

AXT INC  
Form 10-K  
March 15, 2012

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, 2011

OR  
 TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number: 000-24085

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

Delaware  
(State or other jurisdiction of  
incorporation or organization)  
4281 Technology Drive, Fremont, California  
(Address of principal executive offices)

94-3031310  
(I.R.S. Employer  
Identification No.)  
94538  
(Zip Code)

Registrant's telephone number, including area code: (510) 683-5900  
Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, \$0.001 par value	The NASDAQ Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act:  
None

Indicate by checkmark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act o  
Yes  No

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if

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any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). x Yes o No

Indicate by checkmark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) 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. x

Indicate by checkmark 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 Act. (Check one):

Large accelerated filer o      Accelerated filer x      Non-accelerated filer o      Smaller reporting company o  
(Do not check if a smaller reporting company)

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

The aggregate market value of the voting stock held by non-affiliates of the registrant, based upon the closing sale price of \$8.48 for the common stock on June 30, 2011 as reported on the Nasdaq Global Market, was approximately \$208,003,000. Shares of common stock held by each officer, director and by each person who owns 5% or more of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not a conclusive determination for other purposes.

As of March 2, 2012, 32,321,687 shares, \$0.001 par value, of the registrant's common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement for the registrant's 2012 annual meeting of stockholders to be filed with the Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this form are incorporated by reference into Part III of this Form 10-K report. Except for those portions specifically incorporated by reference herein, such document shall not be deemed to be filed with the Commission as part of this Form 10-K.

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## PART I

This Annual Report (including the following section regarding Management’s Discussion and Analysis of Financial Condition and Results of Operations) contains forward-looking statements regarding our business, financial condition, results of operations and prospects. Words such as “expects,” “anticipates,” “intends,” “plans,” “believes,” “seeks,” “estimates” similar expressions or variations of such words are intended to identify forward-looking statements, but are not the exclusive means of identifying forward-looking statements in this Annual Report. Additionally, statements concerning future matters such as industry trends, customer demand, the development of new products, enhancements or technologies, sales levels, expense levels, planned investments and other statements regarding matters that are not historical are forward-looking statements.

Although forward-looking statements in this Annual Report reflect the good faith judgment of our management, such statements can only be based on facts and factors currently known by us. Consequently, forward-looking statements are inherently subject to risks and uncertainties and actual results and outcomes may differ materially from the results and outcomes discussed in or anticipated by the forward-looking statements. Factors that could cause or contribute to such differences in results and outcomes include without limitation those discussed under the heading “Risk Factors” in Item 1A below, as well as those discussed elsewhere in this Annual Report. Readers are urged not to place undue reliance on these forward-looking statements, which speak only as of the date of this Annual Report. We undertake no obligation to revise or update any forward-looking statements in order to reflect any event or circumstance that may arise after the date of this Annual Report. Readers are urged to carefully review and consider the various disclosures made in this Annual Report, which attempt to advise interested parties of the risks and factors that may affect our business, financial condition, results of operations and prospects.

## Item 1. Business

AXT, Inc. (“AXT”, “we,” “us,” and “our” refer to AXT, Inc. and all of its subsidiaries) is a leading worldwide developer and producer of high-performance compound and single element semiconductor substrates, including substrates made from gallium arsenide (GaAs), indium phosphide (InP) and germanium (Ge). We currently sell the following substrate products in the sizes and for the applications indicated:

Substrates	Substrate Diameter	Applications
GaAs (semi-insulating)	2”, 3”, 4”, 5”, 6”	Power amplifiers and radio frequency integrated circuits for wireless handsets (cell phones) Direct broadcast television High-performance transistors Satellite communications
GaAs (semi-conducting)	2”, 3”, 4”	High brightness light emitting diodes Lasers Optical couplers
InP	2”, 3”, 4”	Broadband and fiber optic communications
Ge	2”, 4”, 6”	Satellite and terrestrial solar cells Optical applications

We manufacture all of our semiconductor substrates using our proprietary vertical gradient freeze (VGF) technology. Most of our revenue is from sales of GaAs substrates. We manufacture all of our products in the People's Republic of China (PRC or China), which generally has favorable costs for facilities and labor compared with comparable facilities in the United States, Europe or Japan. We also have joint ventures in China which provide us pricing advantages, reliable supply and enhanced sourcing lead-times for key raw materials that are central to our final manufactured products. These joint ventures produce products including 99.99% pure gallium (4N Ga), high purity gallium, arsenic, germanium, germanium dioxide, paralytic boron nitride (pBN) crucibles and boron oxide (B<sub>2</sub>O<sub>3</sub>). Our ownership interest in these entities ranges from 25% to 83%. We consolidate, for accounting purposes, the joint ventures in which we have a majority or controlling financial interest and employ equity accounting for the joint ventures in which we have a smaller ownership interest. We purchase portions of the materials produced by these ventures for our own use and the joint ventures sell the remainder of their production to third parties. We use our direct sales force in the United States and China, and independent sales representatives in Europe and Asia, to market our substrates. Our ten largest customers for 2011 were: AZUR Space Solar Power GmbH, Beijing China Crystal Technology, Ltd., the IQE group, Nan Da Guang Dang, Osram Opto Semiconductors GmbH, Shin-Etsu Handoutai Co., Ltd., Sumika Electronic Materials, Inc, Sumitomo Chemical Co., Ltd., TianJin Sanan Optoelectronics Co. Ltd. and Visual Photonics Epitaxy Co. We believe that, as the demand for compound semiconductor substrates increase, we are well positioned to leverage our PRC-based manufacturing capabilities and access to favorably priced raw materials to increase our market share.

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Positive industry trends in the wireless device, LED and solar cell markets, as well as healthy demand for our products and continued advantages in our manufacturing cost structure give us confidence in our ability to continue to drive positive results in our business in 2012. Our qualification efforts in both gallium arsenide and germanium substrates have been successful and we are pleased with our increasing diversification in these areas. While the volatile business and financial markets are prompting us to continue to take a conservative approach to our business, we remain optimistic about our business.

We were incorporated in California in December 1986 and reincorporated in Delaware in May 1998. We changed our name from American Xtal Technology, Inc. to AXT, Inc. in July 2000. Our principal corporate office is located at 4281 Technology Drive, Fremont, California 94538, and our telephone number at this address is (510) 683-5900.

## Industry Background

Certain electronic and opto-electronic applications have performance requirements that exceed the capabilities of conventional silicon substrates and often require high-performance compound or single element substrates. Examples of higher performance non-silicon based substrates include GaAs, InP, gallium nitride (GaN), silicon carbide (SiC) and Ge.

For example, power amplifiers and radio frequency integrated circuits for wireless handsets and other wireless devices are made with semi-insulating GaAs substrates. Semi-conducting GaAs substrates are used to create opto-electronic products including high brightness light emitting diodes (HBLEDs) that are often used to backlight wireless handsets and liquid crystal display (LCD) TVs and are also used for automotive panels, signage, display and lighting applications. InP is a high performance semiconductor substrate used in broadband and fiber optic applications. Ge substrates are used in emerging applications such as solar cells for space and terrestrial photovoltaic applications.

Our business and operating results depend in significant part upon capital expenditures of semiconductor designers and manufacturers, which in turn depend upon the current and anticipated market demand for products incorporating semiconductors from these designers and manufacturers. Our business also depends in part on worldwide economic conditions. The severe recession in the United States and in other key international economies in previous years have decreased market demand for products incorporating semiconductors, but we began to see improvement in the demand environment for our products worldwide in the second half of 2009 that contributed to our strengthening revenue results. During 2010, one of the most interesting areas was the growth of smart phones and other sophisticated Internet-connected devices, such as tablets and netbooks that supported more advanced features and access to new web-based applications and services. In addition to improving sales of these products, the benefit to AXT from the sales of more feature-rich, sophisticated devices was that they required greater gallium arsenide content in order to meet the speed and functionality requirements that consumers have come to expect. Although our business experienced some fluctuation of customers' demand in the wireless market in 2011, we believe there continues to be areas of opportunity for our business in the long term.

As we move into 2012, we expect that the demand for gallium arsenide product will be driven by the proliferation of wireless-enabled devices and the increasing rollout of 3G and 4G smartphones that support substantially faster download speeds. This network upgrade enables full performance capability of the video, gaming and Internet browsing capabilities of these next generation handsets and wireless devices and is driving increases in wireless subscribers in major geographic areas around the world as well as a compelling upgrade cycle for new devices.

The LED market has experienced growth in 2011 in a broad range of applications, such as backlighting, signage, general illumination and automotive. LED-based products are becoming increasingly common as the technology offers benefits in terms of cost, efficiency and performance over older technologies. AXT has historically focused its efforts in the high-end market and while we plan to continue to do so, we are also exploring opportunities to

participate in the higher-volume, lower-end market as well. To date, this market has been geared towards novelty products and has therefore been very margin constrained. However, we believe that this market is also providing the entry into general illumination applications, as these applications will need lower cost LED devices in order to gain critical mass. Industry leaders have been making significant product development noted by the declining selling prices of LED-based light bulbs and we believe it will be important to have a presence in this market as it develops.

The concentrator photovoltaic (CPV) market for germanium also continued to grow in 2011, albeit from a smaller base. We expect growth in the global solar industry in 2012 as there is increasing interest in the replacement of fossil fuel resources with sustainable alternatives such as solar power and solar modules and a renewed interest in renewable energy technology, particularly in the United States, Europe, Asia and the Middle East. At the same time, we believe that improvements in conversion efficiency for germanium are occurring, which we believe will enable this technology to become more affordable and therefore, more widely utilized, in the future.

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### The AXT Advantage

We believe that we benefit from the following advantages:

Low-cost manufacturing operation in the PRC. Since 2004, we have manufactured all of our products in China, which generally has favorable costs for facilities and labor compared to comparable facilities in the United States or Europe. As of December 31, 2011, approximately 1,284 of our 1,308 employees (including employees at our consolidated joint ventures) are in China. Our primary competitors have their major manufacturing operations in Germany or Japan and have limited manufacturing operations starting in China.

Favorable access to raw materials. Our joint ventures in China provide us favorable pricing, reliable supply and shorter lead-times for raw materials central to our final manufactured products. These materials include gallium, arsenic, germanium, germanium dioxide, paralytic boron nitride crucibles and boron oxide. As a result, we believe that our joint ventures will enable us to meet potential increases in demand from our customers by providing a more stable supply of raw materials at lower prices.

Flexible manufacturing infrastructure. Our total manufacturing space in China is approximately 190,000 square feet which we currently use for wafer processing. We believe that our competitors typically purchase crystal growing furnaces from original equipment manufacturers. In contrast, we design and build our own VGF crystal growing furnaces, which we believe should allow us to increase our production capacity more quickly and cost effectively.

Given these advantages, when the worldwide economies continued to improve in 2011 after the recovery from the worldwide recession, we experienced increased demand for our compound semiconductor substrates. We believe that we are well positioned to leverage our PRC-based manufacturing capabilities and access to favorably priced raw materials to increase our revenue and market share.

### Strategy

Our goal is to become the leading worldwide supplier of high-performance compound and single element semiconductor substrates. Key elements of our strategy include:

Continue to provide customers high and consistent quality products and service. We seek to improve our manufacturing processes continually in order to meet and exceed our customers' high product quality standards, ensure on-time delivery of our products and optimize the cost of ownership. We expect to continue to improve our manufacturing processes in 2012 by adding new facilities, some additional equipment, automating additional processes, and streamlining performance. In addition, we plan to continue to enhance our support functions, including service and applications engineering.

Increase market share. We intend to leverage our product quality, competitive pricing and lead times both to establish relationships with new customers and to increase our market share with current customers in the integrated circuits for wireless devices and HBLEED markets.

Flexible capacity to meet customers' increasing demand for substrates. Since 2006, we have tripled our 6-inch semi-insulating gallium arsenide substrate capacity in order to scale with increasing demand. As we enter 2012, we are continuing to see increasing demand for all sizes of our GaAs substrates and are reviewing our GaAs substrate capacity in order to make appropriate adjustments.



In January 2012, we agreed with the Administrative Commission of Tianjin Economy and Technology Development Zone to establish a second manufacturing facility in Tianjin, China. The arrangement provides us with land use rights for approximately 32 acres of industrial land located in Yixian Scientific and Industrial Park to construct a compound semiconductor substrate manufacturing facility that would be completed in phases by 2017. We have committed to invest \$12.5 million in the first phase of the construction of the facility and have an understanding with our BoYu joint venture that it will commit the RMB 32.0 million, or approximately \$5.0 million, that is anticipated to be required for the portion of the project devoted to crystal support, in exchange for land use rights, enterprise and individual income tax rebates, employee hiring and development subsidies, and other benefits.

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Establish leadership in emerging substrate applications. We intend to expand our served markets by exploring new opportunities for our substrates and we continue to work with our customers to enhance our substrate product offering. We have worked on the development of a 6" Ge substrate because the larger usable area in a 6-inch wafer over a 4-inch wafer will substantially reduce the cost of Ge solar cell manufacturing, which we believe is essential for commercial adoption of Ge solar cell technology for terrestrial applications.

In 2011, we continued to experience a noticeable increase in demand for our Ge substrates due to improving economic conditions as well as new customer qualifications. As a result, we increased our Ge substrate capacity in 2011 and will closely follow future demand increases and adjust our production capacity accordingly.

Technology enhancements. We continue to focus on technology development in the areas of VGF technology enhancement. We are working to increase the VGF ingot length and improve our single crystal yield rate. We also continue to work to improve our wafer processing technologies to give us better yield, lower production costs and better quality and performance for our customers.

### Technology

There are basically three technologies for crystal growth in our business: Vertical Gradient Freeze (VGF), Liquid Encapsulated Czochralski (LEC), and Czochralski (CZ). Our core technologies include our proprietary VGF technique used to produce high-quality crystals that are processed into compound substrates, and the technologies of our joint venture companies, which enable us to manufacture a range of products that are used in the manufacture of compound semiconductor substrates or can be sold as raw materials to third parties.

Our VGF technique is designed to control the crystal-growth process with minimal temperature variation and is the current technique we use to produce our GaAs, InP and Ge substrates. Unlike traditional techniques, our VGF technique places the hot compound melt above the cool crystal, and minimizes the temperature gradient between the crystal and the melt which reduces the turbulence at the interface of the melt and the solid crystal. In comparison, in the LEC technique the melt and crystal are inverted, there is a higher temperature gradient between the melt and the crystal, and more turbulence at the interface of the melt and solid crystal. These aspects of the VGF technique enable us to grow crystals that have a relatively low defect density and high uniformity. The crystal and the resulting substrate are mechanically strong, resulting in lower breakage rates during a customer's manufacturing process. Since the temperature gradient is controlled electronically rather than by physical movement, the sensitive crystal is not disturbed as it may be during some competitors' VGF-like growth processes. In addition, the melt and growing crystal are contained in a closed chamber, which isolates the crystal from the outside environment to reduce potential contamination. This substrate isolation allows for more precise control of the gallium-to-arsenic ratio, resulting in better consistency and uniformity of the crystals.

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Our VGF technique offers several benefits for producing our GaAs substrates when compared to traditional crystal growing technologies. The Horizontal Bridgman (HB) technique is the traditional method for producing semi-conducting GaAs substrates for opto-electronic applications, but because of the techniques used to hold the GaAs melt, the HB technique cannot be used cost-effectively to produce substrates greater than three inches in diameter. In addition, the HB technique houses the GaAs melt in a quartz container during the growth process, which can contaminate the GaAs melt with silicon impurities, making it unsuitable for producing semi-insulating GaAs substrates.

Our VGF technique also offers advantages over the LEC technique for producing semi-insulating GaAs substrates for wireless applications. Unlike the VGF technique, the LEC technique can result in greater turbulence in the melt, and at a temperature gradient that is significantly higher than the VGF technique, which can cause LEC-grown crystals to have a higher dislocation density than VGF-grown crystals, resulting in a higher rate of breakage during the device manufacturing process. However, the LEC technique can be useful for GaAs semi-conducting substrates since the LED application specifications and requirements are less stringent than those of wireless applications.

**Products**

We design, develop, manufacture and distribute high-performance semiconductor substrates. We make semi-insulating GaAs substrates used in applications such as amplifiers and switches for wireless devices, and semi-conducting GaAs substrates used to create opto-electronic products including HBLEDs, which are often used to backlight wireless handsets and LCD TVs and for automotive, signage, display and lighting applications. InP is a high-performance semiconductor substrate used in broadband and fiber optic applications. Ge substrates are used in emerging applications such as triple junction solar cells for space and terrestrial photovoltaic applications and for optical applications.

The table below sets forth our products and selected applications:

Product	Applications	
	Electronic	Opto-electronic
Substrates		
GaAs	Cellular phones Direct broadcast television High-performance transistors Satellite communications	LEDs Lasers Optical couplers
InP	Fiber optic communications Satellite communications High-performance transistors Automotive collision avoidance radar	Lasers
Ge	Satellite and terrestrial solar cells	Optical applications

**Substrates.** We currently sell compound substrates manufactured from GaAs and InP, as well as single-element substrates manufactured from Ge. We supply GaAs substrates in two-, three-, four-, five- and six-inch diameters. We supply InP substrates in two-, three- and four-inch diameters, and Ge substrates in two-, four- and six-inch diameters.

**Materials.** We participate in joint ventures in China that sell raw materials used by us in substrate manufacturing and by others. These joint ventures produce products including 99.99% pure gallium (4N Ga), high purity gallium, arsenic, and germanium, germanium dioxide, paralytic boron nitride (pBN) crucibles, and boron oxide (B2O3). In 2011 and 2010, sales of raw materials by these joint ventures to third parties were approximately \$23.6 million and \$14.9

million, respectively.

The primary costs of manufacturing compound semiconductor substrates are labor, raw materials and manufacturing equipment such as crystal growing furnaces. Accordingly, substrate manufacturers, including AXT, are continuing to shift production to larger wafers to reduce manufacturing costs.

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### Customers

We sell our compound semiconductor substrates and materials worldwide. Our top ten revenue producing customers in 2011 by revenue in alphabetical order were:

AZUR Space Solar Power GmbH Shin-Etsu Handoutai Co., Ltd.  
Beijing China Crystal Technology, Ltd. Sumika Electronic Materials Co., Ltd.  
IQE Group Sumitomo Chemical Co., Ltd.  
Nan Da Guang Dang TianJin Sanan Optoelectronics Co., Ltd.  
Osram Opto Semiconductors GmbH Visual Photonics Epitaxy Co.

Historically, we have sold a significant portion of our products in any particular period to a limited number of customers. IQE Group (IQE, Inc., IQE RF, LLC, IQE (Europe) Limited, MBE Technology Pte. Ltd., Wafer Technology Ltd.) represented approximately 18% of our revenue for the year ended December 31, 2011. One customer represented 19% of the revenue for the year ended December 31, 2010, and one customer represented 15% of the revenue for the year ended December 31, 2009. Our top five customers represented 35% of our revenue for the year ended December 31, 2011, 40% of our revenue for the year ended December 31, 2010, and 41% of our revenue for the year ended December 31, 2009. We expect that sales to a small number of customers will continue to comprise a significant portion of our revenue in the future.

There were two third party customers for the raw materials revenue from our joint ventures that accounted for 15% and 13% of the revenue from raw materials sales for the year ended December 31, 2011, two third party customers for our raw materials revenue that accounted for 21% and 19% of the revenue from raw materials sales for the year ended December 31, 2010, and three third party customers for our raw materials that accounted for 18%, 13% and 11% of the revenue from raw materials sales for the year ended December 31, 2009. Our joint ventures are a key strategic benefit for us as they give us a strong competitive advantage of allowing our customers to work with one supplier for their substrate and raw material requirements. Our raw materials customers include chemical companies. Additionally, we sell raw materials to some of the competitors to our substrate business.

### Manufacturing, Raw Materials and Supplies

We believe that our operating results reflect our manufacturing efficiency and high product yields and we continually emphasize quality and process control throughout our manufacturing operations. We manufacture all of our products at our facilities in Beijing, China, which generally has favorable costs for facilities and labor compared to our previous manufacturing in the United States. We believe that our capital investment and subsequent operating costs are lower for our manufacturing facilities in China relative to the previous facilities in the United States. Although some of our manufacturing operations are fully automated and computer monitored or controlled, enhancing reliability and yield, we expect to continue to improve our processes and increase the number of automated processes in 2012. We use proprietary equipment in our substrate manufacturing operations to protect our intellectual property and control the timing and pace of capacity additions. All of our manufacturing facilities are ISO 9001 or 9002 certified. In January 2006, our Beijing facility successfully passed the ISO 14001 certification audit.

We have joint ventures in China that provide us favorable pricing, reliable supply and shorter lead-times for raw materials central to our manufactured products including gallium, arsenic, germanium, germanium dioxide, pyrolitic boron nitride crucibles, and boron oxide. We believe that these joint ventures have been and will continue to be advantageous in allowing us to procure materials to support our planned growth and cost management goals. In addition, we purchase supply parts, components and raw materials from several other domestic and international suppliers. We depend on a single or limited number of suppliers for certain critical materials used in the production of our substrates, such as quartz tubing, and polishing solutions. We generally purchase these materials through standard

purchase orders and not pursuant to long-term supply contracts. Although we seek to maintain sufficient inventory levels of certain materials to guard against interruptions in supply and to meet our near term needs, and have to date been able to obtain sufficient supplies of materials in a timely manner, in the future, we may experience shortages of certain key materials, such as gallium.

#### Sales and Marketing

We advertise in trade publications, distribute promotional materials, conduct marketing and sales programs, and participate in industry trade shows and conferences in order to raise market awareness of our products.

