to July 5, 2014, a 2% fee on amounts prepaid between July 5, 2014 and July 5, 2015 and a 1% fee on amounts prepaid between July 5, 2015 and July 5, 2016.

In the event of a default, the Company's interest rate will automatically increase 5% above the otherwise applicable rate.

Credit Facility

During the third quarter of 2013, the Company terminated its revolving credit facility with Silicon Valley Bank, which had provided for borrowings of up to \$30.0 million due to the closing of the Term Loan with Northern Bank & Trust Company. With the termination of this facility, the Company cash collateralized two letters of credit issued by Silicon Valley Bank in the aggregate amount of \$1.5 million. The Company paid a \$0.3 million early termination fee to Silicon Valley Bank.

During the fourth quarter of 2013, the Company reinstated a new revolving credit facility with Silicon Valley Bank. Under this new revolving credit facility, the Company has the ability to borrow up to \$10.0 million on a revolving basis during its two year term. The Company's ability to borrow under

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this line of credit is limited to 80% of the then current amount of qualified accounts receivable. The agreement will terminate on October 31, 2015. At December 31, 2013, our available borrowing capacity under the revolving credit facility was \$7.5 million.

The Company has not drawn down on the line of credit, although a portion of the availability is being used to support outstanding letters of credit in the amount of \$2.5 million in lieu of cash collateralization. The obligations under the credit facility are guaranteed by a domestic subsidiary of Axcelis and are secured by substantially all of the personal property of the Company and the guarantying subsidiary, as well as by all or a portion of the capital stock of its domestic and foreign subsidiaries. The principal amount outstanding under this credit facility will bear interest at a rate equal to the prime plus 1.00%. The Company will also incur a monthly fee equal to 0.375% per annum on any unused portion of the credit facility.

The credit facility contains customary negative covenants which limit the Company's ability, with certain exceptions, to dispose of assets, engage in a new line of business, make material changes to our executive management team, effect a change of control, acquire another business, incur additional indebtedness, incur liens, pay dividends and make other distributions, make investments, make payments on subordinated debt and engage in transactions with affiliates other than transactions in the ordinary course of business on terms no less favorable than would be obtained in an arms-length transaction.

Additionally, the credit facility has certain financial covenants requiring the Company to maintain minimum levels of operating results and liquidity. The Company was in compliance with all covenants associated with the credit facility for the year ended December 31, 2013.

The Company is subject to a \$0.1 million early termination fee if it decides to terminate the credit facility prior to the maturity date or if Silicon Valley Bank terminates the credit facility in the event of a default.

In the event of a default, the interest rate will automatically increase 3.5% above the otherwise applicable rate.

Note 12. Employee Benefit Plans

(a) Defined Contribution Plan

The Company maintains the Axcelis Long-Term Investment Plan, a defined contribution plan. All regular employees are eligible to participate and may contribute up to 35% of their compensation on a before-tax basis subject to Internal Revenue Service ("IRS") limitations. Highly compensated employees may contribute up to 16% of their compensation on a before-tax basis subject to IRS limitations. The Company does not match contributions; therefore, no expense was recorded for this plan in 2013, 2012 or 2011.

(b) Other Compensation Plans

The Company operates in foreign jurisdictions that require lump sum benefits, payable based on statutory regulations, for voluntary or involuntary termination. Where required, an annual actuarial valuation of the benefit plans is obtained.

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The Company has recorded an unfunded liability of \$4.1 million and \$4.5 million at December 31, 2013 and 2012, respectively, for costs associated with these compensation plans in foreign jurisdictions. The following table presents the classification of these liabilities in the Consolidated Balance Sheets:

| | Year Ended December 31, | |
|----------------------------------|------------------------------------|-----------------|
| | 2013 | 2012 |
| | (in thousands) | |
| Current: | | |
| Accrued compensation | \$ 638 | \$ 1,475 |
| Total current liabilities | \$ 638 | \$ 1,475 |
| Long-term: | | |
| Other long-term liabilities | \$ 3,416 | \$ 3,042 |
| Total liabilities | \$ 4,054 | \$ 4,517 |

The expense recorded in connection with these plans was \$0.6 million, \$0.6 million and \$0.7 million during the years ended December 31, 2013, 2012 and 2011, respectively.

Note 13. Stock Award Plans and Stock Based Compensation

(a) Equity Incentive Plans

The Company maintains the Axcelis Technologies, Inc. 2012 Equity Incentive Plan (the "2012 Equity Plan"), which became effective on May 2, 2012. Our 2000 Stock Plan (the "2000 Stock Plan"), expired on May 1, 2012 and no new grants may be made under that plan after that date. However, awards granted under the 2000 Stock Plan prior to the expiration remain outstanding and subject to the terms of the 2000 Stock Plan.