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We sell our substrate products directly to customers through our direct salesforce in the U.S. and through independent sales representatives in France, Germany, Japan, South Korea, Taiwan and the United Kingdom. Our direct salesforce is knowledgeable in the use of compound and single-element substrates. Our applications engineers work with customers during all stages of the substrate manufacturing process, from developing the precise composition of the substrate through manufacturing to processing the substrate to the customer's specifications. We believe that maintaining a close relationship with customers and providing them with ongoing engineering support improves customer satisfaction and will provide us with a competitive advantage in selling other substrates to our customers.

**International Sales.** International sales are an important part of our business. Sales to customers outside North America (primarily United States) accounted for 80% of our revenue in 2011, 78% of our revenue in 2010, and 81% of our revenue in 2009. The primary markets for sales of our substrate products outside of the United States are to customers located in Asia and Western Europe.

We also sell through our joint ventures raw materials including 4N, 5N, 6N, 7N and 8N gallium, boron oxide, germanium, arsenic, germanium dioxide, paralytic boron nitride crucibles used in crystal growth and parts for MBE (Molecular Beam Epitaxy). Our joint ventures are a key strategic benefit for us as they give us a strong competitive advantage by allowing our customers to work with one supplier for all their substrate and raw material requirements. Our joint ventures have their own separate salesforce where they also sell directly to their own customers in addition to their supply of raw materials to us.

## Research and Development

To maintain and improve our competitive position, we focus our research and development efforts on designing new proprietary processes and products, improving the performance of existing products and reducing manufacturing costs. We have assembled a multi-disciplinary team of skilled scientists, engineers and technicians to meet our research and development objectives.

Our current substrate research and development activities focus on continued development and enhancement of GaAs, InP and Ge substrates, including improved yield, enhanced surface and electrical characteristics and uniformity, greater substrate strength and increased crystal length. During 2011 and 2010, we continued to focus research and development resources to reduce surface quality problems we experienced with our GaAs and InP substrates for some customers, particularly related to surface morphology. Although some major problems related to surface quality have been resolved, we still need to continue to improve in this area and expect that this effort in research and development will continue in 2012. In 2011, one of our joint ventures continued to work on research and development projects to qualify for a government incentive program for reduced future tax rates in China. It will continue this effort in the future. We focus our research and development effort to utilize more of our VGF technique to produce high-purity gallium.

Research and development expenses were \$2.5 million in 2011, compared with \$2.3 million in 2010 and \$1.6 million in 2009. We expect our rate of expenditure on research and development costs in 2012 to remain constant as we continue to improve on our processes. Our joint ventures will continue their effort in research and development.

## Competition

The semiconductor substrate industry is characterized by rapid technological change and price erosion, as well as intense foreign and domestic competition. We compete in the market for GaAs substrates with our expertise in VGF technology, product quality, response times and prices. However, we face actual and potential competition from a number of established domestic and international companies who may have advantages not available to us including substantially greater financial, technical and marketing resources; greater name recognition; and more established

relationships in the industry and may utilize these advantages to expand their product offerings more quickly, adapt to new or emerging technologies and changes in customer requirements more quickly, and devote greater resources to the marketing and sale of their products.

We believe that the primary competitive factors in the markets in which our substrate products compete are:

quality;

price;



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performance;  
capacity;  
meeting customer specifications; and  
customer support and satisfaction.

Our ability to compete in target markets also depends on factors such as:

the timing and success of the development and introduction of new products and product features by us and our competitors;

the availability of adequate sources of raw materials;

protection of our products by effective use of intellectual property laws; and

general economic conditions.

A compound semiconductor substrate customer typically has two or three substrate suppliers that it has qualified for the production of its products. These qualified suppliers must meet industry-standard specifications for quality, on-time delivery and customer support. Once a substrate supplier has qualified with a customer, price, consistent quality and current and future product delivery lead times become the most important competitive factors. A supplier that cannot meet customers' current lead times or that a customer perceives will not be able to meet future demand and provide consistent quality can lose current market share. Our primary competition in the market for compound semiconductor substrates includes Freiburger Compound Materials, Hitachi Cable, and Sumitomo Electric Industries. We believe that at least two of our competitors are shipping high volumes of GaAs substrates manufactured using a technique similar to our VGF technique. In addition, we also face competition from compound semiconductor device manufacturers that produce substrates for their own internal use, including Hitachi, and from companies such as TriQuint Semiconductors that are actively developing alternative compound semiconductor materials.

We believe we are the only compound semiconductor substrate supplier to offer a full suite of raw materials and we believe that this gives us a strong competitive advantage in our marketplace.

### Protection of our Intellectual Property

Our success and the competitive position of our VGF technique depend on our ability to maintain trade secrets and other intellectual property protections. We rely on a combination of patents, trademark and trade secret laws, non-disclosure agreements and other intellectual property protection methods to protect our proprietary technology. We believe that, due to the rapid pace of technological innovation in the markets for our products, our ability to establish and maintain a position of technology leadership depends as much on the skills of our research and development personnel as upon the legal protections afforded our existing technologies. To protect our trade secrets, we take certain measures to ensure their secrecy, such as executing non-disclosure agreements with our employees, customers and suppliers. However, reliance on trade secrets is only an effective business practice insofar as trade secrets remain undisclosed and a proprietary product or process is not reverse engineered or independently developed.

To date, we have been issued fifteen (15) patents that relate to our VGF products and processes, three (3) in the U.S., two (2) in Japan, eight (8) in China, one (1) in Canada, and one (1) in Korea, which expire in 2016 (1 U.S.), 2017 (1 JP), 2018 (1 CN), 2020 (2 CN), 2021 (1 JP, 5 CN), 2022 (1 U.S., 1 CA, 1 KR), 2027 (1 U.S.). We have nine (9) U.S.

patent applications pending and thirty-two (32) foreign patent applications pending (including applications in Patent Cooperation Treaty (“PCT”) and national stage processes) in Europe, Canada, China, Japan and Taiwan, which are based on our US patents and/or pertain to our VGF-related wafer manufacturing processes.

In the normal course of business, we periodically receive and make inquiries regarding possible patent infringement. In dealing with such inquiries, it may become necessary or useful for us to obtain or grant licenses or other rights. However, there can be no assurance that such licenses or rights will be available to us on commercially reasonable terms. If we are not able to resolve or settle claims, obtain necessary licenses on commercially reasonable terms and/or successfully prosecute or defend our position, our business, financial condition and results of operations could be materially and adversely affected.

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### Environmental Regulations

We are subject to federal, state and local environmental laws and regulations, including laws in China as well as the U.S. These laws, rules and regulations govern the use, storage, discharge and disposal of hazardous chemicals during manufacturing, research and development and sales demonstrations. We maintain a number of environmental, health and safety programs that are primarily preventive in nature. As part of these programs, we regularly monitor ongoing compliance. If we fail to comply with applicable regulations, we could be subject to substantial liability for clean-up efforts, personal injury and fines or suspension or cessation of our operations.

### Employees

As of December 31, 2011, we had 1,308 employees, of whom 1,014 were principally engaged in manufacturing, 137 in sales and administration, and 157 in research and development. Of these employees, 24 were located in the United States and 1,284 in China. As of December 31, 2010, we had 1,302 employees, of whom 1,034 were principally engaged in manufacturing, 129 in sales and administration, and 139 in research and development. Of these employees, 25 were located in the United States and 1,277 in China.

As of December 31, 2011, 1,130 employees in China were represented by unions, but we have never experienced a work stoppage. We consider our relations with our employees to be good.

### Geographical Information

Please see Note 15 of our Notes to Consolidated Financial Statements for information regarding our foreign operations, and see “Risks related to international aspects of our business” under Item 1A. Risk Factors for further information on risks attendant to our foreign operations and dependence.

### Available Information

Our principal executive offices are located at 4281 Technology Drive, Fremont, CA 94538, and our main telephone number at this address is (510) 683-5900. The public may read and copy any material we file with the Securities and Exchange Commission, or SEC, at the SEC’s Public Reference Room at 100 F Street, N.E., Washington D.C., 20549. The public may obtain information on the operations of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site <http://www.sec.gov> that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

Our web site is [www.axt.com](http://www.axt.com). We make available, free of charge, on or through our web site, our annual, quarterly and current reports, and any amendments to those reports as soon as reasonably practicable after those reports are filed with the SEC. The information on our web site does not constitute a part of this Annual Report on Form 10-K and is not incorporated herein.

### Item 1A. Risk Factors

For ease of reference, we have divided these risks and uncertainties into the following general categories:

Risks related to our general business;

Risks related to international aspects of our business;

Risks related to our financial results and capital structure;

Risks related to our intellectual property; and  
Risks related to compliance and other legal matters.

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Risks Related to Our General Business

Ongoing financial market volatility and adverse changes in the domestic and global economic environment could have a significant adverse impact on our business, financial condition and operating results.

We are subject to the risks arising from adverse changes and uncertainty in domestic and global economies. For example, our business and operating results were significantly impacted by the global economic downturn in 2009 due to the effects of the credit market crisis, slower economic activity and a generally negative economic outlook, a decrease in consumer and business confidence and liquidity concerns, as well as concerns over U.S. government debt. Global market and economic conditions continue to be uncertain and volatile. The possible duration and severity of this adverse economic cycle is unknown. Although we remain well-capitalized and have not suffered any liquidity issues as a result of those events, the cost and availability of funds may be adversely affected by illiquid credit markets. Continued turbulence in U.S. and international markets and economies may adversely affect our liquidity, financial condition and profitability. Another severe or prolonged economic downturn could result in a variety of risks to our business, including:

increased volatility in our stock price;

increased volatility in foreign currency exchange rates;

delays in, or curtailment of, purchasing decisions by our customers or potential customers either as a result of overall economic uncertainty or as a result of their inability to access the liquidity necessary to engage in purchasing initiatives;

increased credit risk associated with our customers or potential customers, particularly those that may operate in industries most affected by the economic downturn, such as financial services; and

impairment of our intangible or other assets.

We have experienced and expect to continue to experience delays in customer purchasing decisions or disruptions in normal volume of customer orders that we believe are in part due to the uncertainties in the global economy and an adverse impact on consumer spending. During challenging and uncertain economic times and in tight credit markets, many customers delay or reduce technology purchases. To the extent that the current economic downturn worsens or persists, or any of the above risks occur, our business and operating results could be significantly and adversely affected.

The average selling prices of our products may decline over relatively short periods, which may reduce our gross margins.

The market for our products is characterized by declining average selling prices resulting from factors such as increased competition, overcapacity, the introduction of new products and decreased sales of products incorporating our products and average selling prices for our products may decline over relatively short time periods. We have in the past experienced, and in the future may experience, substantial period-to-period fluctuations in operating results due to declining average selling prices. On average, we have experienced average selling price declines over the course of the last twelve months of anywhere from approximately 5% to 20% per year depending on the product. It is also possible for the pace of average selling price declines to accelerate beyond these levels for certain products in a commoditizing market. We anticipate that average selling prices will decrease in the future in response to the current difficult economic environment, product introductions by competitors or us, or by other factors, including pricing pressures from significant customers. When our average selling prices decline, our gross profits decline unless we are

able to sell more products or reduce the cost to manufacture our products. We generally attempt to combat average selling price declines by improving yields, manufacturing efficiency and working to reduce the costs of our raw materials and of manufacturing our products. We have in the past and may in the future experience declining sales prices, which could negatively impact our revenues, gross profits and financial results. We therefore need to sell our current products in increasing volumes to offset any decline in their average selling prices, and introduce new products, which we may not be able to do, or do on a timely basis.

We may be unable to reduce the cost of our products sufficiently to enable us to compete with others. Our cost reduction efforts may not allow us to keep pace with competitive pricing pressures and could adversely affect our margins. In order to remain competitive, we must continually reduce the cost of manufacturing our products through design and engineering changes. We cannot assure you that any changes effected by us will result in sufficient cost reductions to allow us to reduce the price of our products to remain competitive or improve our gross margins.

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Shifts in our product mix may result in declines in gross margins.

Our gross profit margins vary among our product families, and are generally higher on our larger diameter wafers. In addition, historically our gross margins have been higher on our raw materials sales. Accordingly, our overall gross margins have fluctuated from period to period as a result of shifts in product mix, the introduction of new products, decreases in average selling prices for products and our ability to reduce product costs, and these fluctuations are expected to continue in the future.

We do not control the prices at which our joint venture companies sell their raw materials products to third parties. However, as we consolidate the results of three of these companies with our own, any reduction in their gross margins could have a significant, adverse impact on our overall gross margins. One or more of our joint venture companies has in the past and may in the future sell raw materials at significantly reduced prices in order to gain volume sales, or sales to new customers. In such an event, our gross margin may be adversely impacted. In addition, one of our joint venture companies has in the past been subject to capacity constraints requiring it to source product from other third party suppliers in order to meet customer demand, resulting in decreased gross margin and adversely impacting our gross margin. This joint venture may in the future continue to experience such capacity restraints, causing our gross margin, and consequently our operating results, to be adversely impacted.

The cyclical nature of the semiconductor industry may limit our ability to maintain or increase net sales and operating results during industry downturns.

The semiconductor industry is highly cyclical and periodically experiences significant economic downturns characterized by diminished product demand, resulting in production overcapacity and excess inventory in the markets we serve. A downturn can result in lower unit volumes and rapid erosion of average selling prices. The semiconductor industry has experienced significant downturns, often in connection with, or in anticipation of, maturing product cycles of both semiconductor companies' and their customers' products or a decline in general economic conditions. We have experienced these conditions in our business for most of 2011 especially for GaAs substrate, and may experience widespread and possibly more severe and prolonged downturns in the future as a result of such cyclical changes. This may adversely affect our results of operations and the value of our business.

Our continuing business depends in significant part upon manufacturers of electronic and opto-electronic compound semiconductor devices, as well as the current and anticipated market demand for these devices and products using these devices. As a supplier to the compound semiconductor industry, we are subject to the business cycles that characterize the industry. The timing, length and volatility of these cycles are difficult to predict. The compound semiconductor industry has historically been cyclical due to of sudden changes in demand, the amount of manufacturing capacity and changes in the technology employed in compound semiconductors. The rate of changes in demand, including end demand, is high, and the effect of these changes upon us occurs quickly, exacerbating the volatility of these cycles. These changes have affected the timing and amounts of customers' purchases and investments in new technology. These industry cycles create pressure on our revenue, gross margin and net income.

Our industry has in the past experienced periods of oversupply that result in significantly reduced demand and prices for compound semiconductor devices and components, including our products, both as a result of general economic changes and overcapacity. When these periods occur and our operating results and financial condition are adversely affected, oversupply creates pressure on our revenue, gross margins and net income. Inventory buildups in telecommunications products and slower than expected sales of computer equipment resulted in overcapacity and led to reduced sales by our customers, and therefore reduced purchases of our products. During periods of weak demand such as those experienced historically, customers typically reduce purchases, delay delivery of products and/or cancel orders of component parts such as our products. Increased price competition has resulted, causing pressure on our net sales, gross margin and net income. We experienced cancellations, price reductions, delays and push-outs of orders,

which have resulted in reduced revenue. If the economic downturn continues, further order cancellations, reductions in order size or delays in orders could occur and would materially adversely affect our business and results of operations. Actions to reduce our costs may be insufficient to align our structure with prevailing business conditions. We may be required to undertake additional cost-cutting measures, and may be unable to invest in marketing, research and development and engineering at the levels we believe are necessary to maintain our competitive position. Our failure to make these investments could seriously harm our business.

We base our planned operating expenses in part on our expectations of future revenue, and a significant portion of our expenses is relatively fixed in the short term. If revenue for a particular quarter is lower than we expect, we likely will be unable to proportionately reduce our operating expenses for that quarter, which would harm our operating results for that quarter.



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The loss of one or more of our key substrate customers would significantly hurt our operating results.

A small number of substrate customers have historically accounted for a substantial portion of our total revenue. For the year ended December 31, 2011, IQE Group represented 18% of our revenue, compared to 19% in the year ended December 31, 2010. Our top five customers represented 35% of revenue for the year ended December 31, 2011, 40% of revenue for the year ended December 31, 2010, and 41% of revenue for the year ended December 31, 2009. We expect that a significant portion of our future revenue will continue to be derived from a limited number of substrate customers. Most of our customers are not obligated to purchase a specified quantity of our products or to provide us with binding forecasts of product purchases. In addition, our customers may reduce, delay or cancel orders at any time without any significant penalty. In the past, we have experienced slower bookings, significant push-outs and cancellation of orders from customers. If we lose a major customer or if a customer cancels, reduces or delays orders, our revenue would decline. In addition, customers that have accounted for significant revenue in the past may not continue to generate revenue for us in any future period. Any delay in scheduled shipments of our products could cause revenue to fall below our expectations and the expectations of market analysts or investors, causing our stock price to decline.

We depend on high utilization of our manufacturing capacity.

An important factor in our success is the extent to which we are able to utilize the available capacity in our Beijing facility. As many of our costs are fixed, a reduction in capacity utilization, as well as changes in other factors such as reduced yield or unfavorable product mix, could reduce our profit margins and adversely affect our operating results. A number of factors and circumstances may reduce utilization rates, including periods of industry overcapacity, low levels of customer orders, operating inefficiencies, mechanical failures and disruption of operations due to expansion, power interruptions, fire, flood or other natural disasters or calamities.

The Chinese Government has previously imposed manufacturing restrictions that, if imposed again in the future on our facilities, could materially and adversely impact our results of operations and our financial condition.

The Chinese government has in the past imposed restrictions on manufacturing facilities, such as the restrictions imposed on polluting factories for the 2008 Olympics and Paralympics, including a shut-down of transportation of materials and power plants to reduce air pollution. If, in the future, restrictions are imposed on our operations, our ability to meet customer demand or supply current or new orders would be significantly impacted. Customers could then be required to purchase product from our competitors, causing our competitors to take market share from us, and could result in our customers supplying future needs from our competitors. Restrictions on transportation of materials could limit our ability to transport our product, and could result in bottlenecks at shipping ports, limiting our ability to deliver products to our customers. During periods of such restrictions, we may increase our stock of critical materials (such as arsenic, gallium, and other chemicals) for use during the period that these restrictions are likely to last, which will increase our use of cash and increase our inventory level, such as occurred during 2008. Any of these restrictions could materially and adversely impact our results of operations and our financial condition.

Defects in our products could diminish demand for our products.

Our products are complex and may contain defects. We have experienced quality control problems with many of our products, which caused customers to return products to us, reduce orders for our products, or both. Although our quality has improved, resulting in some increases in product sales, we believe that we continue to experience some reduction in orders as a result of our prior product quality problems. If we continue to experience quality control problems, or experience these or other problems in new products, customers may cancel or reduce orders or purchase products from our competitors, we may be unable to maintain or increase sales to our customers and sales of our products could decline. Defects in our products could cause us to incur higher manufacturing costs and suffer product

returns and additional service expenses, all of which could adversely impact our operating results.

If new products developed by us contain defects when released, our customers may be dissatisfied and we may suffer negative publicity or customer claims against us, lose sales or experience delays in market acceptance of our new products.

Our results of operations may suffer if we do not effectively manage our inventory.

We must manage our inventory of component parts, work-in-process and finished goods effectively to meet changing customer requirements, while keeping inventory costs down and improving gross margins. Some of our products and supplies have in the past and may in the future become obsolete while in inventory due to changing customer specifications, or become excess inventory due to decreased demand for our products and an inability to sell the inventory within a foreseeable period. Furthermore, if current costs of production increase or sales prices drop below the standard prices at which we value inventory, we may need to take a charge for a reduction in inventory values. We have in the past had to take inventory valuation and impairment charges. Any future unexpected changes in demand or increases in costs of production that cause us to take additional charges for un-saleable, obsolete or excess inventory, or to reduce inventory values, could adversely affect our results of operations.

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If we have low product yields, the shipment of our products may be delayed and our operating results may be adversely impacted.

Our products are manufactured using complex technologies, and the number of usable substrates we produce can fluctuate as a result of many factors, including:

- impurities in the materials used;
- contamination of the manufacturing environment;
- substrate breakage;
- equipment failure, power outages or variations in the manufacturing process; and
- performance of personnel involved in the manufacturing process.

If our yields decrease, our revenue could decline if we are unable to produce needed product on time. At the same time, our manufacturing costs could remain fixed, or could increase. We have experienced product shipment delays and difficulties in achieving acceptable yields on both new and older products, and delays and poor yields have adversely affected our operating results. We may experience similar problems in the future and we cannot predict when they may occur or their duration or severity. In particular, many of our manufacturing processes are new and are still being refined, which can result in lower yields.

If our manufacturing processes result in defects in our products making them unfit for use by our customers, our products would be rejected, resulting in compensation costs paid to our customers, and possible disqualification. This could lead to revenue loss and market share loss.

If we do not successfully develop new products to respond to rapidly changing customer requirements, our ability to generate revenue, obtain new customers, and retain existing customers may suffer.

Our success depends on our ability to offer new products and product features that incorporate leading technology and respond to technological advances. In addition, our new products must meet customer needs and compete effectively on quality, price and performance. The life cycles of our products are difficult to predict because the markets for our products are characterized by rapid technological change, changing customer needs and evolving industry standards. If our competitors introduce products employing new technologies or performance characteristics, our existing products could become obsolete and unmarketable. During the past three years, we have seen our competitors selling more substrates manufactured using a crystal growth technology similar to ours, which has eroded our technological differentiation. Other companies, including TriQuint Semiconductors, are actively developing substrate materials that could be used to manufacture devices that could provide the same high-performance, low-power capabilities as GaAs- and InP-based devices at competitive prices. If these substrate materials or VGF-derived products are successfully developed and semiconductor device manufacturers adopt them, demand for our GaAs substrates could decline and our revenue could suffer.