The 2012 Equity Plan reserves 7.1 million shares of common stock, \$0.001 par value for grant and permits the issuance of options, stock appreciation rights, restricted stock, restricted stock units, stock equivalents, and awards of shares of common stock that are not subject to restrictions or forfeiture to selected employees, directors and consultants of the Company. Shares that are not issued under an award (because such award expires, is terminated unexercised or is forfeited) that were outstanding under the 2000 Stock Plan as of the May 2, 2012 increase the reserve of shares available for grant under the 2012 Equity Plan.

The term of stock options granted under these plans is specified in the award agreements. Unless a lesser term is otherwise specified by the Company's Compensation Committee of the Board of Directors, awards under the 2012 Equity Plan will expire seven years from the date of grant. In general, all awards issued under the 2000 Stock Plan expire ten years from the date of grant. Under the terms of these stock plans, the exercise price of a stock option may not be less than the fair market value of a share of the Company's common stock on the date of grant. Under the 2012 Equity Plan, fair market value is defined as the last reported sale price of a share of the common stock on a national securities exchange as of any applicable date, as long as the Company's shares are traded on such exchange.

Stock options granted to employees generally vest over a period of four years, while stock options granted to non-employee members of the Company's Board of Directors generally vest over a period of 6 months and, once vested, are not affected by the director's termination of service to the Company. In limited circumstances, the Company may grant stock option awards with performance-based vesting conditions, such as, the Company's common stock price. Termination of service by an employee will cause options to cease vesting as of the date of termination, and in most cases, employees will have 90 days after termination to exercise options that were vested as of the termination of employment. In general, retiring employees will have one year after termination of employment to exercise vested options. The Company settles stock option exercises with newly issued common shares.

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Restricted stock units granted to employees during 2013, 2012 and 2011 had both time-based vesting provisions and performance-based vesting provisions. Generally, unvested restricted stock unit awards expire upon termination of service to the Company. The Company settles restricted stock units upon vesting with newly issued common shares. No restricted stock was granted under either stock plan during the three year period.

As of December 31, 2013, there were 3.6 million shares available for grant under the 2012 Equity Plan. No shares are available for grant under the 2000 Stock Plan.

As of December 31, 2013, there were 22.3 million options outstanding under the 2012 Equity Plan and the 2000 Stock Plan, collectively, and less than 0.1 million unvested restricted stock units outstanding under the 2000 Stock Plan.

(b) Employee Stock Purchase Plan

The Employee Stock Purchase Plan (the "Purchase Plan") provides effectively all of the Company's employees the opportunity to purchase common stock of the Company at less than market prices. Purchases are made through payroll deductions of up to 10% of the employee's salary as elected by the participant, subject to certain caps set forth in the Purchase Plan. Employees may purchase its common stock at 85% of the market value of the Company's common stock on the day the stock is purchased.

The Purchase Plan is considered compensatory and as such, compensation expense has been recognized based on the benefit of the discounted stock price, amortized to compensation expense over each offering period of six months. Compensation expense was \$0.1 million for each of the years ended December 31, 2013, 2012, and 2011.

As of December 31, 2013, there were a total of 1.8 million shares reserved for issuance and available for purchase under the Purchase Plan. There were 0.2 million, 0.3 million and 0.4 million shares purchased under the Purchase Plan for the years ended December 31, 2013, 2012, and 2011, respectively.

(c) Valuation of Stock Options

For the purpose of valuing stock options with service conditions, the Company uses the Black-Scholes option pricing model to calculate the grant-date fair value of an award. The fair values of options granted were calculated using the following estimated weighted-average assumptions:

| | Years ended December 31, | | |
|--------------------------------------|--------------------------|---------------|-----------|
| | 2013 | 2012 | 2011 |
| Weighted-average expected volatility | 98.1% | 97.8%-113.55% | 97.8% |
| Weighted-average expected term | 4.7 years | 3.8-6.1 years | 6.1 years |
| Risk-free interest rate | 0.7%-1.4% | 0.45%-1.37% | 1.1%-2.4% |
| Expected dividend yield | 0% | 0% | 0% |

Expected volatility The Company is responsible for estimating volatility and has considered a number of factors when estimating volatility. The Company's method of estimating expected volatility for all stock options granted relies on a combination of historical and implied volatility. The Company believes that this blended volatility results in a more accurate estimate of the grant-date fair value of employee stock options because it more appropriately reflects the market's current expectations of future volatility.

Expected term The Company calculated the weighted average expected term for stock options granted prior to July 1, 2012, using a forward looking lattice model of the Company's stock price incorporating a suboptimal exercise factor and a projected post-vest forfeiture rate. For stock options granted after July 1, 2012 to employees and to non-employee members of the Company's Board of

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Directors, the Company used the simplified method for estimating the expected life of "plain vanilla" options because it did not have sufficient exercise history. The Company expects that it will use a lattice model once sufficient exercise history has been established.. The change in the expected life from 10 years to 7 years reflects the fact that options granted after May 1, 2012 were granted under the 2012 Equity Incentive Plan, which limits option terms to seven years.