The development of new products can be a highly complex process, and we may experience delays in developing and introducing new products. Any significant delay could cause us to fail to timely introduce and gain market acceptance of new products. Further, the costs involved in researching, developing and engineering new products could be greater than anticipated. If we fail to offer new products or product enhancements or fail to achieve higher quality products, we may not generate sufficient revenue to offset our development costs and other expenses or meet our customers' requirements.

Intense competition in the markets for our products could prevent us from increasing revenue and sustaining profitability.

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The markets for our products are intensely competitive. We face competition for our substrate products from other manufacturers of substrates, such as Freiburger Compound Materials, Hitachi Cable and Sumitomo Electric, from semiconductor device manufacturers that produce substrates for their own use, and from companies, such as TriQuint Semiconductors, that are actively developing alternative materials to GaAs and marketing semiconductor devices using these alternative materials. We believe that at least two of our major competitors are shipping high volumes of GaAs substrates manufactured using a technique similar to our VGF technique. Other competitors may develop and begin using similar technology. If we are unable to compete effectively, our revenue may not increase and we may be unable to remain profitable. We face many competitors that have a number of significant advantages over us, including:

greater experience in the business;

more manufacturing experience;

extensive intellectual property;

broader name recognition; and

significantly greater financial, technical and marketing resources.

Our competitors could develop new or enhanced products that are more effective than our products.

The level and intensity of competition has increased over the past year and we expect competition to continue to increase in the future. Competitive pressures caused by the current economic conditions have resulted in reductions in the prices of our products, and continued or increased competition could reduce our market share, require us to further reduce the prices of our products, affect our ability to recover costs and result in reduced gross margins.

In addition, new competitors have and may continue to emerge, such as a small crystal growing company established by a former employee in China that is supplying ingots to the market. While new competitors such as this company currently do not appear to be fully competitive, competition from sources such as this could increase, particularly if these competitors are able to obtain large capital investments.

Demand for our products may decrease if our customers experience difficulty manufacturing, marketing or selling their products.

Our products are used as components in our customers' products. Accordingly, demand for our products is subject to factors affecting the ability of our customers to introduce and market their products successfully, including:

the competition our customers face in their particular industries;

the technical, manufacturing, sales and marketing and management capabilities of our customers;

the financial and other resources of our customers; and

the inability of our customers to sell their products if they infringe third-party intellectual property rights.

If demand for the end-user applications for which our products are used decreases, or our customers are unable to develop, market and sell their products, demand for our products will decrease.

Current global economic conditions may have an impact on our business and financial condition in ways that we currently cannot predict.

Our operations and financial results depend on worldwide economic conditions and their impact on levels of business spending, which had deteriorated significantly in many countries and regions in previous years and may be depressed for the foreseeable future. Uncertainties in the financial and credit markets have caused our customers to postpone deliveries of ordered systems and placement of new orders. Continued uncertainties may reduce future sales of our products and services. The revenue growth and profitability of our business depends on the overall demand for our substrates, and we are particularly dependent on the market conditions for the wireless, solid-state illumination, fiber optics and telecommunications industries. Because our sales are primarily to major corporate customers whose businesses fluctuate with general economic and business conditions, a softening of demand for products that use our substrates, caused by a weakening economy, may result in decreased revenue. Customers may find themselves facing excess inventory from earlier purchases, and may defer or reconsider purchasing products due to the downturn in their business and in the general economy. If the current market conditions continue to deteriorate, we may experience increased collection times and greater write-offs, either of which could have a material adverse effect on our cash flow.

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In addition, the tightening of credit markets and concerns regarding the availability of credit may make it more difficult for our customers to raise capital, whether debt or equity, to finance their purchases of capital equipment, including the products we sell. Delays in our customers' ability to obtain such financing, or the unavailability of such financing, would adversely affect our product sales and revenues and therefore harm our business and operating results. We cannot predict the timing, duration of or effect on our business of the economic slowdown or the timing or strength of any subsequent recovery.

The financial condition of our customers may affect their ability to pay amounts owed to us.

Many of our customers are facing business downturns that have reduced their cash balances and their prospects. We frequently allow our customers extended payment terms after shipping products to them. Subsequent to our shipping a product, some customers have been unable to make payments when due, reducing our cash balances and causing us to incur charges to allow for a possibility that some accounts might not be paid. Customers may also be forced to file for bankruptcy. If our customers do not pay their accounts when due, we will be required to incur charges that would reduce our earnings.

We purchase critical raw materials and parts for our equipment from single or limited sources, and could lose sales if these sources fail to fill our needs.

We depend on a limited number of suppliers for certain raw materials, components and equipment used in manufacturing our products, including key materials such as quartz tubing and polishing solutions. Although several of these raw materials are purchased from suppliers in which we hold an ownership interest, we generally purchase these materials through standard purchase orders and not pursuant to long-term supply contracts, and no supplier guarantees supply of raw materials or equipment to us. If we lose any of our key suppliers, our manufacturing efforts could be significantly hampered and we could be prevented from timely producing and delivering products to our customers. Prior to investing in our raw material joint ventures, we sometimes experienced delays obtaining critical raw materials and spare parts, including gallium, due to shortages of these materials and we could experience such delays again in the future due to shortages of materials and may be unable to obtain an adequate supply of materials. These shortages and delays could result in higher materials costs and cause us to delay or reduce production of our products. If we have to delay or reduce production, we could fail to meet customer delivery schedules and our revenue and operating results could suffer.

We have made and may continue to make strategic investments in raw materials suppliers, which may not be successful and may result in the loss of all or part of our investment.

We have made investments through our joint ventures in raw material suppliers in China, which provide us with opportunities to gain supplies of key raw materials that are important to our substrate business. These affiliates each have a market beyond that provided by us. We do not have influence over all of these companies, each of which is located in China, and in some we have made only a strategic, minority investment. We may not be successful in achieving the financial, technological or commercial advantage upon which any given investment is premised, and we could end up losing all or part of our investment.

Our substrate products have a long qualification cycle that makes it difficult to plan our expenses and forecast our results.

Customers typically place orders with us for our substrate products three months to a year or more after our initial contact with them. The sale of our products may be subject to delays due to our customers' lengthy internal budgeting, approval and evaluation processes. During this time, we may incur substantial expenses and expend sales, marketing and management efforts while the customers evaluate our products. These expenditures may not result in sales of our

products. If we do not achieve anticipated sales in a period as expected, we may experience an unplanned shortfall in our revenue. As a result, we may not be able to cover expenses, causing our operating results to vary. In addition, if a customer decides not to incorporate our products into its initial design, we may not have another opportunity to sell products to this customer for many months or even years. In the current competitive and economic climate, the average sales cycle for our products has lengthened even further and is expected to continue to make it difficult for us to forecast our future sales accurately. We anticipate that sales of any future substrate products will also have lengthy sales cycles and will, therefore, be subject to risks substantially similar to those inherent in the lengthy sales cycles of our current substrate products.



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Problems incurred by our joint ventures or venture partners could result in a material adverse impact on our financial condition or results of operations.

We have invested in joint venture operations in China that produce products including 99.99% pure gallium (4N Ga), high purity gallium, arsenic, germanium, germanium dioxide, paralytic boron nitride (pBN) crucibles and boron oxide (B<sub>2</sub>O<sub>3</sub>). We purchase a portion of the materials produced by these ventures for our use and sell the remainder of their production to third parties. Our ownership interest in these entities ranges from 25% to 83%. We consolidate the joint ventures in which we have a majority or controlling financial interest and employ equity accounting for the joint ventures in which we have a smaller ownership interest. Several of these joint ventures occupy space within larger facilities owned and/or operated by one of the other venture partners. Several of these venture partners are engaged in other manufacturing activities at or near the same facility. In some facilities, we share access to certain functions, including water, hazardous waste treatment or air quality treatment. If any of our joint venture partners in any of these ventures experiences problems with its operations, disruptions of our joint venture operations could result, having a material adverse effect on the financial condition and results of operation of our joint ventures, and correspondingly on our financial condition or results of operations. For example, since gallium is a by-product of aluminum, our gallium joint venture in China, which is housed in and receives services from an affiliated aluminum plant, could generate lower production of gallium as a result of reduced by-product services provided by the aluminum plant. Accordingly, in order to meet customer supply obligations, our joint venture may have to source finished products from another independent third party supplier, resulting in reduced gross margin.

In addition, if any of our joint ventures or venture partners with which our joint ventures share facilities is deemed to have violated applicable laws, rules or regulations governing the use, storage, discharge or disposal of hazardous chemicals during manufacturing, research and development, or sales demonstrations, the operations of our joint ventures could be adversely affected and we could be subject to substantial liability for clean-up efforts, personal injury and fines or suspension or cessation of our joint venture operations as a result of the actions of the joint ventures or other venture partners. Employees working for our joint ventures or any of the other venture partners could bring litigation against us as a result of actions taken at the joint venture or venture partner facilities, even though we are not directly controlling the operations, including actions for exposure to chemicals or other hazardous materials at the facilities of our joint ventures or the facilities of any venture partner that are shared by our joint ventures. While we would expect to defend ourselves vigorously in any litigation that is brought against us, litigation is inherently uncertain and it is possible that our business, financial condition, results of operations or cash flows could be affected. Even if we are not deemed responsible for the actions of the joint ventures or venture partners, litigation could be costly, time consuming to defend and divert management attention; in addition, if we are deemed to be the most financially viable of the partners, plaintiffs may decide to pursue us for damages.

We believe that continuing to invest in additional joint ventures will be important to remaining competitive in our marketplace and ensuring a supply of critical raw materials. However, we may not be able to identify complementary joint venture opportunities or, even once opportunities are identified, we may not be able to reach agreement on the terms of the venture with the other venture partners. Additional joint ventures could cause us to incur contingent liabilities or other expenses, any of which could adversely affect our financial condition and operating results.

Since all of our joint venture activity is expected to occur in China, these activities could subject us to a number of risks associated with conducting operations internationally, including:

difficulties in managing geographically disparate operations;

difficulties in enforcing agreements through non-U.S. legal systems;

unexpected changes in regulatory requirements that may limit our ability to export the venture products or sell into particular jurisdictions or impose multiple conflicting tax laws and regulations;

political and economic instability, civil unrest or war;

terrorist activities that impact international commerce;

difficulties in protecting our intellectual property rights, particularly in countries where the laws and practices do not protect proprietary rights to as great an extent as do the laws and practices of the United States;

changing laws and policies affecting economic liberalization, foreign investment, currency convertibility or exchange rates, taxation or employment; and

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nationalization of foreign-owned assets, including intellectual property.

The effect of terrorist threats and actions on the general economy could decrease our revenue.

The United States continues to be on alert for terrorist activity. The potential near- and long-term impact terrorist activities may have in regards to our suppliers, customers and markets for our products and the U.S. economy is uncertain. There may be embargos of ports or products, or destruction of shipments or our facilities, or attacks that affect our personnel. There may be other potentially adverse effects on our operating results due to significant events that we cannot foresee. Since we perform all of our manufacturing operations in China, and a significant portion of our customers are located outside of the United States, terrorist activity or threats against U.S.-owned enterprise are a particular concern to us.

If any of our facilities is damaged by occurrences such as fire, explosion, or natural disaster, we might not be able to manufacture our products.

The ongoing operation of our manufacturing and production facilities in China is critical to our ability to meet demand for our products. If we are not able to use all or a significant portion of our facilities for prolonged periods for any reason, we would not be able to manufacture products for our customers. For example, a fire or explosion caused by our use of combustible chemicals and high temperatures during our manufacturing processes or power interruption caused by severe weather situation could render some or all of our facilities inoperable for an indefinite period of time. Actions outside of our control, such as earthquakes or other natural disasters, could also damage our facilities, rendering them inoperable. If we are unable to operate our facilities and manufacture our products, we would lose customers and revenue and our business would be harmed.

We depend on the continuing efforts of our senior management team and other key personnel. If we lose members of our senior management team or other key personnel, or are unable to successfully retain, recruit and train qualified personnel, our ability to manufacture and sell our products could be harmed.

Our future success depends on the continuing services of members of our senior management team and other key personnel. Our industry is characterized by high demand and intense competition for talent, and the turnover rate can be high. We compete for qualified management and other personnel with other semiconductor companies. Our employees could leave our company with little or no prior notice and would be free to work for a competitor. If one or more of our senior executives or other key personnel were unable or unwilling to continue in their present positions, we may not be able to replace them easily or at all, and other senior management may be required to divert attention from other aspects of the business. The loss of any of these individuals or our ability to attract or retain qualified personnel could adversely affect our business.

Risks Related to International Aspects of Our Business

Changes in tariffs, import restrictions, export restrictions or other trade barriers may reduce gross margins.

We may incur increases in costs due to changes in tariffs, import or export restrictions, or other trade barriers, or unexpected changes in regulatory requirements, any of which could reduce our gross margins. For example, in 2006, tax authorities in the PRC changed the treatment of refunds of value-added taxes that companies pay when they purchase certain raw materials, including gallium and arsenic. The cumulative effect is that our PRC joint venture companies no longer receive a refund of value-added tax for exports of gallium or arsenic, including certain shipments to our wholly-owned PRC subsidiary that are treated as exports under PRC tax regulations. Given the relatively fluid regulatory environment in the PRC, there could be additional tax or other regulatory changes in the future. Any such changes could directly and materially adversely impact our financial results and general business condition.

Our operating results depend in large part on continued customer acceptance of our substrate products manufactured in China and continued improvements in product quality.

We manufacture all of our products in China, and source most of our raw materials in China. Accordingly, we continue to seek customer qualification of our China-manufactured products. In addition, we have in the past experienced quality problems with our China-manufactured products. Our previous quality problems caused us to lose market share to our competitors, as some customers reduced their orders from us until our surface quality was as good and consistent as that offered by competitors and customers allocated their requirements for compound semiconductor substrates across more of our competitors. If we are unable to continue to achieve customer qualifications for our products, or if continue to experience quality problems, customers may not increase purchases of our products, our China facility will become underutilized, and we will be unable to achieve expected revenue growth. In addition, we have recently entered into an arrangement to establish a second manufacturing facility in China, which when complete will further our reliance on Chinese manufacturing facilities. We may again lose sales of our products to competitors and experience loss of market share. If we are unable to recover and retain our market share, we may be unable to grow our business.

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We derive a significant portion of our revenue from international sales, and our ability to sustain and increase our international sales involves significant risks.

Our revenue growth depends in part on the expansion of our international sales and operations. International sales represented 80%, 78% and 81% our total revenue for the years ended December 31, 2011, 2010 and 2009, respectively. We expect that sales to customers outside the United States, particularly sales to customers in Asia, will continue to represent a significant portion of our revenue.

Currently, a significant percentage of our sales is to customers headquartered in Asia. All of our manufacturing facilities and some of our suppliers are also located outside the U.S. Managing our overseas operations presents challenges, including periodic regional economic downturns, trade balance issues, varying business conditions and demands, political instability, variations in enforcement of intellectual property and contract rights in different jurisdictions, differences in the ability to develop relationships with suppliers and other local businesses, changes in U.S. and international laws and regulations including U.S. export restrictions, fluctuations in interest and currency exchange rates, the ability to provide sufficient levels of technical support in different locations, cultural differences, shipping delays and terrorist acts or acts of war, among other risks. Many of these challenges are present in China, which represents a large potential market for semiconductor devices and where we anticipate significant opportunity for growth. Global uncertainties with respect to: (i) economic growth rates in various countries; (ii) sustainability of demand for electronics products; (iii) capital spending by semiconductor manufacturers; (iv) price weakness for certain semiconductor devices; and (v) political instability in regions where we have operations may also affect our business, financial condition and results of operations.

Our dependence on international sales involves a number of risks, including:

changes in tariffs, import restrictions, export restrictions, or other trade barriers;

unexpected changes in regulatory requirements;

longer periods to collect accounts receivable;

changes in export license requirements;

political and economic instability;

unexpected changes in diplomatic and trade relationships; and

foreign exchange rate fluctuations.

Our sales are denominated in U.S. dollars, except for sales to our Japanese customers which are denominated in Japanese yen. Thus, increases in the value of the U.S. dollar could increase the price of our products in non-U.S. markets and make our products more expensive than competitors' products in these markets.

Also, denominating some sales in Japanese yen subjects us to fluctuations in the exchange rates between the U.S. dollar and the Japanese yen. The functional currency of our Chinese subsidiary and joint ventures is the local currency. We incur transaction gains or losses resulting from consolidation of expenses incurred in local currencies for these entities, as well as in translation of the assets and liabilities of their assets at each balance sheet date. If we do not effectively manage the risks associated with international sales, our revenue, cash flows and financial condition could be adversely affected.

If there are power shortages in the PRC, we may have to temporarily close our China operations, which would adversely impact our ability to manufacture our products and meet customer orders, and would result in reduced revenue.

In the past, the Chinese government has faced a power shortage resulting in power demand outstripping supply in peak periods. Instability in electrical supply in past years has caused sporadic outages among residential and commercial consumers causing the Chinese government to implement tough measures to ease the energy shortage, and as a result, we closed most of our operations for a week in late July 2004 in conformance with this policy.

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In 2006 we were able to switch the electrical supply for our manufacturing facility onto the same power grid as that used by vital PRC government services such as hospitals and police. However, if even despite this switch, further problems with power shortages occur in the future, and we are required to make temporary closures of our subsidiary and joint venture operations, we may be unable to manufacture our products, and would then be unable to meet customer orders except from inventory on hand. As a result, our revenue could be adversely impacted, and our relationships with our customers could suffer, impacting our ability to generate future revenue. In addition, if power is shut off at our Beijing subsidiary at any time, either voluntarily or as a result of unplanned brownouts, during certain phases of our manufacturing process including our crystal growth phase, the work in process may be ruined and rendered unusable, causing us to incur expense that will not be covered by revenue, and negatively impacting our cost of revenue and gross margins.

Changes in China's political, social and economic environment may affect our financial performance.

Our financial performance may be affected by changes in China's political, social and economic environment. The role of the Chinese central and local governments in the Chinese economy is significant. Chinese policies toward economic liberalization, and laws and policies affecting technology companies, foreign investment, currency exchange rates and other matters could change, resulting in greater restrictions on our ability to do business and operate our manufacturing facilities in China. Any imposition of surcharges or any increase in Chinese tax rates or reduction or elimination of Chinese tax benefits could hurt our operating results. The Chinese government could revoke, terminate or suspend our license for national security and similar reasons without compensation to us. If the Chinese government were to take any of these actions, we would be prevented from conducting all or part of our business. Any failure on our part to comply with governmental regulations could result in the loss of our ability to manufacture our products in China.

An outbreak of contagious disease such as Severe Acute Respiratory Syndrome (SARS) or the Avian Flu may adversely impact our manufacturing operations and some of our key suppliers and customers.

Any reoccurrence of SARS or an outbreak of a contagious disease, such as Avian Flu, may cause us to temporarily close our manufacturing operations. Similarly, if one or more of our key suppliers is required to close for an extended period, we might not have enough raw material inventories to continue manufacturing operations. In addition, while we possess management skills among our China staff that enable us to maintain our manufacturing operations with minimal on-site supervision from our U.S.-based staff, our business could also be harmed if travel to or from Asia and the United States is restricted or inadvisable. If our manufacturing operations were closed for a significant period, we could lose revenue and market share, which would depress our financial performance and could be difficult to recapture. Finally, if one of our key customers is required to close for an extended period, we might not be able to ship product to them, our revenue would decline and our financial performance would suffer.

### Risks Related to Our Financial Results and Capital Structure

If we fail to manage periodic contractions, we may utilize our cash balances, resulting in the decline of our existing cash, cash equivalents and investment balances.

We anticipate that our existing cash resources will fund our operations and purchases of capital equipment, as well as provide adequate working capital for the next twelve months. However, our liquidity is affected by many factors including, among others, the extent to which we pursue additional capital expenditures, the level of our production, and other factors related to the uncertainties of the industry and global economies. If we fail to manage our contractions successfully we may draw down our cash reserves, which would adversely affect our operating results and financial condition, reduce our value and possibly impinge our ability to raise debt and equity funding in the future, at a time when we might be required to raise additional cash. Accordingly, there can be no assurance that

events in the future will not require us to seek additional capital or, if required, that such capital would be available on terms acceptable to us, if at all. As part of our effort to reduce costs, we may lose key staff, production resources and technology that we will need to replenish when end markets recover. These events could reduce our ability to grow profitably as markets recover.

If we are not able to fund our capital commitments to expand our facilities in China, our business and operating results may be adversely affected.

We and one of our joint ventures expect to invest up to approximately \$17.5 million in capital projects at our China facilities, including the second manufacturing facility in Tianjin, in 2012 and 2013 to expand our manufacturing capabilities to optimize the utilization of our resources. If we are unable to fund these projects due to an unexpected decrease in our cash reserves or an inability to raise additional funds, our business and operating results may be materially adversely impacted.



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Unpredictable fluctuations in our operating results could disappoint analysts or our investors, which could cause our stock price to decline.

We have experienced and may continue to experience significant fluctuations in our revenue and earnings. Our quarterly and annual revenue and operating results have varied significantly in the past and may vary significantly in the future due to a number of factors, including:

our ability to develop, manufacture and deliver high quality products in a timely and cost-effective manner;

decline in general economic conditions or downturns in the industry in which we compete;

fluctuations in demand for our products;

expansion of our manufacturing capacity;

expansion of our operations in China;

limited availability and increased cost of raw materials;

the volume and timing of orders from our customers, and cancellations, push-outs and delays of customer orders once made;

fluctuation of our manufacturing yields;

decreases in the prices of our or our competitors' products;

costs incurred in connection with any future acquisitions of businesses or technologies; and

increases in our expenses, including expenses for research and development.

Due to these factors, we believe that period-to-period comparisons of our operating results may not be meaningful indicators of our future performance.

A substantial percentage of our operating expenses are fixed in the short term, and we may be unable to adjust spending to compensate for an unexpected shortfall in revenue. As a result, any delay in generating revenue could cause our operating results to be below the expectations of market analysts or investors, which could also cause our stock price to fall.

If our operating results and financial performance do not meet the guidance that we have provided to the public, our stock price may decline.

We provide public guidance on our expected operating and financial results for future periods. Although we believe that this guidance provides our stockholders, investors and analysts with a better understanding of our expectations for the future, such guidance is comprised of forward-looking statements subject to the risks and uncertainties described in this report and in our other public filings and public statements. Our actual results may not meet the guidance we have provided. If our operating or financial results do not meet our guidance or the expectations of investment analysts, our stock price may decline.

We have adopted certain anti-takeover measures that may make it more difficult for a third party to acquire us.

Our board of directors has the authority to issue up to 2,000,000 shares of preferred stock and to determine the price, rights, preferences and privileges of those shares without any further vote or action by the stockholders. The rights of the holders of common stock will be subject to, and may be adversely affected by, the rights of the holders of any preferred stock that may be issued in the future. The issuance of shares of preferred stock could have the effect of making it more difficult for a third party to acquire a majority of our outstanding voting stock. We have no present intention to issue additional shares of preferred stock.

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Provisions in our amended and restated certificate of incorporation and amended and restated bylaws may have the effect of delaying or preventing a merger, acquisition or change of control, or changes in our management, which could adversely affect the market price of our common stock. The following are some examples of these provisions:

the division of our board of directors into three separate classes, each with three-year terms;

the right of our board to elect a director to fill a space created by a board vacancy or the expansion of the board;

the ability of our board to alter our amended and restated bylaws; and

the requirement that only our board or the holders of at least 10% of our outstanding shares may call a special meeting of our stockholders.

Furthermore, because we are incorporated in Delaware, we are subject to the provisions of Section 203 of the Delaware General Corporation Law. These provisions prohibit us from engaging in any business combination with any interested stockholder (a stockholder who owns 15% or more of our outstanding voting stock) for a period of three years following the time that such stockholder became an interested stockholder, unless:

66 $\frac{2}{3}$ % of the shares of voting stock not owned by the interested stockholder approve the merger or combination, or

the board of directors approves the merger or combination or the transaction which resulted in the stockholder becoming an interested stockholder.

Our common stock may be delisted from The Nasdaq Global Select Market, which could negatively impact the price of our common stock and our ability to access the capital markets.

Our common stock is listed on The Nasdaq Global Select Market. The bid price of our common stock has in the past closed below the \$1.00 minimum per share bid price required for continued inclusion on The Nasdaq Global Select Market under Marketplace Rule 5450(a). If the bid price of our common stock remains below \$1.00 per share for thirty consecutive business days, we could be subject to delisting from the Nasdaq Global Select Market.

Any delisting from The Nasdaq Global Select Market could have an adverse effect on our business and on the trading of our common stock. If a delisting of our common stock were to occur, our common stock would trade on the OTC Bulletin Board or on the “pink sheets” maintained by the National Quotation Bureau, Inc. Such alternatives are generally considered to be less efficient markets, and our stock price, as well as the liquidity of our common stock, may be adversely impacted as a result. Delisting from The Nasdaq Global Select Market could also have other negative results, including the potential loss of confidence by suppliers and employees, the loss of institutional investor interest and fewer business development opportunities, as well as the loss of liquidity for our stockholders.

Risks Related to Our Intellectual Property

Intellectual property infringement claims may be costly to resolve and could divert management attention.

Other companies may hold or obtain patents on inventions or may otherwise claim proprietary rights to technology necessary to our business. The markets in which we compete are comprised of competitors that in some cases hold substantial patent portfolios covering aspects of products that could be similar to ours. We could become subject to claims that we are infringing patent, trademark, copyright or other proprietary rights of others. For example, we have

in the past been involved in lawsuits alleging patent infringement, and could in the future be involved in similar litigation.

If we are unable to protect our intellectual property, we may lose valuable assets or incur costly litigation.

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. However, we believe that, due to the rapid pace of technological innovation in the markets for our products, our ability to establish and maintain a position of technology leadership also depends on the skills of our development personnel. Despite our efforts to protect our intellectual property, third parties can develop products or processes similar to ours. Our means of protecting our proprietary rights may not be adequate, and our competitors may independently develop similar technology, duplicate our products or design around our patents. We believe that at least two of our competitors have begun to ship GaAs substrates produced using a process similar to our VGF technique. Our competitors may also develop and patent improvements to the VGF technology upon which we rely, and thus may limit any exclusivity we enjoy by virtue of our patents or trade secrets.

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It is possible that pending or future United States or foreign patent applications made by us will not be approved, that our issued patents will not protect our intellectual property, or that third parties will challenge our ownership rights or the validity of our patents. In addition, the laws of some foreign countries may not protect our proprietary rights to as great an extent as do the laws of the United States and it may be more difficult to monitor the use of our intellectual property. Our competitors may be able to legitimately ascertain non-patented proprietary technology embedded in our systems. If this occurs, we may not be able to prevent the development of technology substantially similar to ours.

We may have to resort to costly litigation to enforce our intellectual property rights, to protect our trade secrets or know-how or to determine their scope, validity or enforceability. Enforcing or defending our proprietary technology is expensive, could cause us to divert resources and may not prove successful. Our protective measures may prove inadequate to protect our proprietary rights, and if we fail to enforce or protect our rights, we could lose valuable assets.

### Risks Related to Compliance and Other Legal Matters

We need to continue to improve or implement our systems, procedures and controls.

The shift of our manufacturing operations to China and growth of our business has placed and continues to place a significant strain on our operations and management resources. We have upgraded our inventory control systems, but continue to rely on certain manual processes in our operations and in connection with consolidation of our financial results. If we fail to manage a transition from manual processes to automated processes effectively, our operations may be disrupted.

To manage our business effectively, we may need to implement additional and improved management information systems, further develop our operating, administrative, financial and accounting systems and controls, add experienced senior level managers, and maintain close coordination among our executive, engineering, accounting, marketing, sales and operations organizations.

We are subject to internal control evaluations and attestation requirements of Section 404 of the Sarbanes-Oxley Act.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we must include in our Annual Report on Form 10-K a report of management on the effectiveness of our internal control over financial reporting. Ongoing compliance with this requirement is complex, costly and time-consuming. If: (1) we fail to maintain effective internal control over financial reporting; or (2) our management does not timely assess the adequacy of such internal control, we could be subject to regulatory sanctions and the public's perception of us may be adversely impacted.

If we fail to comply with environmental and safety regulations, we may be subject to significant fines or forced to cease our operations; in addition, we could be subject to suits for personal injuries caused by hazardous materials.

We are subject to federal, state and local environmental and safety laws and regulations in all of our operating locations, including laws and regulations of China, such as laws and regulations related to the development, manufacture and use of our products, the operation of our facilities, and the use of our real property. These laws and regulations govern the use, storage, discharge and disposal of hazardous chemicals during manufacturing, research and development, and sales demonstrations. If we fail to comply with applicable regulations, we could be subject to substantial liability for clean-up efforts, personal injury and fines or suspension or be forced to cease our operations, and/or suspend or terminate the development, manufacture or use of certain of our products, the use of our facilities, or the use of our real property, each of which could have a material adverse effect on our business, financial condition and results of operations.

We have in the past been the subject of claims made by the California Occupational Safety and Health Administration in an investigation primarily regarding impermissible levels of potentially hazardous materials in certain areas of our manufacturing facility in Fremont, California. We were also previously the target of press allegations and correspondence purportedly on behalf of current and/or former employees concerning our environmental compliance programs and exposure of our employees to hazardous materials in California. In addition, a complaint was previously filed against us and two current officers, alleging personal injury, general negligence, intentional tort, wage loss and other damages, including punitive damages, as a result of exposure of plaintiffs to high levels of gallium arsenide in gallium arsenide wafers, and methanol. Other current and/or former employees could bring litigation against us in the future. Although we have put in place engineering, administrative and personnel protective equipment programs to address these issues, our ability to expand or continue to operate our present locations could be restricted or we could be required to acquire costly remediation equipment or incur other significant expenses if we were found liable for failure to comply with environmental and safety regulations. Existing or future changes in laws or regulations in the United States and China may require us to incur significant expenditures or liabilities, or may restrict our operations. In addition, our employees could be exposed to chemicals or other hazardous materials at our facilities and we may be subject to lawsuits seeking damages for wrongful death or personal injuries allegedly caused by exposure to chemicals or hazardous materials at our facilities.

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Litigation is inherently uncertain and while we would expect to defend ourselves vigorously, it is possible that our business, financial condition, results of operations or cash flows could be affected in any particular period by litigation pending and any additional litigation brought against us. In addition, future litigation could divert management's attention from our business and operations, causing our business and financial results to suffer. We could incur defense or settlement costs in excess of the insurance covering these litigation matters, or that could result in significant judgments against us or cause us to incur costly settlements, in excess of our insurance limits.

Item 1B. Unresolved Staff Comments

None.

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## Item 2. Properties

Our principal properties as of February 28, 2012 are as follows:

Location	Square Feet	Principal Use	Ownership
Fremont, CA	27,760	Administration	Operating lease, expires November 2015
Beijing, China	33,000	Production	Owned
Beijing, China	34,000	Production	Owned
Beijing, China	48,000	Production	Owned
Beijing, China	22,000	Production and Administration	Owned
Beijing, China	53,000	Production	Owned
Xianxi, China	56,500	Production	Owned by Beijing Ji Ya Semiconductor Material, Co., Ltd.*
Xianxi, China	7,500	Administration	Owned by Beijing Ji Ya Semiconductor Material, Co., Ltd.*
Beijing, China	2,000	Administration	Operating lease by Beijing Ji Ya Semiconductor Material, Co., Ltd., expires February 2014
Nanjing, China	22,000	Production	Owned by Nanjing Jin Mei Gallium Co., Ltd.*
Nanjing, China	5,700	R&D and Administration	Owned by Nanjing Jin Mei Gallium Co., Ltd.*
Nanjing, China	3,900	Production	Owned by Nanjing Jin Mei Gallium Co., Ltd.*
Beijing, China	7,600	Production and Administration	Operating leases by Bo Yu Semiconductor Vessel Craftwork Technology Co., Ltd., expire in various terms until March 2014

\*Joint ventures in which we hold an interest. We hold a 46% interest in Beijing Ji Ya Semiconductor Material Co., Ltd., a 83% interest in Nanjing Jin Mei Gallium Co., Ltd., and a 70% interest in Beijing BoYu Semiconductor Vessel Craftwork Technology Co., Ltd.

We consider each facility to be in good operating condition and adequate for its present use, and believe that each facility has sufficient plant capacity to meet its current and anticipated operating requirements.

## Item 3. Legal Proceedings

From time to time we may be involved in judicial or administrative proceedings concerning matters arising in the ordinary course of business. We do not expect that any of these matters, individually or in the aggregate, will have a material adverse effect on our business, financial condition, cash flows or results of operation.

## Item 4. Mine Safety Disclosures

Not applicable.





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## PART II

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

Our common stock has been trading publicly on the NASDAQ Global Market (NASDAQ) under the symbol “AXTI” since May 20, 1998, the date we consummated our initial public offering, and beginning on January 3, 2011, our common stock began trading on the NASDAQ Global Select Market under the same symbol. The following table sets forth the range of high and low sales prices of the common stock for the periods indicated, as reported by NASDAQ.

	High	Low
2011		
First Quarter	\$12.23	\$5.65
Second Quarter	\$8.90	\$5.85
Third Quarter	\$9.24	\$4.98
Fourth Quarter	\$5.97	\$3.63
2010		
First Quarter	\$3.84	\$2.65
Second Quarter	\$5.20	\$3.17
Third Quarter	\$7.03	\$4.05
Fourth Quarter	\$10.74	\$6.26

As of December 31, 2011, there were 77 holders of record of our common stock. Because many shares of AXT’s common stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of beneficial owners of our common stock.

We have never paid or declared any cash dividends on our common stock and do not anticipate paying cash dividends in the foreseeable future. Dividends accrue on our outstanding Series A preferred stock at the rate of \$0.20 per annum per share of Series A preferred stock. The 883,000 shares of \$0.001 par value Series A preferred stock issued and outstanding as of December 31, 2011 and 2010, respectively, valued at \$3,532,000 are non-voting and non-convertible preferred stock with a 5.0% cumulative annual dividend rate payable when declared by the board of directors, and \$4 per share liquidation preference over common stock, and must be paid before any distribution is made to common stockholders. These preferred shares were issued to Lyte Optronics, Inc. stockholders in connection with the completion of our acquisition of Lyte Optronics, Inc. on May 28, 1999.

## Issuer Purchases of Equity Securities

During the years ended December 31, 2011 and 2010, we did not repurchase any shares of our common stock.

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## Comparison of Stockholder Return

Set forth below is a line graph comparing the annual percentage change in the cumulative total return to the stockholders of the Company on our common stock with the CRSP Total Return Index for the Nasdaq Stock Market (U.S. Companies) and the Nasdaq Electronic Components Index for the period commencing December 31, 2006, and ending December 31, 2011.

	12/06	12/07	12/08	12/09	12/10	12/11
AXT, Inc.	\$ 100.00	\$ 131.36	\$ 28.60	\$ 68.86	\$ 221.19	\$ 88.35
NASDAQ Composite	\$ 100.00	\$ 110.26	\$ 65.65	\$ 95.19	\$ 112.10	\$ 110.81
NASDAQ Electronic Components	\$ 100.00	\$ 117.33	\$ 60.16	\$ 96.77	\$ 110.84	\$ 99.75

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## Item 6. Selected Consolidated Financial Data

The following selected consolidated financial data is derived from and should be read in conjunction with our consolidated financial statements and related notes set forth in Item 8 below, and in our previously filed reports on Form 10-K. See also Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” for further information relating to items reflecting our results of operations and financial condition.

	Years Ended December 31,				
	2011	2010	2009	2008	2007
	(in thousands, except per share data)				
Statements of Operations Data:					
Revenue	\$104,121	\$95,493	\$55,364	\$73,075	\$58,203
Cost of revenue	59,339	58,998	41,495	55,115	37,942
Gross profit	44,782	36,495	13,869	17,960	20,261
Operating expenses:					
Selling, general, and administrative	14,836	13,972	13,389	15,751	13,746
Research and development	2,473	2,339	1,569	2,164	1,699
Impairment (recovery of impairment) on assets held for sale	—	—	—	83	(481)
Restructuring charge	—	—	507	—	—
Total operating expenses	17,309	16,311	15,465	17,998	14,964
Income (loss) from operations	27,473	20,184	(1,596)	(38)	5,297
Interest income, net	449	53	177	513	704
Other income, net	696	2,462	385	1,290	1,912
Income (loss) before provision for income taxes	28,618	22,699	(1,034)	1,765	7,913
Provision for income taxes	2,795	2,323	471	1,023	728
Net income (loss)	25,823	20,376	(1,505)	742	7,185
Less: Net income attributable to noncontrolling interest					
	5,503	1,723	393	1,431	1,896
Net income (loss) attributable to AXT, Inc.	\$20,320	\$18,653	\$(1,898)	\$(689)	\$5,289
Net income (loss) attributable to AXT, Inc. per common share:					
Basic	\$0.63	\$0.60	\$(0.07)	\$(0.03)	\$0.17
Diluted	\$0.61	\$0.57	\$(0.07)	\$(0.03)	\$0.16
Shares used in per share calculations:					
Basic	31,872	31,008	30,500	30,400	30,035
Diluted	33,061	32,512	30,500	30,400	31,348

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	2011	2010	December 31, 2009 (in thousands)	2008	2007
Balance Sheet Data:					
Cash and cash equivalents	\$26,156	\$23,724	\$16,934	\$13,566	\$18,380
Investments	14,486	17,251	18,469	17,756	20,825
Working capital	92,220	82,116	70,681	66,836	75,350
Restricted deposits	—	—	—	3,013	6,700
Total assets	162,488	140,251	107,946	111,662	112,772
Long-term debt, net of current portion	—	—	420	496	6,250
Stockholders' equity	147,049	119,804	97,251	96,876	96,986

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

In addition to historical information, the following discussion contains forward-looking statements that are subject to risks and uncertainties. Actual results may differ substantially from those referred to herein due to a number of factors, including but not limited to risks described in the section entitled Item 1A. "Risk Factors" and elsewhere in this Annual Report. This discussion should be read in conjunction with Item 6. "Selected Consolidated Financial Data" and our consolidated financial statements and related notes included elsewhere in this Form 10-K.

## Critical Accounting Policies and Estimates

We prepare our consolidated financial statements in accordance with accounting principles generally accepted in the United States of America. Accordingly, we make estimates, assumptions and judgments that affect the amounts reported on our consolidated financial statements. These estimates, assumptions and judgments about future events and their effects on our results cannot be determined with certainty, and are made based upon our historical experience and on other assumptions that are believed to be reasonable under the circumstances. These estimates may change as new events occur or additional information is obtained, and we may periodically be faced with uncertainties, the outcomes of which are not within our control and may not be known for a prolonged period of time.

We have identified the policies below as critical to our business operations and understanding of our financial condition and results of operations. A critical accounting policy is one that is both material to the presentation of our consolidated financial statements and requires us to make difficult, subjective or complex judgments that could have a material impact on our consolidated financial statements and results of operations. Different estimates that we could have used, or changes in the estimates that are reasonably likely to occur, may have a material impact on our financial condition or results of operations. We also refer you to our "The Company and Summary of Significant Accounting Policies" discussed in the accompanying notes to our consolidated financial statements included elsewhere in this Form 10-K.

## Revenue Recognition

We manufacture and sell high-performance compound semiconductor substrates and sell certain raw materials including gallium, germanium dioxide, and pBN crucibles. After we ship our products, there are no remaining obligations or customer acceptance requirements that would preclude revenue recognition. Our products are typically sold pursuant to a purchase order placed by our customers, and our terms and conditions of sale do not require customer acceptance. We recognize revenue upon shipment and transfer of title of products to our customers, which is either upon shipment from our dock, receipt at the customer's dock, or removal from consignment inventory at the customer's location, provided that we have received a signed purchase order, the price is fixed or determinable, title and risk of ownership have transferred, collection of resulting receivables is probable, and product returns are

reasonably estimable. We do not provide training, installation or commissioning services.

We provide for future returns based on historical experience, current economic trends and changes in customer demand at the time revenue is recognized.

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### Accounts Receivable and Allowance for Doubtful Accounts

We periodically review the likelihood of collection on our accounts receivable balances and provide an allowance for doubtful accounts receivable primarily based upon the age of these accounts. We evaluate receivables from U.S. customers in excess of 90 days and for receivables from customers located outside the U.S. in excess of 120 days and reserve allowance on the receivable balances if needed. We assess the probability of collection based on a number of factors, including the length of time a receivable balance has been outstanding, our past history with the customer and their creditworthiness.

As of December 31, 2011, our accounts receivable balance was \$18.0 million with no allowance for doubtful accounts. During 2011, we decreased our allowance for doubtful accounts by \$99,000 compared to the amount as of December 31, 2010 primarily for improved collections worldwide. As of December 31, 2010, our accounts receivable balance was \$23.1 million, which was net of an allowance for doubtful accounts of \$99,000. During 2010, we decreased our allowance for doubtful accounts by \$64,000 compared to the amount as of December 31, 2009 primarily for improved collections worldwide. As of December 31, 2009, our accounts receivable balance was \$15.4 million, which was net of an allowance for doubtful accounts of \$163,000. During 2009, we decreased our allowance by \$367,000 compared to the amount as of December 31, 2008 primarily for improved collections from slow-paying customers in Asia. If actual uncollectible accounts differ substantially from our estimates, revisions to the estimated allowance for doubtful accounts would be required, which could have a material impact on our financial results for the period.

The allowance for sales returns is also deducted from gross accounts receivable. During 2011, we utilized \$367,000 and charged an additional \$29,000 resulting in the allowance for sales returns of \$124,000 as of December 31, 2011. During 2010, we utilized \$703,000 and charged an additional \$309,000 resulting in the allowance for sales returns of \$462,000 as of December 31, 2010. During 2009, we utilized \$119,000 and charged an additional \$842,000 resulting in the allowance for sales returns of \$856,000 as of December 31, 2009.

### Warranty Reserve

We maintain a warranty reserve based upon our claims experience during the prior twelve months. Warranty costs are accrued at the time revenue is recognized. As of December 31, 2011 and 2010, accrued product warranties totaled \$1.0 million and \$740,000, respectively. The increase in accrued product warranties is primarily attributable to increased claims for quality issues experienced by some customers. If actual warranty costs differ substantially from our estimates, revisions to the estimated warranty liability would be required, which could have a material impact on our financial condition and results of operations.

### Inventory Valuation

Inventories are stated at the lower of cost or market. Cost is determined using the weighted average cost method. Our inventory consists of raw materials as well as finished goods and work-in-process that include material, labor and manufacturing overhead costs. Given the nature of our substrate products, and the materials used in the manufacturing process, the wafers and ingots comprising work-in-process may be held in inventory for up to two years and three years, respectively, as the risk of obsolescence for these materials is low. We routinely evaluate the levels of our inventory in light of current market conditions in order to identify excess and obsolete inventory and provide a valuation allowance for certain inventories based upon the age and quality of the product and the projections for sale of the completed products. As of December 31, 2011 and 2010, we had an inventory reserve of \$12.3 million and \$11.5 million, respectively, for excess and obsolete inventory. If actual demand for our products were to be substantially lower than estimated, additional inventory adjustments for excess or obsolete inventory might be required, which could have a material impact on our business, financial condition and results of operations.