Risk-free interest rate The yield on zero-coupon U.S. Treasury securities for a period that is commensurate with the expected term assumption is used as the risk-free interest rate.

Expected dividend yield Expected dividend yield was not considered in the option pricing formula since the Company does not pay dividends and has no current plans to do so in the future.

In limited circumstances, the Company also issues stock option grants with vesting based on performance conditions, such as the Company's common stock price, or, a combination of time or performance conditions. The fair values and derived service periods for all grants that have vesting based on these performance conditions are estimated using the Monte Carlo valuation method. For each stock option grant with vesting based on a combination of time or performance conditions where vesting will occur if either condition is met, the related compensation costs are recognized over the shorter of the explicit service period or the derived service period.

(d) Summary of Share-Based Compensation Expense

The Company estimates the fair value of stock options with time-based conditions using the Black-Scholes valuation model and estimates the fair value of stock options with performance-based vesting conditions such as the price of the Company's common stock, using the Monte Carlo valuation model. The fair value of the Company's restricted stock and restricted stock units is calculated based upon the fair market value of the Company's stock at the date of grant.

The Company uses the straight-line attribution method to recognize expense for stock-based awards such that the expense associated with awards is evenly recognized throughout the period.

The amount of stock-based compensation recognized is based on the value of the portion of the awards that are ultimately expected to vest. The Company estimates forfeitures at the time of grant and revises them, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The term "forfeitures" is distinct from "cancellations" or "expirations" and represents only the unvested portion of the surrendered stock-based award. Based on a historical analysis, a forfeiture rate of 5% per year, including executive officer awards, was applied to stock-based awards for the years ended December 31, 2013, 2012 and 2011.

The Company recognized stock-based compensation expense of \$4.3 million, \$3.9 million and \$4.7 million for the years ended December 31, 2013, 2012 and 2011, respectively. For 2013, 2012 and 2011, the Company primarily used stock options in its annual equity compensation program.

The benefits of tax deductions in excess of recognized compensation cost is reported as a financing cash flow, rather than as an operating cash flow. Because the Company does not recognize the benefit of tax deductions in excess of recognized compensation cost due to its cumulative net operating loss position, this had no impact on the Company's consolidated statement of cash flows as of and for the years ended December 31, 2013, 2012 or 2011.

(e) Stock Option Awards

The following table summarizes the stock option activity for the year ended December 31, 2013:

| | Options (in thousands) | Weighted Average Exercise Price | Weighted Average Remaining Contractual Term (years) | Aggregate Intrinsic Value (in thousands) |
|--|---------------------------|--|--|---|
| Outstanding at December 31, 2012 | 21,260 | \$ 2.24 | | |
| Granted | 5,409 | 1.95 | | |
| Exercised | (1,511) | 1.10 | | |
| Canceled | (1,138) | 1.39 | | |
| Expired | (1,721) | 7.26 | | |
| Outstanding at December 31, 2013 | 22,299 | \$ 1.89 | 5.95 | \$ 12,017 |
| Exercisable at December 31, 2013 | 12,075 | \$ 2.10 | 5.53 | \$ 12,705 |
| Options Vested or Expected to Vest at December 31, 2013(1) | 21,515 | \$ 1.89 | 6.02 | \$ 12,609 |

(1) In addition to the vested options, the Company expects a portion of the unvested options to vest at some point in the future. Options expected to vest is calculated by applying an estimated forfeiture rate to the unvested options.

Of the options outstanding at December 31, 2013, 12.1 million were vested and exercisable with a weighted average exercise price of \$2.10. The total intrinsic value, which is defined as the difference between the market price at exercise and the price paid by the employee to exercise the options, for options exercised during the years ended December 31, 2013, 2012 and 2011 was \$1.4 million, \$0.9 million and \$0.7 million, respectively.

The total fair value of stock options vested during the years ended December 31, 2013, 2012 and 2011 were \$3.8 million, \$4.1 million and \$3.3 million respectively. As of December 31, 2013, there was \$9.4 million of total forfeiture- adjusted unrecognized compensation cost related to non-vested stock options granted under the 2012 Equity Incentive Plan and the 2000 Stock Plan. That cost is expected to be recognized over a weighted-average period of 2.9 years.

(f) Restricted Stock and Restricted Stock Units

Restricted stock units ("RSUs") represent the Company's unfunded and unsecured promise to issue shares of the common stock at a future date, subject to the terms of the RSU Award Agreement and either the 2012 Equity Incentive Plan or the 2000 Stock Plan. The purpose of these awards is to assist in attracting and retaining highly competent employees and directors and to act as an incentive in motivating selected employees and directors to achieve long-term corporate objectives. RSU awards granted in 2013, 2012 and 2011 included both time vested awards and performance vested awards for employees and executive officers. No restricted stock awards were granted, or vested, during the period. The fair value of a restricted stock unit and restricted stock awards is charged to expense ratably over the applicable service period.