### Impairment of Investments

We classify our investments in debt and equity securities as available-for-sale securities in accordance with ASC topic 320, Investments—Debt and Equity Securities (“ASC 320”). All available-for-sale securities with a quoted market value below cost (or adjusted cost) are reviewed in order to determine whether the decline is other-than-temporary. Factors considered in determining whether a loss is temporary include the magnitude of the decline in market value, the length of time the market value has been below cost (or adjusted cost), credit quality, and our ability and intent to hold the securities for a period of time sufficient to allow for any anticipated recovery in market value.



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We invest in equity instruments of privately-held companies for business and strategic purposes. These investments are classified as other assets and are accounted for under the cost method as we do not have the ability to exercise significant influence over their operations. We monitor our investments for impairment and record reductions in carrying value when events or changes in circumstances indicate that the carrying value may not be recoverable. Determination of impairment is highly subjective and is based on a number of factors, including an assessment of the strength of investee's management, the length of time and extent to which the fair value has been less than our cost basis, the financial condition and near-term prospects of the investee, fundamental changes to the business prospects of the investee, share prices of subsequent offerings, and our intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in our carrying value. We had no write-downs in 2011, 2010 or 2009.

### Fair Value of Investments

In the current market environment, the assessment of the fair value of investment instruments can be difficult and subjective. Although the volume of trading activity of certain investment instruments has increased in 2011, the rapid changes occurring in today's financial markets may lead to changes in the fair value of financial instruments in relatively short periods of time. ASC 820 establishes three levels of inputs that may be used to measure fair value.

Level 1 instruments represent quoted prices in active markets. Therefore, determining fair value for Level 1 instruments does not require significant management judgment, and the estimation is not difficult.

Level 2 instruments include observable inputs other than Level 1 prices, such as quoted prices for identical instruments in markets with insufficient volume or infrequent transactions (less active markets), issuer credit ratings, non-binding market consensus prices that can be corroborated with observable market data, model-derived valuations in which all significant inputs are observable or can be derived principally from or corroborated with observable market data for substantially the full term of the assets or liabilities, or quoted prices for similar assets or liabilities. These Level 2 instruments require more management judgment and subjectivity compared to Level 1 instruments, including:

Determining which instruments are most similar to the instrument being priced requires management to identify a sample of similar securities based on the coupon rates, maturity, issuer, credit rating, and instrument type, and subjectively select an individual security or multiple securities that are deemed most similar to the security being priced.

Determining whether a market is considered active requires management judgment. Our assessment of an active market for our marketable debt instruments generally takes into consideration activity during each week of the one-month period prior to the valuation date of each individual instrument, including the number of days each individual instrument trades and the average weekly trading volume in relation to the total outstanding amount of the issued instrument.

Determining which model-derived valuations to use in determining fair value requires management judgment. When observable market prices for identical securities or similar securities are not available, we price our marketable debt instruments using non-binding market consensus prices that are corroborated with observable market data or pricing models, such as discounted cash flow models, with all significant inputs derived from or corroborated with observable market data.

Level 3 instruments include unobservable inputs to the valuation methodology that are significant to the measurement of fair value of assets or liabilities. The determination of fair value for Level 3 instruments requires the most management judgment and subjectivity. As of December 31, 2011, we did not have any assets or liabilities without

observable market values that would require a high level of judgment to determine fair value (Level 3 assets).

#### Impairment of Long-Lived Assets

We evaluate the recoverability of property, equipment and intangible assets in accordance with ASC topic 360, Property, Plant and Equipment (“ASC 360”). When events and circumstances indicate that long-lived assets may be impaired, we compare the carrying value of the long-lived assets to the projection of future undiscounted cash flows attributable to such assets. In the event that the carrying value exceeds the future undiscounted cash flows, we record an impairment charge against income equal to the excess of the carrying value over the asset’s fair value. Fair values are determined based on quoted market values, discounted cash flows or internal and external appraisals, as applicable. Assets held for sale are carried at the lower of carrying value or estimated net realizable value. We had no “Assets held for sale” on the consolidated balance sheet as of December 31, 2011 and 2010.

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### Stock Based Compensation

We grant options to substantially all management employees and believe that this program helps us to attract, motivate and retain high quality employees, to the ultimate benefit of our stockholders. We account for stock-based compensation in accordance with the provisions of FASB Accounting Standards Codification (“ASC”) topic 718, Stock-based Compensation (“ASC 718”), using the modified prospective method.

We utilize the Black-Scholes option pricing model to estimate the grant date fair value of employee stock compensation awards, which requires the input of highly subjective assumptions, including expected volatility and expected term. Historical volatility was used in estimating the fair value of our stock options awards, while the expected term for our options was estimated based on historical option exercise behavior and post-vesting forfeitures of options by our employees. Further, we estimate forfeitures for stock compensation awards that are not expected to vest. Changes in these inputs and assumptions can materially affect the measure of estimated fair value of our stock compensation.

We recognize the compensation costs net of an estimated forfeiture rate over the requisite service period of the options award, which is generally the vesting term of four years. The cost of restricted stock awards is determined using the fair value of our common stock on the date of grant. Compensation expense for restricted stock awards is recognized over the vesting period, which is generally three years or four years. Stock-based compensation expense is recorded in cost of revenue, research and development, and selling, general and administrative expenses. (see Note 1—Summary of Significant Accounting Policies—Stock-Based Compensation). All of our stock compensation is accounted for as an equity instrument.

### Income Taxes

We account for income taxes in accordance with ASC topic 740, Income Taxes (“ASC 740”) which requires that deferred tax assets and liabilities be recognized using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities. ASC 740 also requires that deferred tax assets be reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized.

We provide for income taxes based upon the geographic composition of worldwide earnings and tax regulations governing each region, particularly China. The calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws, particularly in foreign countries such as China.

See Note 13—“Income Taxes” in the consolidated financial statements for additional information.

### Results of Operations

#### Overview

We were founded in 1986 to commercialize and enhance our proprietary vertical gradient freeze (VGF) technique for producing high-performance compound semiconductor substrates. We have one operating segment: our substrate business, with limited additional raw materials sales. We recorded our first substrate sales in 1990 and our substrate division currently sells gallium arsenide (GaAs), indium phosphide (InP) and germanium (Ge) substrates to manufacturers of semiconductor devices for use in applications such as fiber optic and wireless telecommunications, light emitting diodes (LEDs), lasers and for solar cells for space and terrestrial photovoltaic applications. We also sell raw materials including gallium and germanium through our participation in majority- and minority-owned joint ventures. During 2011, we continued to qualify our germanium substrates with satellite and terrestrial solar cell system manufacturers in the United States, Europe, Asia and the Middle East.

## Continuing Operations

We manufacture all of our semiconductor substrates using our proprietary vertical gradient freeze (VGF) technology. Most of our revenue is from sales of GaAs substrates. We manufacture all of our products in the People's Republic of China (PRC or China), which generally has favorable costs for facilities and labor compared to comparable facilities in the United States or Europe. We also have joint ventures in China that provide us favorable pricing, reliable supply and shorter lead-times for raw materials central to our final manufactured products.

Our business and operating results depend in significant part upon capital expenditures of semiconductor designers and manufacturers, which in turn depend upon the current and anticipated market demand for products incorporating semiconductors from these designers and manufacturers. Our business also depends in part on worldwide economic conditions. During 2011, the United States and other key international economies continued to recover from the recent economic downturn and our business has grown as a whole. Although we experienced some fluctuation in the customer demand for the GaAs substrates that are used for end-products in the wireless market, our revenues have grown in all other substrates including semi-conducting GaAs substrate, InP substrate and Ge substrate. These results reflect both strong growth in our markets as well as continued share gains and improved operational execution across our entire organization. Should the worldwide economic conditions continue to recover and customer demand becomes stable, we believe that we are well positioned to leverage our PRC-based manufacturing capabilities and access to favorably priced raw materials to increase our market share.

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## Revenue

(\$ in thousands)	Years Ended Dec. 31,			2010 to 2011		2009 to 2010	
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change
GaAs	\$63,697	\$67,591	\$41,054	\$(3,894)	(5.8)%	\$26,537	64.6%
InP	5,182	4,038	2,375	1,144	28.3	1,663	70.0
Ge	11,635	8,955	5,440	2,680	29.9	3,515	64.6
Raw Materials	23,606	14,884	6,440	8,722	58.6	8,444	131.1
Other	1	25	55	(24)	(96.0)	(30)	(54.5)
Total revenue	\$104,121	\$95,493	\$55,364	\$8,628	9.0%	\$40,129	72.5%

Revenue increased by \$8.6 million or 9.0%, to \$104.1 million in 2011 from \$95.5 million in 2010. Total GaAs substrate revenue decreased \$3.9 million, or 5.8%, to \$63.7 million in 2011 from \$67.6 million in 2010. The decrease in revenue was primarily due to reduced orders from a few big customers as demand fell in the wireless market.

Sales of 5 inch and 6 inch diameter GaAs substrates, which are mainly used in wireless devices, decreased by \$7.1 million to \$20.7 million in 2011 compared to \$27.8 million in 2010 primarily due to reduced orders from a few big customers as demand fell in the wireless market.

Sales of 2 inch, 3 inch and 4 inch diameter GaAs substrates, which are mainly used in LED applications, increased by \$3.2 million to \$43.0 million in 2011 compared to \$39.8 million in 2010 primarily due to increased worldwide adoption and investment in LED technology in many applications in 2011 compared to the prior year.

Revenue increased by \$40.1 million or 72.5%, to \$95.5 million in 2010 from \$55.4 million in 2009. Total GaAs substrate revenue increased \$26.5 million, or 64.6%, to \$67.6 million in 2010 from \$41.1 million in 2009. The increase in revenue was primarily due to the stronger demand environment worldwide in 2010 compared to 2009, particularly for our GaAs product. Sales of 5 inch and 6 inch diameter GaAs substrates, which are mainly used in wireless devices, increased by \$10.6 million to \$27.8 million in 2010 compared to \$17.2 million in 2009 primarily due to strong sales of wireless devices. Sales of 2 inch, 3 inch and 4 inch diameter GaAs substrates, which are mainly used in LED applications, increased by \$15.9 million to \$39.8 million in 2010 compared to \$23.9 million in 2009 primarily due to strong sales of wireless devices as well as the increasing worldwide adoption and investment in LED technology in many applications, compared to the worldwide economic slowdown we experienced in the prior year.

InP substrate revenue increased by \$1.1 million, or 28.3%, to \$5.2 million in 2011 compared to \$4.0 million in 2010 as demand from customers in the optical networking industry increased. We continued to see renewed demand for these substrates as investment in high-speed optical communications increased worldwide. InP substrate revenue increased by \$1.7 million, or 70.0%, to \$4.0 million in 2010 compared to \$2.4 million in 2009 as demand from customers in the optical networking industry increased.

Ge substrate revenue increased by \$2.7 million, or 29.9%, to \$11.6 million in 2011 from \$9.0 million in 2010. Our Ge substrate revenue increased as demand from our customers increased for satellite applications and for concentrated photovoltaic solar applications. We continued to make progress in our penetration of the solar cell market, particularly in satellite applications. Ge substrate revenue increased by \$3.5 million, or 64.6%, to \$9.0 million in 2010 from \$5.4 million in 2009. Our Ge substrate revenue increased primarily due to demand increased for concentrated photovoltaic solar applications from our German and Chinese customers.



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Raw materials revenue increased by \$8.7 million, or 58.6%, to \$23.6 million in 2011 from \$14.9 million in 2010 primarily as a result of increased demand from our new and existing customers for 4N raw gallium, as well as from increased selling prices. However, the selling price of gallium has begun to stabilize and we expect that this will affect our raw material revenue in future years. Raw materials revenue increased by \$8.4 million, or 131.1%, to \$14.9 million in 2010 from \$6.4 million in 2009 as a result of increased demand of 4N raw gallium.

Our raw materials business has increasingly become an important part of our business, as it provides us protection against raw materials pricing increases and supply constraints. Since we are able to supply raw materials necessary for the production of our substrates at favorable prices, our ability to sell such materials in the open market, at market prices, also provides us with pricing protection. We expect to continue to expand our raw materials sales efforts. However, the selling price of gallium has begun to stabilize and we expect that this will affect our raw material revenue in future years.

## Revenue by Geographic Region

(\$ in thousands)	Years Ended Dec. 31,						2010 to 2011		2009 to 2010	
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change			
North America*	\$20,471	\$20,739	\$10,701	\$ (268)	(1.3)%	\$10,038	93.8%			
% of total revenue	20%	22%	19%							
Europe	21,082	18,838	10,489	2,244	11.9%	8,349	79.6%			
% of total revenue	20%	20%	19%							
Japan	13,749	11,857	7,777	1,892	16.0%	4,080	52.5%			
% of total revenue	13%	12%	14%							
Taiwan	9,813	14,834	10,453	(5,021)	(33.8)%	4,381	41.9%			
% of total revenue	9%	15%	19%							
Asia Pacific (excluding Japan and Taiwan)	39,006	29,225	15,944	9,781	33.5%	13,281	83.3%			
% of total revenue	38%	31%	29%							
Total revenue	\$104,121	\$95,493	\$55,364	\$8,628	9.0%	\$40,129	72.5%			

\* Primarily the United States.

Sales to customers located outside of North America represented approximately 80%, 78%, and 81% of our revenue during 2011, 2010 and 2009, respectively.

Revenue from customers located in North America decreased by \$268,000, or 1.3%, to \$20.5 million in 2011 from \$20.7 million in 2010. This decrease in 2011 was due to a decrease in the demand for GaAs substrates of \$1.9 million, reflecting the slower demand in the wireless market, offset by an increase in the demand for raw materials of \$935,000 primarily from 4N raw gallium and an increase in the demand for InP substrates of \$637,000 used in the optical networking industry. Revenue from customers located in North America increased by \$10.0 million, or 93.8%, to \$20.7 million in 2010 from \$10.7 million in 2009. This increase in 2010 was due to an increase in the demand for

substrates of \$9.2 million and an increase in the demand for raw materials of \$837,000 due to the stronger demand environment compared to the economic slowdown we experienced in the prior year.

Revenue from customers located in Europe increased by \$2.2 million, or 11.9%, to \$21.1 million in 2011 from \$18.8 million in 2010. This increase was mainly from increased sales of \$2.8 million primarily of GaAs substrates, Ge substrates and 4N raw gallium to customers in Germany, increased sales of \$911,000 primarily of GaAs substrates to customers in the United Kingdom, offset by decreased sales of \$1.7 million primarily of GaAs substrates to customers in France. Revenue from customers located in Europe increased by \$8.3 million, or 79.6%, to \$18.8 million in 2010 from \$10.5 million in 2009. This increase was mainly from increased sales of \$5.6 million primarily of GaAs substrates and Ge substrates to customers in Germany, increased sales of \$1.2 million primarily of GaAs substrates to customers in France and \$1.1 million in raw materials sales to customers in Slovakia.

Revenue from customers located in Japan increased by \$1.9 million, or 16.0%, to \$13.7 million in 2011 from \$11.9 million in 2010. The increase mainly came from increased sales of semi-conducting GaAs substrates of \$3.1 million, increased raw material sales of \$1.5 million and increased sales of Ge substrates of \$246,000, offset by decreased sales of semi-insulating GaAs substrates of \$3.3 million reflecting the slower demand in wireless market. Revenue from customers in Japan increased by \$4.1 million, or 52.5%, to \$11.9 million in 2010 from \$7.8 million in 2009. The increase mainly came from increased sales of substrates of all sizes amounting to \$3.0 million and increased raw material sales of \$960,000.



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Revenue from customers in Taiwan decreased by \$5.0 million, or 33.8%, to \$9.8 million in 2011 from \$14.8 million in 2010. This decrease was mainly from decreased sales of GaAs substrates as demand for both semi-insulating and semi-conducting substrates decreased from a few big customers. Revenue from customers in Taiwan increased by \$4.4 million, or 41.9%, to \$14.8 million in 2010 from \$10.5 million in 2009. This increase was mainly from increased sales of \$3.6 million of GaAs substrates as demand for both semi-insulating and semi-conducting substrates increased.

Revenue from customers in the Asia Pacific (excluding Japan and Taiwan) increased by \$9.8 million, or 33.5%, to \$39.0 million in 2011 from \$29.2 million in 2010. The increase was mainly from increased sales of \$8.7 million to customers in the PRC due to increases primarily in demand for raw materials and all substrates and increased sales of \$1.0 million primarily from GaAs substrates to customers in Singapore and Korea. Revenue from customers in the Asia Pacific (excluding Japan and Taiwan) increased by \$13.3 million, or 83.3%, to \$29.2 million in 2010 from \$15.9 million in 2009. The increase was mainly from increased sales of \$8.1 million to customers in the PRC due to an increase primarily in demand for raw materials and substrates, and increased sales of \$4.4 million primarily from GaAs substrates to customers in Singapore.

## Gross Margin

	Years Ended Dec. 31,			2010 to 2011		2009 to 2010			
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change		
Gross profit	\$44,782	\$36,495	\$13,869	\$8,287	22.7	%	\$22,626	163.1	%
Gross Margin %	43.0	% 38.2	% 25.1						

Gross margin increased to 43.0% of total revenue in 2011 from 38.2% of total revenue in 2010. Sales product mix, and process improvements in production such as longer ingots and first pass yield improvements in ingots, continued to contribute to higher gross margins, as well as raw material sales with higher gross margins due to higher gallium selling prices compared to the prior year. The 2011 quarterly trend of gross margin for the first quarter to the fourth quarter of 43.4%, 46.7%, 43.3% and 36.9%, respectively, demonstrates the high rate of absorption of manufacturing overhead with higher production volume in the earlier quarters of the year. The lower 36.9% gross margin for the fourth quarter was due to the lower rate of absorption of manufacturing overhead as a result of fluctuation of customers' orders in the wireless market towards the end of the year.

Gross margin increased to 38.2% of total revenue in 2010 from 25.1% of total revenue in 2009. Sales product mix, process improvements in production such as longer ingots and first pass yield improvements in wafers, and improved slicing methods contributed to higher gross profit for the year ended December 31, 2010. Our manufacturing facility in Beijing was operating at a higher utilization capacity in 2010 compared to the prior year, which resulted in higher absorption rates. The 2010 quarterly trend of gross margin for the first quarter to the fourth quarter of 36.1%, 36.8%, 39.3% and 39.8%, respectively, demonstrates the high rate of absorption of manufacturing overhead with higher production volume. The lower 25.1% gross margin for the year ended December 31, 2009 was primarily due to the low rate of absorption of manufacturing overhead as a result of reduced sales and hence lower production volume.

## Selling, General and Administrative Expenses

	Years Ended Dec. 31,			2010 to 2011		2009 to 2010			
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change		
	\$14,836	\$13,972	\$13,389	\$864	6.2	%	\$583	4.4	%

Selling, general  
and  
administrative  
expenses

% of total revenue	14.2	%	14.6	%	24.2	%
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Selling, general and administrative expenses increased \$864,000 to \$14.8 million for 2011 compared to \$14.0 million for 2010. The increase was primarily due to (i) \$606,000 higher health insurance costs in China compared to a health insurance refund received in the prior year, (ii) \$363,000 higher labor costs from annual salary increases and increased average headcount, (iii) \$323,000 higher taxes and registration expenses primarily from new business taxes levied on all foreign-owned companies in China., partially offset by (iv) \$517,000 lower selling expenses mainly due to absence of severance cost and personnel cost after the departure of one of the executive officers at the end of 2010. We expect our selling, general administrative expenses may increase in the future with rising costs of doing business in China for increasing labor costs, business taxes and utilities expenses.

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Selling, general and administrative expenses increased \$583,000 to \$14.0 million for 2010 compared to \$13.4 million for 2009. The increase was primarily due to (i) \$1.0 million higher commission and bonus accrual based on improved company performance, (ii) \$346,000 higher accounting fees for the integrated audit including the SOX audit for 2010, which was not required for 2009, (iii) \$283,000 higher legal fees incurred in fourth quarter of 2010 to conclude the royalty negotiation with Sumitomo, partially offset by (iv) \$567,000 lower legal fees as certain legal fees incurred in 2009 did not recur in 2010, and (v) \$376,000 lower severance cost.

## Research and Development Expenses

	Years Ended Dec. 31,			2010 to 2011		2009 to 2010		
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change	
Research and development expenses	\$2,473	\$2,339	\$1,569	\$134	5.7	% \$770	49.1	%
% of total revenue	2.4	% 2.4	% 2.8	%				

Research and development expenses increased \$134,000, or 5.7%, to \$2.5 million for 2011, from \$2.3 million for 2010 primarily due to higher labor costs from increased headcount of our joint ventures in China. We expect our rate of expenditures on research and development costs in 2012 to be stable as our joint ventures continue to maintain their efforts in research and development.

Research and development expenses increased \$770,000, or 49.1%, to \$2.3 million for 2010, from \$1.6 million for 2009 mainly from increases of \$553,000 for costs relating to new product testing primarily from one of our joint ventures to possible qualification for a government incentive program to reduce future tax rates and development of 6" Germanium and increased bonus accrual of \$95,000 due to better company performance.

## Interest Income, Net

	Years Ended Dec. 31,			2010 to 2011		2009 to 2010		
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change	
Interest income, net	\$449	\$53	\$177	\$396	747.2	% \$(124 )	(70.1	)%
% of total revenue	0.4	% 0.1	% 0.3	%				

Interest income, net increased \$396,000 to \$449,000 for 2011 from \$53,000 for 2010 as a result of higher returns from various investment portfolio mixes and the absence of interest expense for the tenant improvement loan at our Fremont, U.S. offices, which was paid in full in September 2010.

Interest income, net decreased \$124,000 to \$53,000 for 2010 from \$177,000 for 2009 as a result of lower returns from various investment portfolio mixes.



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## Other Income, Net and Noncontrolling Interest

	Years Ended Dec. 31,			2010 to 2011		2009 to 2010	
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change
				(\$ in thousands)			
Other income, net	\$696	\$2,462	\$385	\$(1,766)	(71.7)%	\$2,077	539.5%
% of total revenue	0.7%	2.6%	0.7%				
Noncontrolling interest	\$5,503	\$1,723	\$393	\$3,780	219.4%	\$1,330	338.4%
% of total revenue	5.3%	1.8%	0.7%				

Other income, net was \$696,000 for 2011 primarily due to net investment gains of \$741,000 from our minority-owned joint ventures that are not consolidated, a \$319,000 small business development fund received by our joint ventures in China, partially offset by \$316,000 withholding tax on foreign dividends from joint ventures and foreign exchange losses of \$101,000.

Other income, net was \$2.5 million for 2010 primarily due to a \$1.2 million net sales tax refund, a realized gain of \$346,000 on the sale of investments, investment gains of \$259,000 from our minority-owned joint ventures that are not consolidated, foreign exchange gain of \$614,000, partially offset by a \$109,000 tax on foreign dividends from joint ventures.

Minority interest in earnings of consolidated subsidiaries for the years ended December 31, 2011, 2010, and 2009 were \$5.5 million, \$1.7 million, and \$393,000, respectively. The increase in minority interest from 2010 to 2011 was due to improved profitability from all of our majority-owned consolidated subsidiaries which had higher sales worldwide in 2011. The increase in minority interest from 2009 to 2010 was due to improved profitability from all of our majority-owned consolidated subsidiaries which had higher sales worldwide in 2010.

## Provision for Income Taxes

	Years Ended Dec. 31			2010 to 2011		2009 to 2010	
	2011	2010	2009	Increase (Decrease)	% Change	Increase (Decrease)	% Change
				(\$ in thousands)			
Provision for income taxes	\$2,795	\$2,323	\$471	\$472	20.3%	\$1,852	393.2%
% of total revenue	2.7%	2.4%	0.9%				

Provision for income taxes for 2011 was \$2.8 million, which was mostly related to our foreign subsidiaries. The increase in provision for income taxes from 2010 to 2011 was due to increased net income of our foreign subsidiaries as well as higher taxable income for state taxes purpose in the U.S. Besides the state taxes liabilities, no income taxes have been provided for U.S. operations due to our available federal net operating loss carryforwards.

Provision for income taxes for 2010 was \$2.3 million, which was mostly related to our foreign subsidiaries. The increase in provision for income taxes from 2009 to 2010 was due to improved profitability of our foreign subsidiaries.

Provision for income taxes for 2009 was \$471,000, which was mostly related to our foreign subsidiaries.

Due to our uncertainty regarding our future profitability, we recorded a full valuation allowance against our net deferred tax assets of \$49.6 million in 2011, \$53.1 million in 2010 and \$54.7 million in 2009.

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## Liquidity and Capital Resources

	Years Ended December 31,		
	2011	2010	2009
	(\$ in thousands)		
Net cash provided by (used in):			
Operating activities	\$ 18,132	\$ 11,009	\$ 4,665
Investing activities	(15,430 )	(5,272 )	2,365
Financing activities	(999 )	474	(3,692 )
Effect of exchange rate changes	729	579	30
Net change in cash and cash equivalents	2,432	6,790	3,368
Cash and cash equivalents—beginning period	23,724	16,934	13,566
Cash and cash equivalents—end of period	26,156	23,724	16,934
Short and long-term investments—end of period	14,486	17,251	18,469
Total cash, cash equivalents and short-term and long-term investments	\$ 40,642	\$ 40,975	\$ 35,403

We consider cash and cash equivalents, short-term investments and long-term investments as liquid and available for use within two years in our current operations. Short-term investments and long-term investments are comprised of U.S. government securities and investment-grade corporate notes and bonds. As of December 31, 2011, our principal sources of liquidity were \$40.6 million of which \$15.0 million was held by our consolidated joint ventures, consisting of cash and cash equivalents of \$26.2 million, short-term investments of \$5.5 million and long-term investments of \$9.0 million, a decrease of \$400,000 from \$41.0 million as of December 31, 2010. The \$2.4 million combined increase in cash and cash equivalents was primarily due to net cash provided by operating activities of \$18.1 million, offset by net cash used in investing activities of \$15.4 million and net cash used in financing activities of \$999,000. Short-term and long-term investments decreased by \$2.8 million to \$14.5 million from \$17.3 million.

Cash and cash equivalents and short-term and long-term investments increased \$5.6 million to \$41.0 million as of December 31, 2010 from \$35.4 million as of December 31, 2009. The \$6.8 million increase in cash and cash equivalents was primarily due to net cash provided by operating activities of \$11.0 million, and net cash provided by financing activities of \$474,000, partially offset by net cash used in investing activities of \$5.3 million. Short-term and long-term investments decreased by \$1.2 million to \$17.3 million from \$18.5 million.

Net cash provided by operating activities of \$18.1 million for 2011 was primarily comprised of our net income of \$25.8 million, adjusted for non-cash items of depreciation of \$3.4 million, stock-based compensation of \$896,000, amortization of marketable securities premium of \$368,000, a realized loss on sale of investments of \$8,000 and a net increase of \$12.4 million in assets and liabilities. The \$12.4 million net increase in assets and liabilities primarily resulted from a \$9.8 million increase in inventories, a \$4.0 million decrease in accounts payable and accrued liabilities, a \$3.3 million increase in prepaid expenses and other current assets and a \$781,000 decrease in other long-term liabilities, partially offset by a \$5.2 million decrease in accounts receivable and a \$426,000 decrease in other assets.

Net cash provided by operating activities of \$11.0 million for 2010 was primarily comprised of our net income of \$20.4 million, adjusted for non-cash items of depreciation of \$2.9 million, stock-based compensation of \$655,000, amortization of marketable securities premium of \$316,000, offset by a realized gain on sale of investments of \$346,000 and a net increase of \$12.9 million in assets and liabilities. The \$12.9 million net increase in assets and liabilities primarily resulted from a \$8.3 million increase in inventories, a \$7.7 million increase in accounts receivable, a \$5.7 million increase in other assets, a \$1.7 million increase in prepaid expenses and other current assets, partially offset by a \$5.8 million increase in other long-term liabilities, a \$3.2 million increase in accrued liabilities and a \$1.5 million increase in accounts payable.

Net cash provided by operating activities of \$4.7 million for 2009 was primarily comprised of our net loss of \$1.5 million, adjusted for non-cash items of depreciation of \$3.1 million, stock-based compensation of \$766,000, a restructuring charge of \$507,000, and a \$164,000 loss on sale of investments, partially offset by a realized gain on sale of property, plant and equipment of \$237,000, and by a net decrease of \$1.9 million in assets and liabilities. The net decrease in assets and liabilities of \$1.9 million resulted from a \$7.4 million decrease in inventories, net, a \$717,000 decrease in prepaid expenses, partially offset by a \$3.9 million increase in accounts receivable, net, a \$1.1 million decrease in accounts payable, a \$769,000 increase in other assets, a \$390,000 decrease in accrued liabilities, and a \$27,000 decrease in other long-term liabilities.

Net cash used in investing activities of \$15.4 million for the year ended December 31, 2011 was primarily from the purchase of property, plant and equipment of \$13.1 million mainly in capital projects at our China facilities, investments in new joint ventures of \$3.0 million, loans from our consolidated joint ventures to their equity investment entities of \$1.6 million offset by net proceeds from investment securities totaling \$2.2 million.



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Net cash used in investing activities of \$5.3 million for the year ended December 31, 2010 was primarily net proceeds from investment securities totaling \$1.1 million, offset by purchases of property and equipment of \$6.4 million.

Net cash provided by investing activities of \$2.4 million for the year ended December 31, 2009 included a decrease in our restricted deposits of \$3.0 million, net proceeds from investment securities totaling \$885,000, proceeds from the sale of property, plant and equipment of \$430,000, partially offset by purchases of property and equipment of \$2.0 million.

In January 2012, we have agreed with the Administrative Commission of Tianjin Economy and Technology Development Zone to establish a second manufacturing facility in Tianjin, China. The arrangement provides us with land use rights for approximately 32 acres of industrial land located in Yixian Scientific and Industrial Park to construct a compound semiconductor substrate manufacturing facility that would be completed in phases by 2017. We have committed to invest \$12.5 million in the first phase of the construction of the facility and have an understanding with our BoYu joint venture that it will commit the RMB 32.0 million, or approximately \$5.0 million, that is anticipated to be required for the portion of the project devoted to crystal support, in exchange for land use rights, enterprise and individual income tax rebates, employee hiring and development subsidies, and other benefits. The investment of \$12.5 million in one of the projects will be funded by cash flow generated by our normal operations supplemented by our existing line of credit. The investment of \$5.0 million will be funded by our BoYu joint venture.

In January 2012, we increased the credit facility line of credit maintained by us with a bank from \$3.0 million to \$10.0 million at an annual interest rate of 1.65% above the current 30-day LIBOR (London Interbank Offered Rate). As of December 31, 2011 and 2010, we had not used the \$3.0 million line of credit.

Net cash used in financing activities was \$999,000 for the year ended December 31, 2011 consisted of \$1.6 million of dividends paid by joint ventures, offset by \$637,000 from the proceeds from the exercise of employee stock options.

Net cash provided by financing activities was \$474,000 for the year ended December 31, 2010 consisted of \$1.5 million from the proceeds from the exercise of employee stock options, offset by \$496,000 long-term debt payment and \$527,000 of dividends paid by joint ventures.

Net cash used in financing activities was \$3.7 million for the year ended December 31, 2009 and consisted of \$3.1 million paying down our line of credit and long-term debt, \$1.0 million of dividends paid by joint ventures, partially offset by \$351,000 from the proceeds from the exercise of employee stock options.

We believe that we have adequate cash and investments to meet our needs over the next 12 months. If our sales decrease, however, our ability to generate cash from operations will be adversely affected which could adversely affect our future liquidity, require us to use cash at a more rapid rate than expected, and require us to seek additional capital. There can be no assurance that such additional capital will be available or, if available it will be at terms acceptable to us. On September 13, 2011, our registration statement on Form S-3 was declared effective by the Securities and Exchange Commission (SEC). We may from time to time offer up to \$60.0 million of common stock, preferred stock, depository shares, warrants, debt securities and/or units in one or more offerings and in any combination. We intend to use the net proceeds from any sale of securities under the shelf registration statement for general corporate purposes, which may include capital expenditures in connection with our planned expansion of our manufacturing facilities in China. The timing of any offering will be at our discretion and will depend on many factors, including the prevailing market conditions. Specific terms and share prices of any future offering under the registration statement will be established at the time of any such offering, and will be described in a prospectus supplement that we will file with the SEC.

Cash from operations could be affected by various risks and uncertainties, including, but not limited to those set forth below under Item 1A. "Risk Factors" above.

#### Off-Balance Sheet Arrangements

We do not have any off-balance sheet financing arrangements and have never established any special purpose entities. We have not entered into any options on non-financial assets.

#### Contractual Obligations

We lease certain office space, manufacturing facilities and property under long-term operating leases expiring at various dates through November 2015. The lease agreement for the facility at Fremont, California with approximately 27,760 square feet commenced on December 1, 2008 for a term of seven years, with an option by us to cancel the lease after five years, upon forfeiture of the security deposit and payment of one-half of the fifth year's rent. Total rent expenses under these operating leases were approximately \$460,000, \$308,000, and \$298,000 for year ended December 31, 2011, 2010 and 2009, respectively.

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We entered into a royalty agreement with a vendor effective December 3, 2010 with a term of eight years, terminating December 31, 2018. We and our related companies are granted a worldwide, nonexclusive, royalty bearing, irrevocable license to certain patents for the term on the agreement. We shall pay a total of \$7.0 million royalty payment over eight years that began in 2011 based on future royalty bearing sales. Royalty expense under this agreement was \$1.3 million for the year ended December 31, 2011 and was included in cost of revenue.

The following table summarizes our contractual obligations as of December 31, 2011 (in thousands):

Contractual Obligations	Total	Payments due by period			
		Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating leases	\$1,348	\$ 376	\$686	\$286	\$—
Royalty agreement	5,500	1,375	1,600	1,375	1,150
Total	\$6,848	\$ 1,751	\$2,286	\$1,661	\$1,150

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## Selected Quarterly Results of Operations

The following table sets forth unaudited quarterly results for the eight quarters ended December 31, 2011. We believe that all necessary adjustments, consisting only of normal recurring adjustments, have been included in the amounts stated below to present fairly such quarterly information. The operating results for any quarter are not necessarily indicative of results for any subsequent period.

(in thousands, except for per share amounts)	Quarters Ended							
	Dec. 31, 2011	*Sept. 30, 2011	June 30, 2011	Mar. 31, 2011	Dec. 31, 2010	Sept. 30, 2010	June 30, 2010	Mar. 31, 2010
Revenue	\$21,219	\$ 28,305	\$30,031	\$24,566	\$26,866	\$26,809	\$23,177	\$18,641
Cost of revenue	13,386	16,042	16,005	13,906	16,169	16,278	14,642	11,909
Gross profit	7,833	12,263	14,026	10,660	10,697	10,531	8,535	6,732
Operating expenses:								
Selling, general and administrative	3,851	3,581	3,714	3,690	4,167	3,347	3,039	3,419
Research and development	657	612	699	505	911	462	515	451
Total operating expenses	4,508	4,193	4,413	4,195	5,078	3,809	3,554	3,870
Income from operations	3,325	8,070	9,613	6,465	5,619	6,722	4,981	2,862
Interest income (expense), net	190	103	69	87	37	26	(25 )	15
Other income and (expense), net	253	356	450	(363 )	385	442	1,556	79
Income before provision for income taxes	3,768	8,529	10,132	6,189	6,041	7,190	6,512	2,956
Provision for income taxes	162	667	1,064	902	646	871	560	246
Net income	3,606	7,862	9,068	5,287	5,395	6,319	5,952	2,710
Less: Net income attributable to noncontrolling interest	1,040	1,378	2,006	1,079	496	680	417	130
Net income attributable to AXT, Inc	\$2,566	\$ 6,484	\$7,062	\$4,208	\$4,899	\$5,639	\$5,535	\$2,580
Net income attributable to AXT, Inc. per common share:								
Basic	\$0.08	\$ 0.20	\$0.22	\$0.13	\$0.16	\$0.18	\$0.18	\$0.08
Diluted	\$0.08	\$ 0.19	\$0.21	\$0.13	\$0.15	\$0.17	\$0.17	\$0.08
Weighted average number of common shares outstanding:								
Basic	31,991	31,944	31,831	31,718	31,061	30,944	30,834	30,743
Diluted	32,822	33,126	33,093	33,199	32,614	32,509	32,172	31,792

\*Certain reclassifications have been made between cost of revenue and selling, general and administrative expenses. The reclassifications have no impact on reported total assets, stockholders' equity and net income.

#### Recent Accounting Pronouncements

Recent accounting pronouncements are detailed in Note 1 to our Consolidated Financial Statements included in this Annual Report on Form 10-K.

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

##### Foreign Currency Risk

A significant portion of our business is conducted in currencies other than the U.S. dollar. The functional currency for our foreign operations is the renminbi, the local currency of China, where our operating expenses are predominantly in the local currency. Since most of our operations are conducted in China, most of our costs are incurred in Chinese currency, which subjects us to fluctuations in the exchange rates between the U.S. dollar and the Chinese renminbi. We incur transaction gains or losses resulting from consolidation of expenses incurred in local currencies for these subsidiaries, as well as in translation of the assets and liabilities of these assets at each balance sheet date. Our financial results could be adversely affected by factors such as changes in foreign currency exchange rates or weak economic conditions in foreign markets, including the revaluation by China of the renminbi, and any future adjustments that China may make to its currency such as any move it might make to a managed float system with opportunistic interventions. In the future we may experience foreign exchange losses on our non-functional currency denominated receivables and payables to the extent that we have not mitigated our exposure utilizing foreign currency forward exchange contracts. Foreign exchange losses could have a material adverse effect on our operating results and cash flows. The U.S. is currently pressuring China to revalue the renminbi, which could adversely affect our operation costs and results of operations. If we do not effectively manage against these risks, our cash flows and financial condition may be adversely affected.

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In July 2005, China agreed to a shift in Chinese currency policy. It established a 2% revaluation of the renminbi and referenced the renminbi to a basket of currencies, with a daily trading band of +/-0.3%. Depending on market conditions and the state of the Chinese economy, it is possible that China will make more adjustments in the future. Over the next five to ten years, China may move to a managed float system, with opportunistic interventions. This may negatively impact the United States dollar and U.S. interest rates, which, in turn, could negatively impact our operating results and financial condition. The functional currency of our Chinese subsidiaries, including our joint ventures, is the local currency; since most of our operations are conducted in China, most of our costs are incurred in Chinese currency, which subjects us to fluctuations in the exchange rates between the U.S. dollar and the Chinese renminbi. We incur transaction gains or losses resulting from consolidation of expenses incurred in local currencies for these subsidiaries, as well as in translation of the assets and liabilities of these assets at each balance sheet date. These risks may be increased by the fluctuation and revaluation of the Chinese renminbi. If we do not effectively manage the risks associated with this currency risk, our revenue, cash flows and financial condition could be adversely affected.

We manage against these risks by actively monitoring our exchange rate exposure. Our foreign operations, however, in most instances act as a natural hedge since both operating expenses as well as revenues and both assets and liabilities are generally denominated in their respective local currency. In these instances, although an unfavorable change in the exchange rate of foreign currencies against the U.S. dollar will result in lower revenues when translated into U.S. dollars, the operating expenses will be lower as well. We do not use short-term forward exchange contracts for hedging purposes to reduce the effects of adverse foreign exchange rate movements. We had previously purchased foreign exchange contracts to hedge against certain trade accounts receivable denominated in Japanese yen. The change in the fair value of the forward contracts was recognized as part of the related foreign currency transactions as they occur. As of December 31, 2011 and 2010, we had no outstanding commitments with respect to foreign exchange contracts.

During 2011, we recorded net realized foreign exchange losses of \$101,000, included as part of other income in our consolidated statements of operations. We incurred foreign currency transaction exchange gains and losses due to operations in general. It is uncertain whether these currency trends will continue. In the future we may experience foreign exchange losses on our non-functional currency denominated receivables and payables to the extent that we have not mitigated our exposure utilizing foreign currency forward exchange contracts. Foreign exchange losses could have a materially adverse effect on our operating results and cash flows. During 2011, we recorded unrealized foreign currency gains of \$1.7 million related to currency translation which are included in the balance of accumulated other comprehensive income on our consolidated balance sheet.

**Interest Rate Risk**

Cash and cash equivalents earning interest and certain variable rate debt instruments are subject to interest rate fluctuations. The following table sets forth the probable impact of a 10% change in interest rates (in thousands):

Instrument	Balance as of December 31, 2011	Current Interest Rate	Projected Annual Interest Income/(Expense)	Proforma 10% Interest Rate Decline	Proforma 10% Interest Rate Increase
Cash	\$ 25,299	0.38	% \$ 96	\$ 87	\$ 106
Cash equivalents	857	0.14	1	1	1
Investment in debt and equity instruments	14,486	3.51	508	457	559
			\$ 605	\$ 545	\$ 666

The primary objective of our investment activities is to preserve principal while maximizing income without significantly increasing risk. Financial instruments that potentially subject us to concentration of credit risk consist primarily of cash and cash equivalents, short-term investments, and trade accounts receivable. We invest primarily in money market accounts, certificates of deposits, corporate bonds and notes, and government securities. We are exposed to credit risks in the event of default by the issuers to the extent of the amount recorded on the consolidated balance sheets. These securities are generally classified as available-for-sale and consequently are recorded on the balance sheet at fair value with unrealized gains or losses reported as a separate component of accumulated other comprehensive income, net of estimated tax. Our cash, cash equivalents and short-term investments are in high-quality securities placed with major banks and financial institutions and commercial paper. We have no investments in auction rate securities.

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### Credit Risk

We perform periodic credit evaluations of our customers' financial condition and generally do not require collateral. Two customers accounted for 10% or more of our trade accounts receivable balance at 33% and 12%, respectively, as of December 31, 2011. One customer accounted for 10% or more of our trade accounts receivable balance at 30% as of December 31, 2010.

### Equity Risk

We maintain minority investments directly, and indirectly through our joint ventures in privately-held companies located in China. These minority investments are reviewed for other than temporary declines in value on a quarterly basis. These investments are classified as other assets in the consolidated balance sheets and are either accounted for under the cost method or under equity method consolidated through joint ventures as we do not have the ability to exercise significant influence over their operations. We monitor our investments for impairment and record reductions in carrying value when events or changes in circumstances indicate that the carrying value may not be recoverable. Reasons for other than temporary declines in value include whether the related company would have insufficient cash flow to operate for the next twelve months, significant changes in the operating performance and changes in market conditions. As of December 31, 2011 and 2010, the direct minority investments totaled \$392,000, and the indirect minority investments totaled \$1.3 million and \$341,000, respectively.

### Item 8. Consolidated Financial Statements and Supplementary Data

The consolidated financial statements, related notes thereto and financial statement schedule required by this item are listed and set forth beginning on page 48, and is incorporated by reference here. Supplementary financial information regarding quarterly financial information required by this item is set forth under the caption "Selected Quarterly Results of Operations" in Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations," and is incorporated by reference here.

### 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 Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this Annual Report on Form 10-K. Based upon this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures as defined under Exchange Act Rules 13a-15(e) and 15d-15(e) were effective at the reasonable assurance level to ensure that information required to be disclosed in our Securities Exchange Act reports is recorded, processed, summarized and reported within the time periods specified by the Securities and Exchange Commission and is accumulated and communicated to management, including our Chief Executive Officer and our Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Our disclosure controls and procedures include components of our internal control over financial reporting. Management's assessment of the effectiveness of our internal control over financial reporting is expressed at the level of reasonable assurance because a control system, no matter how well designed and operated, can provide only



reasonable assurance that the control system's objectives will be met.