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Changes in the Company's non-vested restricted stock units for the year ended December 31, 2013 is as follows:

| | Shares/units (in thousands) | Weighted-Average Grant Date Fair Value per Share |
|----------------------------------|--------------------------------|--|
| Outstanding at December 31, 2012 | 961 | \$ 1.73 |
| Granted | 195 | 1.27 |
| Vested | (231) | 1.56 |
| Forfeited | (902) | 1.68 |
| Outstanding at December 31, 2013 | 23 | \$ 1.39 |

Some restricted stock units provide for a net share settlement program to offset the personal income tax obligations of the employee's restricted stock unit vesting. Vesting activity above reflects shares vested before net share settlement. The total forfeiture adjusted unrecognized compensation cost related to performance based restricted stock units that had not vested as of December 31, 2013 was not significant.

Note 14. Stockholders' Equity

Preferred Stock

The Company may issue up to 30 million shares of preferred stock in one or more series. The Board of Directors is authorized to fix the rights and terms for any series of preferred stock without additional shareholder approval. As of December 31, 2013 and 2012, there were no outstanding shares of preferred stock.

Note 15. Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date.

(a) Fair Value Hierarchy

The accounting guidance for fair value measurement requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard establishes a fair value hierarchy based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

Level 1 applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2 applies to assets or liabilities for which there are inputs other than quoted prices that are observable for the asset or liability, such as quoted prices for similar assets or liabilities in active markets; quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets); or model-derived valuations in which significant inputs are observable or can be derived principally from, or corroborated by, observable market data.

Level 3 applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities.

(b) Assets Measured at Fair Value

The Company's money market funds are included in cash and cash equivalents in the Consolidated Balance Sheets, and are considered a level 1 investment as they are valued at quoted market prices in active markets. The Company's Term Loan is carried at amortized cost which approximates fair value based on current market pricing of similar debt instruments and is categorized as level 2 within the fair value hierarchy.

The following table sets forth Company's assets which are measured at fair value by level within the fair value hierarchy.

| | December 31, 2013 | | | |
|--------------------|-------------------------|-----------|---------|-----------|
| | Fair Value Measurements | | | |
| | Level 1 | Level 2 | Level 3 | Total |
| | (in thousands) | | | |
| Assets | | | | |
| Cash equivalents: | | | | |
| Money market funds | \$ 10,504 | \$ | \$ | \$ 10,504 |
| Liabilities | | | | |
| Term loan | \$ | \$ 15,000 | \$ | \$ 15,000 |

| December 31, 2012 | | | | |
|-------------------------|-----------|---------|---------|-----------|
| Fair Value Measurements | | | | |
| | Level 1 | Level 2 | Level 3 | Total |
| (in thousands) | | | | |
| Assets | | | | |
| Cash equivalents: | | | | |
| Money market funds | \$ 29,179 | \$ | \$ | \$ 29,179 |

(c) Other Financial Instruments

The carrying amounts reflected in the consolidated balance sheets for cash and cash equivalents (which are comprised primarily of deposit and overnight sweep accounts), accounts receivable, prepaid expenses and other current and non-current assets, restricted cash, accounts payable and accrued expenses approximate fair value due to their short-term maturities.

Note 16. Commitments and Contingencies
(a) Lease Commitments

The Company leases manufacturing and office facilities and certain equipment under operating leases that expire through 2016. Rental expense was \$4.0 million, \$4.3 million, and \$4.6 million under operating leases for the years ended December 31, 2013, 2012, and 2011, respectively.

Future minimum lease commitments on non-cancelable operating leases for the year ended December 31, 2013 are as follows:

| | Operating Leases |
|------|---------------------|
| | (in thousands) |
| 2014 | \$ 2,762 |
| 2015 | 1,458 |
| 2016 | 312 |
| 2017 | 42 |
| | \$ 4,574 |

(b) Purchase Commitments

The Company has non-cancelable contracts and purchase orders for inventory of \$24.5 million at December 31, 2013.

(c) Litigation

The Company is not presently a party to any litigation that it believes might have a material adverse effect on its business operations. The Company is, from time to time, a party to litigation that arises in the normal course of its business operations.

(d) 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

The Company 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 the Company to its customers located in the United States, Europe and Asia Pacific.

The Company's ion implantation systems product line includes high current, medium current and high energy implanters. Other products include dry strip equipment, curing systems, and thermal processing systems. In addition to new equipment, the Company provides post-sales equipment service and support, including spare parts, equipment upgrades, used equipment, maintenance services and customer training.

Revenue by product lines is as follows:

| | Years ended December 31, | | |
|---|--------------------------|------------|------------|
| | 2013 | 2012 | 2011 |
| | (in thousands) | | |
| Ion implantation systems, services, and royalties | \$ 164,030 | \$ 156,090 | \$ 237,857 |
| Other systems and services | 31,602 | 47,295 | 81,559 |
| | \$ 195,632 | \$ 203,385 | \$ 319,416 |

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

| | Revenue | Long-Lived Assets |
|---------------|----------------|----------------------|
| | (in thousands) | |
| 2013 | | |
| United States | \$ 116,969 | \$ 44,424 |
| Europe | 27,933 | |
| Asia Pacific | 50,730 | 480 |
| | 195,632 | \$ 44,904 |

| | | |
|---------------|------------|-----------|
| 2012 | | |
| United States | \$ 132,159 | \$ 43,440 |
| Europe | 27,636 | |
| Asia Pacific | 43,590 | 752 |
| | \$ 203,385 | \$ 44,192 |

| | | |
|---------------|------------|-----------|
| 2011 | | |
| United States | \$ 234,123 | \$ 54,472 |
| Europe | 31,505 | |
| Asia Pacific | 53,779 | 996 |
| | \$ 319,416 | \$ 55,468 |

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

International revenue, including export sales from U.S. manufacturing facilities to foreign customers, sales by foreign subsidiaries and branches was \$149.4 million (76.4% of total revenue) in 2013, \$142.8 million (70.2% of total revenue) in 2012, and \$231.0 million (72.3% of total revenue) in 2011.

Note 18. Income Taxes

Income (loss) before income taxes are as follows:

| | Years ended December 31, | | |
|---------------|--------------------------|-------------|----------|
| | 2013 | 2012 | 2011 |
| | (in thousands) | | |
| United States | \$ (18,998) | \$ (37,682) | \$ 2,622 |
| Foreign | 2,894 | 5,294 | 4,849 |

| | | | | | | |
|-----------------------------------|----|----------|----|----------|----|-------|
| Income (loss) before income taxes | \$ | (16,104) | \$ | (32,388) | \$ | 7,471 |
|-----------------------------------|----|----------|----|----------|----|-------|

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Income taxes (Benefits) are as follows:

| | Years ended December 31, | | |
|----------------|--------------------------|----------|----------|
| | 2013 | 2012 | 2011 |
| | (in thousands) | | |
| Current: | | | |
| United States | | | |
| Federal | \$ | \$ | \$ |
| State | 84 | 82 | 163 |
| Foreign | 641 | 738 | 1,646 |
| Total current | 725 | 820 | 1,809 |
| Deferred: | | | |
| Foreign | 315 | 826 | 585 |
| Total deferred | 315 | 826 | 585 |
| Income taxes | \$ 1,040 | \$ 1,646 | \$ 2,394 |

Reconciliations of income taxes at the United States Federal statutory rate to the effective income tax rate are as follows:

| | Years ended December 31, | | |
|---|--------------------------|-------------|----------|
| | 2013 | 2012 | 2011 |
| | (in thousands) | | |
| Income tax (benefits) at the United States statutory rate | \$ (5,636) | \$ (11,336) | \$ 2,615 |
| State income taxes | 55 | 53 | 31 |
| Unrecognized tax benefits | (293) | (832) | 899 |
| Effect of change in valuation allowance | 5,975 | 12,662 | (3,160) |
| Foreign income tax rate differentials | (1,244) | (788) | (365) |
| Restoration of foreign deferred tax assets | 961 | | |
| Foreign dividend | | 383 | |
| Stock options | 450 | 1,298 | |
| Deemed distribution from foreign subsidiaries | 316 | 149 | 1,533 |
| Other, net | 456 | 57 | 841 |
| Income taxes | \$ 1,040 | \$ 1,646 | \$ 2,394 |

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Significant components of current and long-term deferred income taxes are as follows:

| | As of December 31, | | | |
|---|--------------------|------------|----------|-----------|
| | 2013 | | 2012 | |
| | Current | Long Term | Current | Long Term |
| | (in thousands) | | | |
| Federal net operating loss carryforwards | \$ | \$ 104,370 | \$ | \$ 88,088 |
| State net operating loss carryforwards | | 2,250 | | 1,181 |
| Foreign net operating loss carryforwards | | 1,421 | | 1,853 |
| Federal tax credit carryforwards | | 17,814 | | 17,814 |
| State tax credit carryforwards | | 5,543 | | 9,051 |
| Unremitted earnings of foreign subsidiaries | | (9,661) | | (8,580) |
| Intangible assets | | 532 | | 661 |
| Property, plant and equipment | | 4,796 | | 5,925 |
| Accrued compensation | 43 | | 352 | 368 |
| Inventories | 16,540 | | 22,582 | (215) |
| Stock compensation | | 4,896 | | 4,378 |
| Warranty | 591 | (56) | 612 | 36 |
| Other | 2,671 | (2,406) | 1,820 | 917 |
| Deferred taxes, gross | 19,845 | 129,499 | 25,366 | 121,477 |
| Valuation allowance | (18,059) | (129,409) | (25,062) | (119,605) |
| Deferred taxes, net | \$ 1,786 | \$ 90 | \$ 304 | \$ 1,872 |

At December 31, 2013, the Company had \$149.3 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. A valuation allowance must 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 there is a strong presumption that a valuation allowance is needed. This presumption can be overcome in very limited circumstances.