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### Management's report on internal control over financial reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, and implemented by our Board of Directors, management and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States. Internal control over financial reporting includes those policies and procedures that:

pertain to the maintenance of records that in reasonable detail accurately and fairly reflect our transactions and dispositions of our assets;

provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures are being made only in accordance with authorizations of our management and directors; and

provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of 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.

Our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, has assessed the effectiveness of our internal control over financial reporting as of December 31, 2011 based on the criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Management has concluded that our internal control over financial reporting was effective as of December 31, 2011.

Our independent registered public accounting firm, Burr Pilger Mayer, Inc. has audited the consolidated financial statements included in this Annual Report on Form 10-K and has issued its report on the effectiveness of our internal control over financial reporting as of December 31, 2011.

### Changes in internal control over financial reporting.

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2011 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

### Item 9B. Other Information

On January 17, 2012, our credit line account with UBS Bank USA ("UBS") was increased from \$3.0 million to \$10.0 million at an annual interest rate of 1.65% above the current 30-day LIBOR (London Interbank Offered Rate). Our original credit line account with UBS was opened in December 2008 pursuant to a Credit Line Account Application and Agreement for Organizations and Businesses. The credit line account is for an uncommitted, demand credit facility. Loans made under this account are subject to final credit and bank approval.



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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of  
AXT, Inc.

We have audited the internal control over financial reporting of AXT, Inc. and its subsidiaries (the “Company”) as of December 31, 2011, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management’s Report on Internal Control Over Financial Reporting, appearing in item 9A. 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, AXT, Inc. and its subsidiaries maintained, in all material respects, effective internal control over financial reporting as of December 31, 2011, 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 AXT, Inc. and its subsidiaries as of December 31, 2011 and 2010, and the related consolidated statements of operations, stockholders’ equity and cash flows for each of the three years in the period ended December 31, 2011 and our report dated March 14, 2012 expressed an unqualified opinion thereon.

/s/ Burr Pilger Mayer, Inc.

San Jose, California  
March 14, 2012



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PART III

The United States Securities and Exchange Commission (“SEC”) allows us to include information required in this report by referring to other documents or reports we have already or will soon be filing. This is called “Incorporation by Reference.” We intend to file our definitive proxy statement for our annual meeting of stockholders to be held on May 15, 2012 (the “Proxy Statement”) pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this report, and certain information therein is incorporated in this report by reference.

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item with respect to identification of directors is incorporated by reference to the information contained in the section captioned “Information About our Board of Directors” in the Proxy Statement. The information with respect to our executive officers, is incorporated by reference to the information contained in the section captioned “Executive Officers” in the Proxy Statement. Information with respect to Items 405 of Regulation S-K is incorporated by reference to the information contained in the sections of the Proxy Statement captioned “Section 16(a) Beneficial Ownership Reporting Compliance.” There will be no disclosure under Item 407(c)(3). Information with respect to Items 407(d)(4) and 407(d)(5) is incorporated by reference to the information contained in the sections of the Proxy Statement captioned “Corporate Governance—Committees of the Board of Directors.”

The Board of Directors of AXT, Inc. has adopted a Code of Conduct and Ethics (the “Code”) that applies to our principal executive officers, principal financial officer, and corporate controller, as well as other employees. A copy of this Code has been posted on our Internet website at [www.axt.com](http://www.axt.com). Any amendments to, or waivers from, a provision of our Code that applies to our principal executive officer, principal financial officer, controller, or persons performing similar functions and that relates to any element of the Code enumerated in paragraph (b) of Item 406 of Regulation S-K shall be disclosed by posting such information on our website.

Item 11. Executive Compensation

The information required by this Item is incorporated herein by reference to information set forth in our Proxy Statement under the section entitled “Executive Compensation and Other Matters.”

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

The information required by this Item is incorporated herein by reference to information set forth in our Proxy Statement under the section entitled “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information.”

Item 13. Certain Relationships and Related Transactions and Director Independence

Information required by this item will be set forth in our Proxy Statement under the headings “Compensation Committee Interlocks and Insider Participation” and “Certain Relationships and Related Transactions,” which information is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated herein by reference to information set forth in our Proxy Statement under the section entitled “Ratification of Appointment of Independent Registered Public Accountants.”



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PART IV

Item 15. Exhibits and Financial Statement Schedules

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

(1) Financial Statements:

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

<u>Report of Independent Registered Public Accounting Firm, Burr Pilger Mayer, Inc.</u>	48
<u>Consolidated Balance Sheets</u>	49
<u>Consolidated Statements of Operations</u>	50
<u>Consolidated Statements of Stockholders' Equity</u>	51
<u>Consolidated Statements of Cash Flows</u>	52
<u>Notes to Consolidated Financial Statements</u>	53

(2) Financial Statement Schedules

All schedules have been omitted because the required information is not applicable or because the information required is included in the consolidated financial statements or notes thereto.

(b) Exhibits

See Index to Exhibits attached elsewhere to this Form 10-K. The exhibits listed in the accompanying Index to Exhibits are filed as part of, or incorporated by reference into, this report on Form 10-K.



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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of  
AXT, Inc.

We have audited the accompanying consolidated balance sheets of AXT, Inc. and its subsidiaries (the “Company”) as of December 31, 2011 and 2010, and the related consolidated statements of operations, stockholders’ equity and cash flows for each of the three years in the period ended December 31, 2011. These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these consolidated 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 consolidated financial statements referred to above present fairly, in all material respects, the financial position of AXT, Inc. and its subsidiaries as of December 31, 2011 and 2010, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2011, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company's internal control over financial reporting as of December 31, 2011, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 14, 2012 expressed an unqualified opinion thereon.

/s/ Burr Pilger Mayer, Inc.

San Jose, California  
March 14, 2012

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AXT, INC.

## CONSOLIDATED BALANCE SHEETS

	December 31,	
	2011	2010
	(In thousands, except per share data)	
<b>ASSETS</b>		
Current assets		
Cash and cash equivalents	\$ 26,156	\$ 23,724
Short-term investments	5,505	10,079
Accounts receivable, net of allowances of \$124 and \$561 as of December 31, 2011 and 2010, respectively	17,966	23,076
Inventories	46,012	35,986
Related party notes receivable - current	412	—
Prepaid expenses and other current assets	7,052	4,090
Total current assets	103,103	96,955
Long-term investments	8,981	7,172
Property, plant and equipment, net	34,282	24,240
Related party notes receivable - long-term	2,021	—
Other assets	14,101	11,884
Total assets	\$ 162,488	\$ 140,251
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities		
Accounts payable	\$ 3,286	\$ 7,094
Accrued liabilities	7,597	7,745
Total current liabilities	10,883	14,839
Long-term portion of royalty payments	4,125	5,500
Other long-term liabilities	431	108
Total liabilities	15,439	20,447
Commitments and contingencies (Note 17)		
Stockholders' equity:		
Preferred stock, \$0.001 par value; 2,000 shares authorized; 883 shares issued and outstanding as of December 31, 2011 and 2010 (Liquidation preference of \$5.8 million and \$5.6 million as of December 31, 2011 and 2010, respectively)	3,532	3,532
Common stock, \$0.001 par value; 70,000 shares authorized; 32,222 and 31,877 shares issued and outstanding as of December 31, 2011 and 2010, respectively	32	32
Additional paid-in-capital	191,554	190,021
Accumulated deficit	(62,157 )	(82,477 )
Other comprehensive income	5,818	4,652
AXT, Inc. stockholders' equity	138,779	115,760
Noncontrolling interests	8,270	4,044
Total stockholders' equity	147,049	119,804
Total liabilities and stockholders' equity	\$ 162,488	\$ 140,251

See accompanying notes to consolidated financial statements.



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## AXT, INC.

## CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2011	2010	2009
	(In thousands, except per share data)		
Revenue	\$ 104,121	\$ 95,493	\$ 55,364
Cost of revenue	59,339	58,998	41,495
Gross profit	44,782	36,495	13,869
Operating expenses:			
Selling, general, and administrative	14,836	13,972	13,389
Research and development	2,473	2,339	1,569
Restructuring charge	—	—	507
Total operating expenses	17,309	16,311	15,465
Income (loss) from operations	27,473	20,184	(1,596 )
Interest income, net	449	53	177
Other income, net	696	2,462	385
Income (loss) before provision for income taxes	28,618	22,699	(1,034 )
Provision for income taxes	2,795	2,323	471
Net income (loss)	25,823	20,376	(1,505 )
Less: Net income attributable to noncontrolling interest	(5,503 )	(1,723 )	(393 )
Net income (loss) attributable to AXT, Inc	\$ 20,320	\$ 18,653	\$ (1,898 )
Net income (loss) attributable to AXT, Inc. per common share:			
Basic	\$ 0.63	\$ 0.60	\$ (0.07 )
Diluted	\$ 0.61	\$ 0.57	\$ (0.07 )
Weighted average number of common shares outstanding:			
Basic	31,872	31,008	30,500
Diluted	33,061	32,512	30,500

See accompanying notes to consolidated financial statements.

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## AXT, INC.

## CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands)

	Preferred Stock		Common Stock		Additional Paid In Capital	Accumulated Deficit	Other Comprehensive Income/(loss)	AXT, Inc. stockholders' equity	Noncontrolling interest
	Shares	\$	Shares	\$					
Balance as of December 31, 2008	883	\$3,532	30,513	\$30	\$186,754	\$(99,232)	\$2,580	\$93,664	\$3,212
Common stock options exercised			246		351			351	
Stock-based compensation					766			766	
Issuance of common stock in the form of restricted stock			121						
Comprehensive loss:									
Net loss						(1,898)		(1,898)	393
Dividend declared by joint ventures									(957)
Change in unrealized (loss) gain on marketable securities							1,750	1,750	
Currency translation adjustment							(30)	(30)	
Balance as of December 31, 2009	883	3,532	30,880	30	187,871	(101,130)	4,300	94,603	2,648
Common stock options exercised			876	2	1,495			1,497	
Stock-based compensation					655			655	
Issuance of common stock in the form of restricted stock			121						

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Comprehensive income:										
Net income						18,653			18,653	1,723
Dividend declared by joint ventures										(527)
Change in unrealized (loss) gain on marketable securities							(144)	)	(144)	)
Currency translation adjustment							496		496	200
Balance as of December 31, 2010	883	3,532	31,877	32	190,021	(82,477)	)	4,652	115,760	4,044
Common stock options exercised										
			251		637				637	
Stock-based compensation										
					896				896	
Issuance of common stock in the form of restricted stock-net										
			94							
Comprehensive income:										
Net income						20,320			20,320	5,503
Dividend declared by joint ventures										(1,636)
Change in unrealized (loss) gain on marketable securities							(161)	)	(161)	)
Currency translation adjustment							1,327		1,327	359
Balance as of December 31, 2011	883	\$3,532	32,222	\$32	\$191,554	\$(62,157)	)	\$5,818	\$138,779	\$8,270

See accompanying notes to consolidated financial statements.

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## AXT, INC.

## CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2011	2010	2009
	(In thousands)		
Cash flows from operating activities:			
Net income (loss)	\$25,823	\$20,376	\$(1,505)
Adjustments to reconcile net income (loss) to net cash provided by operations:			
Depreciation and amortization	3,410	2,916	3,058
Amortization (accretion) of marketable securities premium/discount	368	316	(12)
Stock-based compensation	896	655	766
Realized loss (gain) on sale of investments	8	(346)	164
Restructuring charge	—	—	507
(Gain) loss on disposal of property, plant and equipment	6	5	(237)
Changes in assets and liabilities:			
Accounts receivable, net	5,165	(7,726)	(3,880)
Inventories	(9,839)	(8,288)	7,352
Prepaid expenses and other current assets	(3,313)	(1,684)	717
Other assets	426	(5,689)	(769)
Accounts payable	(3,840)	1,530	(1,079)
Accrued liabilities	(197)	3,187	(390)
Other long-term liabilities	(781)	5,757	(27)
Net cash provided by operating activities	18,132	11,009	4,665
Cash flows from investing activities:			
Purchases of property, plant and equipment	(13,102)	(6,386)	(1,963)
Proceeds from disposal of property, plant and equipment	33	10	430
Purchases of available for sale securities	(13,951)	(18,982)	(3,012)
Proceeds from available for sale securities	16,179	20,086	3,897
Investments in joint ventures	(3,024)	—	—
Loans to related parties	(1,565)	—	—
Decrease in restricted deposits	—	—	3,013
Net cash provided by (used in) investing activities	(15,430)	(5,272)	2,365
Cash flows from financing activities:			
Proceeds from common stock options exercised	637	1,497	351
Dividends paid by joint ventures	(1,636)	(527)	(957)
Payment on line of credit	—	—	(3,013)
Long-term debt payments	—	(496)	(73)
Net cash provided by (used in) financing activities	(999)	474	(3,692)
Effect of exchange rate changes on cash and cash equivalents	729	579	30
Net increase in cash and cash equivalents	2,432	6,790	3,368
Cash and cash equivalents at the beginning of the year	23,724	16,934	13,566
Cash and cash equivalents at the end of the year	\$26,156	\$23,724	\$16,934
Supplemental disclosures:			
Interest paid	\$—	\$14	\$72
Income taxes paid	\$3,234	\$1,979	\$887

See accompanying notes to consolidated financial statements.



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AXT, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. The Company and Summary of Significant Accounting Policies

The Company

AXT, Inc. (“AXT”, “we,” “us,” and “our” refer to AXT, Inc. and all of its subsidiaries) designs, develops, manufactures and distributes high-performance compound semiconductor substrates. Our substrate products are used primarily in wireless communications, lighting display applications, and fiber optic communications. We believe our vertical gradient freeze, or VGF, technique for manufacturing semiconductor substrates provides significant benefits over other methods and enabled us to become a leading manufacturer of such substrates. We pioneered the commercial use of VGF technology to manufacture gallium arsenide (GaAs) substrates and subsequently used VGF technology to manufacture substrates from indium phosphide (InP), and germanium (Ge). We also manufacture and sell raw materials related to our substrate business through our joint ventures located in China. These joint ventures produce products including 99.99% pure gallium (4N Ga), high purity gallium, arsenic, and germanium, germanium dioxide, paralytic boron nitride (pBN) crucibles, and boron oxide (B<sub>2</sub>O<sub>3</sub>). AXT’s ownership interest in these entities ranges from 25 percent to 83 percent. We consolidate the joint ventures in which we own a majority or controlling share and employ equity accounting for the joint ventures in which we have a smaller ownership interest. We purchase the materials produced by these ventures for our own use and sell other portions of their production to third parties.

Principles of Consolidation

The consolidated financial statements include the accounts of AXT and our majority-owned subsidiaries. All significant inter-company accounts and transactions have been eliminated. Investments in business entities in which we do not have control, but have the ability to exercise significant influence over operating and financial policies (generally 20-50% ownership), are accounted for by the equity method. For majority-owned subsidiaries and joint ventures that are consolidated, we reflect the noncontrolling interest of the portion we do not own on our Consolidated Balance Sheets in Stockholders’ Equity and in our Consolidated Statements of Operations.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from these estimates.

Fair Value of Financial Instruments

The carrying amounts of certain of our financial instruments including cash and cash equivalents, accounts receivable, short-term investments and long-term investments, accounts payable and accrued liabilities approximate fair value due to their short maturities.

Fair Value of Investments

In the current market environment, the assessment of the fair value of debt instruments can be difficult and subjective. ASC 820 establishes three levels of inputs that may be used to measure fair value.

Level 1 instruments represent quoted prices in active markets. Therefore, determining fair value for Level 1 instruments does not require significant management judgment, and the estimation is not difficult.

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Level 2 instruments include observable inputs other than Level 1 prices, such as quoted prices for identical instruments in markets with insufficient volume or infrequent transactions (less active markets), issuer credit ratings, non-binding market consensus prices that can be corroborated with observable market data, model-derived valuations in which all significant inputs are observable or can be derived principally from or corroborated with observable market data for substantially the full term of the assets or liabilities, or quoted prices for similar assets or liabilities. These Level 2 instruments require more management judgment and subjectivity compared to Level 1 instruments, including:

- Determining which instruments are most similar to the instrument being priced requires management to identify a sample of similar securities based on the coupon rates, maturity, issuer, credit rating, and instrument type, and subjectively select an individual security or multiple securities that are deemed most similar to the security being priced.
- Determining whether a market is considered active requires management judgment. Our assessment of an active market for our marketable debt instruments generally takes into consideration activity during each week of the one-month period prior to the valuation date of each individual instrument, including the number of days each individual instrument trades and the average weekly trading volume in relation to the total outstanding amount of the issued instrument.
- Determining which model-derived valuations to use in determining fair value requires management judgment. When observable market prices for identical securities or similar securities are not available, we price our marketable debt instruments using non-binding market consensus prices that are corroborated with observable market data or pricing models, such as discounted cash flow models, with all significant inputs derived from or corroborated with observable market data.

Level 3 instruments include unobservable inputs to the valuation methodology that are significant to the measurement of fair value of assets or liabilities. The determination of fair value for Level 3 instruments requires the most management judgment and subjectivity. As of December 31, 2011, we did not have any assets or liabilities without observable market values that would require a high level of judgment to determine fair value (Level 3 assets).

## Foreign Currency Translation

The functional currencies of our Chinese subsidiaries are the local currencies. Transaction gains and losses resulting from transactions denominated in currencies other than the U.S. dollar or in the functional currencies of our subsidiaries are included in other income, net for the periods presented.

The assets and liabilities of the subsidiaries are translated at the rates of exchange on the balance sheet date. Revenue and expense items are translated at the average rate of exchange for the period. Gains and losses from foreign currency translation are included in other comprehensive income (loss) in stockholders' equity.

## Revenue Recognition

We recognize revenue upon the shipment of our products to customers when:

- we have received a signed purchase order placed by our customers,
- the price is fixed or determinable,
-

title and risk of ownership has transferred to our customers upon shipment from our dock, receipt at customer's dock, or removal from consignment inventory at customer's location,

- collection of resulting receivables is probable, and
- product returns are reasonably estimable.

We do not provide training, installation or commissioning services. Our terms and conditions of sale do not require customer acceptance. We assess the probability of collection based on a number of factors including past history with the customer and credit worthiness. We provide for future returns based on historical experience, current economic trends and changes in customer demand at the time revenue is recognized. Additionally, we do not provide discounts or other incentives to customers. We present our revenue net of any taxes assessed by any governmental authority.

#### Accounting for Sales Taxes in Net Revenues

We report sales taxes collected on sales of our products as a component of net revenues and as accrued liabilities on our consolidated balance sheets. The amount is immaterial for fiscal years 2011, 2010 and 2009.

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### Risks and Concentration of Credit Risk

Our business is very dependent on the semiconductor industry, which is highly cyclical and has historically experienced downturns as a result of economic changes, overcapacity, and technological advancements. Significant technological changes in the industry or customer requirements, or the emergence of competitive products with new capabilities or technologies, could adversely affect operating results. In addition, a significant portion of our revenues and net income is derived from international sales. Fluctuations of the United States dollar against foreign currencies and changes in local regulatory or economic conditions, particularly in an emerging market such as China, could adversely affect operating results.

We depend on a single or limited number of suppliers for certain critical materials used in the production of our substrates, such as quartz tubing and polishing solutions. We generally purchase these materials through standard purchase orders and not pursuant to long-term supply contracts.

Financial instruments that potentially subject us to concentration of credit risk consist primarily of cash equivalents, short-term investments, and trade accounts receivable. We invest primarily in money market accounts, commercial paper instruments, and investment grade securities with high quality financial institutions. The composition and maturities are regularly monitored by management. Such deposits are in excess of the amount of the insurance provided by the federal government on such deposits. We are exposed to credit risks in the event of default by the issuers to the extent of the amount recorded on the consolidated balance sheets.

We perform ongoing credit evaluations of our customers' financial condition, and limit the amount of credit extended when deemed necessary, but generally do not require collateral. The credit risk in our accounts receivable is substantially mitigated by our credit evaluation process, reasonably short collection terms and the geographical dispersion of sales transactions. One customer represented 18%, 19% and 15% of revenue for the year ended December 31, 2011, 2010 and 2009, respectively. Our top five customers represented 35%, 40% and 41% of revenue for the year ended December 31, 2011, 2010 and 2009, respectively. We expect that sales to a small number of customers will continue to comprise a significant portion of our revenue in the future. Two customers accounted for 10% or more of our trade accounts receivable balance as of December 31, 2011 at 33% and 12%, respectively. One customer accounted for 10% or more of our trade accounts receivable balance as of December 31, 2010 at 30%.

### Cash Equivalents and Short-Term and Long-Term Investments

We classify our investments in debt and equity securities as available-for-sale securities as prescribed by ASC topic 320, Debt and Equity Securities ("ASC 320"). We consider investments in highly liquid instruments purchased with an original maturity of three months or less to be cash equivalents. Cash equivalents consist primarily of money market funds. Cash and cash equivalents are stated at cost, which approximates fair value.

Short-term and long-term investments are comprised of marketable debt securities, which consist primarily of certificates of deposit, U.S. government securities, and corporate notes and bonds. These investments are reported at fair value as of the respective balance sheet dates with unrealized gains and losses included in accumulated other comprehensive income within stockholders' equity on the consolidated balance sheets. The amortized cost of securities is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization is included in other income, net in the consolidated statements of operations. Realized gains and losses and declines in value judged to be other than temporary on available-for-sale securities are also included in other income, net in the consolidated statements of operations. The cost of securities sold is based upon the specific identification method.