The Company is in a three year cumulative loss position in the United States. As a result, the Company maintains a 100% valuation allowance for entities in those tax jurisdictions to reduce the carrying value of deferred tax assets to zero. The Company will continue to maintain a full valuation allowance for those tax assets until sustainable future levels of profitability are evident. Changes in the valuation allowance in 2013 and 2012 were attributable to changes in the composition of temporary differences and changes in net operating loss carryforwards.

At December 31, 2013, the Company has federal and state net operating loss carryforwards of approximately \$345.3 million and foreign net operating loss carryforwards of approximately \$5.1 million expiring principally between 2014 and 2032.

The Company has research and development and other tax credit carryforwards of approximately \$25.8 million at December 31, 2013 that can be used to reduce future federal and state income tax liabilities. These tax credit carryforwards expire principally between 2014 and 2028. In addition, the Company has foreign tax credit carryforwards of approximately \$5 million at December 31, 2013 that are available to reduce future U.S. income tax liabilities subject to certain limitations. These foreign tax credit carryforwards expire between 2014 and 2016.

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It is Company policy to provide taxes for the total anticipated tax impact of the undistributed earnings of our wholly-owned foreign subsidiaries', as such earnings are not expected to be reinvested indefinitely. The Company anticipates that U.S. tax resulting from remitting such earnings will be off-set by net operating loss or credit carryforwards to the extent available. In addition, the Company does not anticipate incurring a foreign withholding tax on remitting such earnings since it does not intend to remit the earnings as dividends.

The Company and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various states and foreign jurisdictions. The Company and most foreign subsidiaries are subject to income tax examinations by tax authorities for all years dating back to 2003. The Company's policy is to recognize interest related to unrecognized tax benefits as interest expense and penalties as operating expenses. The Company believes that it has appropriate support for the income tax positions taken and to be taken on its tax returns and that its accruals for tax liabilities are adequate for all open years based on an assessment of many factors including past experience and interpretations of tax law applied to the facts of each matter.

At December 31, 2013, the Company had unrecognized tax benefits of approximately \$7.6 million, of which approximately \$5.3 million reduced the Company's deferred tax assets and the offsetting valuation allowance and \$2.3 million was recorded in other long-term liabilities. The Company does not expect any significant changes in unrecognized tax benefits in 2014.

A reconciliation of the beginning and ending balance of unrecognized tax benefits are as follows:

| | 2013 | 2012 |
|---|----------------|----------|
| | (in thousands) | |
| Balance at beginning of year | \$ 7,719 | \$ 8,089 |
| Increases in unrecognized tax benefits as a result of tax positions taken during a prior period | 324 | 646 |
| Decreases in unrecognized tax benefits related to settlements with tax authorities | | (880) |
| Increases in unrecognized tax benefits as a result of tax positions taken during the current period | | 663 |
| Reductions to unrecognized tax benefits as a result of a lapse of the applicable statute of limitations | (398) | (799) |
| Balance at end of year | \$ 7,645 | \$ 7,719 |
| Recorded as other long-term liability | \$ 2,343 | \$ 2,646 |
| Recorded as a decrease in deferred tax assets and offsetting valuation allowance | 5,302 | 5,073 |
| | \$ 7,645 | \$ 7,719 |

Note 19. Quarterly Results of Operations (unaudited)

| | Dec. 31, 2013(1) | Sept. 30, 2013(2) | June 30, 2013(3) | March 31, 2013(4) | Dec. 31, 2012(5) | Sept. 30, 2012(6) | June 30, 2012(7) | March 31, 2012(8) |
|---|---------------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| | (in thousands, except per share data) | | | | | | | |
| Revenue | \$ 58,574 | \$ 48,831 | \$ 47,501 | \$ 40,726 | \$ 44,624 | \$ 44,640 | \$ 59,114 | \$ 55,007 |
| Gross profit | 21,280 | 16,976 | 16,737 | 12,943 | 480 | 14,367 | 22,788 | 20,536 |
| Net income (loss) | 614 | (4,750) | (4,019) | (8,988) | (14,818) | (8,718) | (471) | (10,027) |
| Net income (loss) per share basic and diluted | \$ 0.01 | \$ (0.04) | \$ (0.04) | \$ (0.08) | \$ (0.14) | \$ (0.08) | \$ (0.00) | \$ (0.09) |

(1) Net income includes \$0.4 million of income related to the expiration of an uncertain tax position in a foreign jurisdiction.

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- (2) Net loss includes \$0.4 million related to the write off of certain deferred tax assets in foreign jurisdictions.
- (3) Net loss includes \$0.4 million in restructuring charges, and \$0.8 million from the gain on sale of dry strip assets and intellectual property.
- (4) Gross profit and net loss includes a \$2.1 million charge to excess and obsolete inventory. Net loss includes, \$1.8 million in restructuring charges, and \$0.4 million from the gain on sale of dry strip assets and intellectual property.
- (5) Gross profit and net loss includes a \$13.4 million provision for excess inventory related to the Company's comprehensive review of its worldwide inventory levels. Net loss includes a \$7.9 million gain on sale of the Company's dry strip assets and intellectual property to Lam Research; restructuring charges of \$0.6 million; and a \$2.1 million one-time marketing expense associated with the Company's evaluation programs.
- (6) Net loss includes restructuring charges of \$0.6 million.
- (7) Net loss includes restructuring charges of \$0.1 million and a tax expense of \$0.8 million related to an uncertain tax position in a certain foreign jurisdiction.
- (8) Net loss includes restructuring charges of \$2.9 million

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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.

By: /s/ MARY G. PUMA

Dated: March 3, 2014

Mary G. Puma, *Chief Executive Officer*

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

| Signature | Title | Date |
|---|--|---------------|
| <u>/s/ MARY G. PUMA</u> Mary G. Puma | Director and Principal Executive Officer | March 3, 2014 |
| <u>/s/ KEVIN J. BREWER</u> Kevin J. Brewer | Principal Accounting and Financial Officer | March 3, 2014 |
| <u>/s/ R. JOHN FLETCHER</u> R. John Fletcher | Director | March 3, 2014 |
| <u>/s/ STEPHEN R. HARDIS</u> Stephen R. Hardis | Director | March 3, 2014 |
| <u>/s/ WILLIAM C. JENNINGS</u> William C. Jennings | Director | March 3, 2014 |
| <u>/s/ JOSEPH P. KEITHLEY</u> Joseph P. Keithley | Director | March 3, 2014 |
| <u>/s/ PATRICK H. NETTLES</u> Patrick H. Nettles | Director | March 3, 2014 |
| <u>/s/ H. BRIAN THOMPSON</u> H. Brian Thompson | Director | March 3, 2014 |

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Exhibit Index

| Exhibit No. | Description |
|-------------|---|
| 2.1 | Asset Purchase Agreement dated December 3, 2012 between Axcelis Technologies, Inc. and Lam Research Corporation. Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Commission on December 4, 2012. |
| 3.1 | Amended and Restated Certificate of Incorporation of the registrant, as adopted May 6, 2009. Incorporated by reference to Exhibit 3.1 of the Company's Form 8-K filed with the Commission on May 11, 2009. |
| 3.2 | Bylaws of the Company, as amended as of August 8, 2007. Incorporated by reference to Exhibit 3.2 of the Company's Form 10-Q for the quarter ended June 30, 2007, filed with the Commission on August 9, 2007 |
| 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). |
| 10.1* | Axcelis Technologies, Inc. 2000 Stock Plan, as amended through June 23, 2005. Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the Commission on June 28, 2005. |
| 10.2* | Axcelis Technologies, Inc. 2012 Equity Incentive Plan, as amended through May 14, 2013. Incorporated by reference to Exhibit 10.1 to the Company's registration statement on Form S-8 filed with the Commission on May 31, 2013 (File No. 333-188967). |
| 10.3* | Axcelis Management Incentive Plan, as amended and restated by the Compensation Committee of the Board of Directors on February 11, 2010. Incorporated by reference to Exhibit 10.2 of the Company's report on Form 10-K for the year ended December 31, 2009 filed with the Commission on March 15, 2010. |
| 10.4* | Form of Indemnification Agreement approved by the Board of Directors of the Company on February 9, 2012 for use with each of its directors and officers, together with a schedule of each current indemnitee. Incorporated by reference to Exhibit 10.4 of the Company's report on Form 10-K for the year ended December 31, 2011 filed with the Commission on February 29, 2012. |
| 10.5* | Form of Change in Control Agreement, as amended, as approved by the Board of Directors on April 27, 2012 between the Company and each of its executive officers. Incorporated by reference to Exhibit 10.5 of the Company's report on Form 10-Q for the quarter ended June 30, 2012 filed with the Commission on August 7, 2012. |
| 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* | Form of Restricted Stock Unit Award Agreement for use under the 2000 Stock Plan. Incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the Commission on June 28, 2005. |
| 10.9* | Form of Employee Non-Qualified Stock Option Certificate under the 2012 Equity Incentive Plan, adopted June 18, 2012. Incorporated by reference to Exhibit 10.2 of the Company's report on Form 10-Q for the quarter ended June 30, 2012 filed with the Commission on August 7, 2012. |

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| Exhibit No. | Description |
|-------------|---|
| 10.10* | Form of Non-Employee Director Non-Qualified Stock Option Certificate under the 2012 Equity Incentive Plan, adopted June 18, 2012. Incorporated by reference to Exhibit 10.3 of the Company's report on Form 10-Q for the quarter ended June 30, 2012 filed with the Commission on August 7, 2012. |
| 10.11* | Form of Restricted Stock Unit Award Agreement under the 2012 Equity Incentive Plan, adopted June 18, 2012. Incorporated by reference to Exhibit 10.4 of the Company's report on Form 10-Q for the quarter ended June 30, 2012 filed with the Commission on August 7, 2012. |
| 10.12* | Named Executive Officer Base Compensation at March 1, 2014. Filed herewith. |
| 10.13* | Non-Employee Director Cash Compensation at March 1, 2014. Filed herewith. |
| 10.14* | Amended and Restated Employment Agreement between the Company and Mary G. Puma dated November 6, 2007. Incorporated by reference to Exhibit 10.3 of the Company's report on Form 10-Q for the quarter ended September 30, 2007 filed with the Commission on November 8, 2007. |
| 10.15 | Business Loan Agreement dated as of July 5, 2013 between the Company and Northern Bank & Trust Company. Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q filed with the Commission on August 2, 2013. |
| 10.16 | Mortgage and Fixture Filing dated as of July 5, 2013 by the Company in favor of Northern Bank & Trust Company. Incorporated by reference to Exhibit 10.2 to the Company's report on Form 10-Q filed with the Commission on August 2, 2013. |
| 10.17* | Executive Separation Agreement between the Company and Jay Zager dated as of July 17, 2013. Incorporated by reference to Exhibit 10.1 to the Company's report on Form 8-K filed with the Commission on August 2, 2013. |
| 10.18 | Loan and Security Agreement dated as of October 31, 2013 between the Company and Silicon Valley Bank. Incorporated by reference to Exhibit 10.4 to the Company's report on Form 10-Q filed with the Commission on November 8, 2013. |
| 10.19 | License Agreement dated as of March 30, 2009 between the Company and SEN Corporation. Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Commission on April 3, 2009. |
| 10.20 | Transition Agreement dated December 3, 2012 between Axcelis Technologies, Inc. and Lam Research Corporation. Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the Commission on December 4, 2012. |
| 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 Principal Executive Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated March 3, 2014. Filed herewith. |
| 31.2 | Certification of the Principal Financial Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated March 3, 2014. Filed herewith. |

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| Exhibit No. | Description |
|-------------|--|
| 32.1 | Certification of the Principal 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 3, 2014. Filed herewith. |
| 32.2 | Certification of the Principal 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 3, 2014. Filed herewith. |
| 101 | The following materials from the Company's Form 10-K for the year ended December 31, 2013, formatted in eXtensible Business Reporting Language (XBRL): (i) Consolidated Statements of Operations, (ii) Consolidated Statement of Comprehensive Income (iii) Consolidated Balance Sheets, (iv) Consolidated Statements of Equity, (v) Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements. |

*

Indicates a management contract or compensatory plan.

You may obtain a copy of any of these exhibits free of charge either on our website at <http://www.axcelis.com> or by contacting Investor Relations at Axcelis Technologies, Inc., 108 Cherry Hill Drive, Beverly, MA 01915-1053.

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

| | Balance at Beginning of Period | Charged to Costs and Expenses | Deductions | Other(*) | Balance at End of Period |
|---|--------------------------------------|-------------------------------------|------------|----------|--------------------------------|
| Year Ended December 31, 2013 | | | | | |
| Allowance for doubtful accounts and returns | \$ 305 | \$ 96 | \$ | \$ 3 | \$ 404 |
| Reserve for excess and obsolete inventory(**) | 33,601 | 2,562 | (10,913) | (159) | 25,091 |
| Year Ended December 31, 2012 | | | | | |
| Allowance for doubtful accounts and returns | \$ 411 | \$ | \$ (112) | \$ 6 | \$ 305 |
| Reserve for excess and obsolete inventory | 22,778 | 14,492 | (4,819) | 1,150 | 33,601 |
| Year Ended December 31, 2011 | | | | | |
| Allowance for doubtful accounts and returns | \$ 1,357 | \$ (535) | \$ (449) | \$ 38 | \$ 411 |
| Reserve for excess and obsolete inventory | 27,517 | 1,015 | (5,583) | (171) | 22,778 |

(*) Represents foreign currency translation adjustments.

(**) Deductions include the disposal of fully reserved inventory