All available-for-sale securities with a quoted market value below cost (or adjusted cost) are reviewed in order to determine whether the decline is other-than-temporary. Factors considered in determining whether a loss is temporary

include the magnitude of the decline in market value, the length of time the market value has been below cost (or adjusted cost), credit quality, and our ability and intent to hold the securities for a period of time sufficient to allow for any anticipated recovery in market value.

#### Accounts Receivable and Allowance for Doubtful Accounts and Sales Returns

Accounts receivable are recorded at the invoiced amount and are not interest bearing. We periodically review the likelihood of collection on our accounts receivable balances and provide an allowance for doubtful accounts receivable primarily based upon the age of these accounts. We evaluate receivables from U.S. customers in excess of 90 days and for receivables from customers located outside the U.S. in excess of 120 days and reserve allowance on the receivable balances if needed. We assess the probability of collection based on a number of factors, including the length of time a receivable balance has been outstanding, our past history with the customer and their credit worthiness. We exercise judgment when determining the adequacy of these reserves as we evaluate historical bad debt trends, general economic conditions in the United States and internationally, and changes in customer financial conditions. Uncollectible receivables are recorded as bad debt expense when all efforts to collect have been exhausted and recoveries are recognized when they are received.

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As of December 31, 2011, our accounts receivable balance was \$18.0 million with no allowance for doubtful accounts accrued. During 2011, we decreased this allowance for doubtful accounts by \$99,000 primarily for improved collections worldwide. As of December 31, 2010, our accounts receivable balance was \$23.1 million, which was net of an allowance for doubtful accounts of \$99,000. During 2010, we decreased this allowance for doubtful accounts by \$64,000 primarily for improved collections worldwide. As of December 31, 2009, our accounts receivable balance was \$15.4 million, which was net of an allowance for doubtful accounts of \$163,000. During 2009, we decreased this allowance by \$367,000 primarily for improved collections from slow-paying customers in Asia, resulting in the allowance for doubtful accounts of \$163,000 as of December 31, 2009. No amounts have been written off. If actual uncollectible accounts differ substantially from our estimates, revisions to the estimated allowance for doubtful accounts would be required, which could have a material impact on our financial results for the period.

The allowance for sales returns is also deducted from gross accounts receivable. During 2011, we utilized \$367,000 and charged an additional \$29,000 resulting in the allowance for sales returns of \$124,000 as of December 31, 2011. During 2010, we utilized \$703,000 and charged an additional \$309,000 resulting in the allowance for sales returns of \$462,000 as of December 31, 2010. During 2009, we utilized \$119,000 and charged an additional \$842,000 resulting in the allowance for sales returns of \$856,000 as of December 31, 2009.

## Inventories

Inventories are stated at the lower of cost (approximated by standard cost) or market. Cost is determined using the weighted average cost method. Our inventory consists of raw materials as well as finished goods and work-in-process that include material, labor and manufacturing overhead costs. We routinely evaluate the levels of our inventory in light of current market conditions in order to identify excess and obsolete inventory, and we provide a valuation allowance for certain inventories based upon the age and quality of the product and the projections for sale of the completed products.

## Property, Plant and Equipment

Property, plant and equipment are stated at cost less accumulated depreciation computed using the straight-line method over the estimated economic lives of the assets, which vary from 3 to 27.5 years. Leasehold improvements are amortized over the shorter of the estimated useful life or the term of the lease. We generally depreciate computers and software over 3 years, office equipment, furniture and fixtures over 3 years, automobiles over 5 years, leasehold improvements over 10 years, or lease term if shorter, and buildings over 27.5 years. Repairs and maintenance costs are expensed as incurred.

## Impairment of Long-Lived Assets

We evaluate the recoverability of property, equipment and intangible assets in accordance with ASC topic 360, Property, Plant and Equipment (“ASC 360”). When events and circumstance indicate that long-lived assets may be impaired, our management compares the carrying value of the long-lived assets to the projection of future undiscounted cash flows attributable to such assets. In the event that the carrying value exceeds the future undiscounted cash flows, we record an impairment charge against income equal to the excess of the carrying value over the asset’s fair value. Fair values are determined based on quoted market values, discounted cash flows or internal and external appraisals, as applicable. Assets held for sale are carried at the lower of carrying value or estimated net realizable value. We had no “Assets held for sale” on the consolidated balance sheet as of December 31, 2011 and 2010.

## Segment Reporting

Our business is conducted in a single operating segment. Our principal executive officer reviews a single set of financial data that encompasses our entire operations for purposes of making operating decisions and assessing financial performance. Our principal executive officer manages our Company based primarily on broad functional categories of sales, manufacturing, product development and engineering and marketing and strategy. While we obtain financial statements from all of our joint ventures in order to prepare our consolidated financial statements, we do not review them either individually or in the aggregate when making operating decisions for our business. We manage our Company on a consolidated basis with a review of revenue by product. We discuss revenue and capacity for both AXT and our joint ventures collectively, when determining capacity constraints and need for raw materials in our business, and consider their capacity when determining our strategic and product marketing and advertising strategies. While we consolidate three of the joint ventures we do not allocate resources to any of them, nor allocate any portion of overhead, interest and other income, interest expense or taxes to them. We therefore have determined that our joint venture operations do not constitute an operating segment.



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### Impairment of Investments

We invest in equity instruments of privately-held companies for business and strategic purposes. These investments are classified as other assets and are accounted for under the cost method as we do not have the ability to exercise significant influence over their operations. We monitor our investments for impairment and record reductions in carrying value when events or changes in circumstances indicate that the carrying value may not be recoverable. Determination of impairment is highly subjective and is based on a number of factors, including an assessment of the strength of investee's management, the length of time and extent to which the fair value has been less than our cost basis, the financial condition and near-term prospects of the investee, fundamental changes to the business prospects of the investee, share prices of subsequent offerings, and our intent and ability to hold the investment for a period of time sufficient to allow for any anticipated recovery in our carrying value. We estimate fair value of our cost method investments considering available information such as pricing in recent rounds of financing, current cash positions, earnings and cash flow forecasts, recent operational performance and any other readily available market data.

### Stock-Based Compensation

We have employee stock option plans, which are described more fully in Note 11—Employee Benefit Plans and Stock-based Compensation. We account for stock-based compensation in accordance with the provisions of ASC topic 718, Stock Compensation (“ASC 718”). We utilize the Black-Scholes option pricing model as the most appropriate method for determining the estimated fair value of our share-based awards. Stock-based compensation cost is measured at each grant date, based on the fair value of the award, and is recognized as expense over the requisite service period of the award. All of our stock compensation is accounted for as an equity instrument.

### Research and Development

Research and development costs consist primarily of salaries including stock compensation expense and related personnel costs, depreciation and product testing and are expensed as incurred.

### Advertising Costs

Advertising costs, included in selling, general and administrative expenses, are expensed as incurred. Advertising costs for the years ended December 31, 2011, 2010, and 2009 were \$16,000, \$83,000 and \$71,000, respectively.

### Shipping and Handling costs

We include fees billed to customers and costs incurred for shipping and handling as a component of cost of sales.

### Income Taxes

We account for income taxes in accordance with ASC topic 740, Income Taxes (“ASC 740”) which requires that deferred tax assets and liabilities be recognized using enacted tax rates for the effect of temporary differences between the book and tax bases of recorded assets and liabilities. ASC 740 also requires that deferred tax assets be reduced by a valuation allowance if it is more likely than not that a portion of the deferred tax asset will not be realized. The impact of ASC 740 is more fully described in Note 13.

### Comprehensive Income (Loss)

We report comprehensive income or loss in accordance with the provisions of ASC topic 220 Comprehensive Income (“ASC 220”) which establishes standards for reporting comprehensive income or loss and its components in the

financial statements. The components of other comprehensive income (loss) consist of unrealized gains and losses on marketable securities and foreign currency translation adjustments. Comprehensive income (loss) is presented in the accompanying consolidated statements of stockholders' equity. The balance of accumulated other comprehensive income is as follows (in thousands):

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	As of December 31,	
	2011	2010
Accumulated other comprehensive income:		
Unrealized gain on investments, net	\$(132 )	\$29
Cumulative translation adjustment	6,509	4,823
	6,377	4,852
Less: Cumulative translation adjustment attributable to the noncontrolling interest	559	200
Accumulated other comprehensive income attributable to AXT, Inc.	\$5,818	\$4,652

  

	Years ended December 31,		
	2011	2010	2009
Net income (loss) attributable to AXT, Inc.	\$20,320	\$18,653	\$(1,898 )
Other comprehensive income, net of tax:			
Change in foreign currency translation gain (loss), net of tax	1,686	696	(30 )
Change in unrealized gain (loss) on available-for-sale investments, net of tax	(161 )	(144 )	1,750
Total other comprehensive income, net of tax	1,525	552	1,720
Comprehensive income (loss)	21,845	19,205	(178 )
Less: Comprehensive income attributable to the noncontrolling interest	359	200	—
Comprehensive income (loss) attributable to AXT, Inc.	\$21,486	\$19,005	\$(178 )

## Net Income (Loss) Per Share

Basic net income per share is computed using the weighted average number of common shares outstanding during the periods less shares of common stock subject to repurchase and non-vested stock awards. Diluted net income per share is computed using the weighted average number of common shares outstanding and potentially dilutive common shares outstanding during the periods. The dilutive effect of outstanding stock options and restricted stock awards is reflected in diluted earnings per share by application of the treasury stock method. Potentially dilutive common shares consist of common shares issuable upon the exercise of stock options and upon the vesting of restricted stock awards under the treasury stock method.

## Recent Accounting Pronouncements

In September 2011, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update 2011-08 (“ASU No. 2011-08), “Intangibles — Goodwill and Other (Topic 350).” This standard is intended to simplify the testing of goodwill for impairment by permitting an entity to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step goodwill impairment test described in Topic 350. This standard will become effective for fiscal years that begin after December 15, 2011, with early adoption permitted. The standard will become effective for us in January 2012 and the adoption is not expected to have a material impact on our consolidated results of operations and financial condition.

In June 2011, the FASB issued ASU No. 2011-05, “Presentation of Comprehensive Income (Topic 220)”. This standard eliminates the current option to report other comprehensive income and its components in the statement of stockholders’ equity. The Company will have the option to present the total of comprehensive income, the component of net income, and the components of other comprehensive income either in a single continuous statement of comprehensive income or in two separate but consecutive statements. The new requirements are effective as of the beginning of a fiscal year that begins after December 15, 2011 and interim and annual periods thereafter. The standard will become effective for us for the three months ended March 31, 2012 and is not expected to have a material impact

on our consolidated results of operations and financial condition.

In May 2011, the FASB issued ASU No. 2011-04, "Fair Value Measurement (Topic 820): Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U. S. GAAP and IFRS," which amends the current fair value measurement and disclosure guidance to include increased transparency around valuation inputs and investment categorization. This guidance will be effective for interim and annual periods beginning after December 15, 2011. The standard will become effective for us for the three months ended March 31, 2012 and is not expected to have a material impact on our existing fair value measurements or disclosures.

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## Note 2. Cash, Cash Equivalents and Investments

Our cash, cash equivalents and investments are classified as follows (in thousands):

	December 31, 2011				December 31, 2010			
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized (Loss)	Fair Value	Amortized Cost	Gross Unrealized Gain	Gross Unrealized (Loss)	Fair Value
Classified as:								
Cash	\$25,299	\$ —	\$ —	\$25,299	\$22,736	\$ —	\$ —	\$22,736
Cash equivalents:								
Money market fund	857	—	—	857	988	—	—	988
Total cash equivalents	857	—	—	857	988	—	—	988
Total cash and cash equivalents	26,156	—	—	26,156	23,724	—	—	23,724
Investments:								
Certificates of Deposit	3,561	5	(3 )	3,563	3,360	11	—	3,371
US Treasury and agency securities	1,200	—	(1 )	1,199	4,903	8	(2 )	4,909
Corporate bonds	9,859	2	(137 )	9,724	8,961	10	—	8,971
Total investments	14,620	7	(141 )	14,486	17,224	29	(2 )	17,251
Total cash, cash equivalents and investments	\$40,776	\$ 7	\$ (141 )	\$40,642	\$40,948	\$ 29	\$ (2 )	\$40,975
Contractual maturities on investments:								
Due within 1 year	\$5,521			\$5,505	\$10,074			\$10,079
Due after 1 through 5 years	9,099			8,981	7,150			7,172
	\$14,620			\$14,486	\$17,224			\$17,251

We manage our investments as a single portfolio of highly marketable securities that is intended to be available to meet our current cash requirements. We have no investments in auction rate securities. For the year ended December 31, 2011 and 2009, we had \$8,000 and \$164,000, respectively, of gross realized losses on sales of our available-for-sale securities. For the year ended December 31, 2010, we had \$346,000 of gross realized gains on sales of our available-for-sale securities.

The gross unrealized losses related to our portfolio of available-for-sale securities were primarily due to changes in interest rates and market and credit conditions of the underlying securities. We have determined that the gross unrealized losses on some of our available-for-sale securities as of December 31, 2011 are temporary in nature. We periodically review our investment portfolio to identify and evaluate investments that have indications of possible impairment. Factors considered in determining whether a loss is temporary include the magnitude of the decline in market value, the length of time the market value has been below cost (or adjusted cost), credit quality, and our ability and intent to hold the securities for a period of time sufficient to allow for any anticipated recovery in market value.

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The following table summarizes the fair value and gross unrealized losses related to available-for-sale securities, aggregated by investment category and length of time that individual securities have been in a continuous unrealized loss position as of December 31, 2011 (in thousands):

	In Loss Position < 12 months		Total In Loss Position	
	Fair Value	Gross Unrealized (Loss)	Fair Value	Gross Unrealized (Loss)
Investments:				
Certificates of Deposit	678	(3 )	678	(3 )
US Treasury and agency securities	1,199	(1 )	1,199	(1 )
Corporate bonds	\$8,221	\$(137 )	\$8,221	\$(137 )
Total in loss position	\$10,098	\$(141 )	\$10,098	\$(141 )

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## Investments in Privately-held Companies

We have made strategic investments in private companies located in China in order to gain access at a competitive cost to raw materials that are critical to our substrate business (see Note 6). The investment balances for all the companies, including minority investments indirectly in privately-held companies through our consolidated joint ventures, accounted for under the equity method are included in “other assets” in the consolidated balance sheets and totaled \$8.3 million and \$4.8 million as of December 31, 2011 and 2010, respectively. We also maintain minority investments in other unconsolidated privately-held companies which are accounted for under the cost method. As of both December 31, 2011 and 2010, our investments in these unconsolidated privately-held companies had a carrying value of \$392,000 and are also included in “other assets” in the consolidated balance sheets.

## Fair Value Measurements

Our financial assets and liabilities are valued using market prices on both active markets (Level 1) and less active markets (Level 2). Level 1 instrument valuations are obtained from real-time quotes for transactions in active exchange markets involving identical assets. Level 2 instrument valuations are obtained from readily-available pricing sources for comparable instruments. Level 3 instrument valuations are obtained from unobservable inputs in which there is little or no market data, which require us to develop our own assumptions. As of December 31, 2011, we did not have any Level 3 assets or liabilities. This hierarchy requires us to use observable market data, when available, and to minimize the use of unobservable inputs when determining fair value. On a recurring basis, we measure certain financial assets and liabilities at fair value, primarily consisting of our short-term and long-term investments.

The type of instrument valued based on quoted market prices in active markets include our money market funds, which are generally classified within Level 1 of the fair value hierarchy. We classify all of our available-for-sale securities as having Level 2 inputs. The valuation techniques used to measure the fair value of these financial instruments having Level 2 inputs were derived from quoted market prices, broker or dealer quotations, or alternative pricing sources with reasonable levels of price transparency.

The following table summarizes our financial assets and liabilities measured at fair value on a recurring basis in accordance with ASC 820 as of December 31, 2011 (in thousands):

	Balance as of December 31, 2011	Quoted Prices in Active Markets of Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)
Assets:			
Cash equivalents and investments:			
Money market fund – cash	\$ 857	\$ 857	\$ —
Certificates of deposit	3,563	—	3,563
US Treasury and agency securities	1,199	—	1,199
Corporate bonds	9,724	—	9,724
Total	\$ 15,343	\$ 857	\$ 14,486
Liabilities	\$ —	\$ —	\$ —

## Items Measured at Fair Value on a Nonrecurring Basis

Certain assets that are subject to nonrecurring fair value measurements are not included in the table above. These assets include investments in privately-held companies accounted for by equity and cost method (See Note 6). We did not record other-than-temporary impairment charges for either of these investments during 2011.



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## Note 3. Inventories

The components of inventory are summarized below (in thousands):

	As of December 31,	
	2011	2010
Inventories:		
Raw materials	\$25,460	\$16,477
Work in process	15,753	15,839
Finished goods	4,799	3,670
	\$46,012	\$35,986

As of December 31, 2011 and 2010, carrying values of inventories were net of inventory reserve of \$12.3 million and \$11.5 million, respectively, for excess and obsolete inventory.

## Note 4. Related Party Transactions

In August 2011, our consolidated joint venture, Beijing JiYa Semiconductor Material Co., Ltd (JiYa), entered into a non-interest bearing note agreement in the amount of \$1.6 million with one of its equity investment entities. Under the loan agreement, JiYa loaned \$779,000 to its equity investment entity in August 2011 and the remaining amount of \$868,000 will be loaned during the three months ending March 31, 2012 and has been included as part of accrued liabilities on the consolidated balance sheets. The term of the loan is two years and ten months and the equity investment entity will repay JiYa in three installments with the first installment of \$412,000 due in December 2012, the second installment of \$823,000 due in December 2013, and last installment of \$412,000 due in May 2014. As of December 31, 2011, we included \$412,000 in “Related party notes receivable – short term” and \$1.2 million in “Related party notes receivable – long term” in the consolidated balance sheets.

In August 2011, our consolidated joint venture, Jin Mei loaned \$786,000 to its equity investment entity for construction purposes. As of December 31, 2011, this balance was included in “Related party notes receivable – long term” in the consolidated balance sheets.

Our Related Party Transactions Policy seeks to prohibit all conflicts of interest in transactions between the Company and related parties, unless they have been approved by the Board of Directors of the Company. This policy applies to all employees and directors of the Company, our subsidiaries and our joint ventures. Our executive officers retain board seats on the Board of Directors of the companies in which we have invested in our China joint ventures. See Note 6 for further details.

## Note 5. Property, Plant and Equipment, Net

The components of our property, plant and equipment are summarized below (in thousands):

	As of December 31,	
	2011	2010
Property, plant and equipment:		
Building	\$19,997	\$17,841
Machinery and equipment	32,242	28,744
Leasehold improvements	2,330	2,123
Construction in progress	11,574	4,139
	66,143	52,847

Less: accumulated depreciation and amortization	(31,861 )	(28,607 )
	\$34,282	\$24,240

Depreciation and amortization expense was \$3.4 million, \$2.9 million, and \$3.1 million for the years ended 2011, 2010, and 2009, respectively.

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## Note 6. Investments in Privately-held Companies

We have made strategic investments in private companies located in China in order to gain access to raw materials at a competitive cost that are critical to our substrate business.

Our investments are summarized below (in thousands):

Company	Investment Balance as of		Accounting Method	Ownership Percentage	
	December 31, 2011	December 31, 2010			
Beijing JiYa Semiconductor Material Co., Ltd	\$ 996	\$ 996	Consolidated	46	%
Nanjing Jin Mei Gallium Co., Ltd	592	592	Consolidated	83	%
Beijing BoYu Semiconductor Vessel Craftwork Technology Co., Ltd	410	410	Consolidated	70	%
	\$ 1,998	\$ 1,998			
Jiangsu Dongfang Electric, Inc.	\$ 2,167	\$ —	Equity	46	%
Xilingol Tongli Germanium Co. Ltd	3,881	3,437	Equity	25	%
Emeishan Jia Mei High Purity Metals Co., Ltd	1,001	1,055	Equity	25	%
	\$ 7,049	\$ 4,492			

Our ownership of Beijing JiYa Semiconductor Material Co., Ltd. (JiYa) is 46%. We continue to consolidate JiYa as we have significant influence in management and have a majority control of the board. Our Chief Executive Officer is chairman of the board, while our president of China operations and our vice president of China administration and our vice president of wafer production are members of the board.

Our ownership of Nanjing Jin Mei Gallium Co., Ltd. (Jin Mei) is 83%. We continue to consolidate Jin Mei as we have significant influence in management and have a majority control of the board. Our Chief Executive Officer is chairman of the board, while our president of China operations and our vice president of China administration are members of the board.

Our ownership of Beijing BoYu Semiconductor Vessel Craftwork Technology Co., Ltd (BoYu) is 70%. We continue to consolidate BoYu due to our ownership position as well as our significant influence over management and our majority control of the board. Our Chief Executive Officer is chairman of the board and our president of China operations and our vice president of China administration are members of the board.

Although we have representation on the boards of directors of each of these companies, the daily operations of each of these companies, are managed by local management and not by us. Decisions concerning their respective short term strategy and operations, any capacity expansion and annual capital expenditures, and decisions concerning sales of finished product, are made by local management without input from us.

During 2011, 2010 and 2009, the three consolidated joint ventures generated \$12.5 million, \$5.3 million and \$1.2 million of income, respectively, of which \$5.5 million, \$1.7 million and \$393,000, respectively was allocated to minority interests, resulting in \$7.0 million, \$3.6 million and \$826,000, respectively to our net income.

We have added a new equity investment entity during the year ended December 31, 2011. The investment balances for all of these three equity investment entities are included in other assets in our consolidated balance sheets and totaled

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\$7.0 million and \$4.5 million as of December 31, 2011 and 2010, respectively. We own 46% of the ownership interests in one of these companies and 25% in each of the other two companies. These three companies are not considered variable interest entities because:

- all three companies have sustainable businesses of their own;
- our voting power is proportionate to our ownership interests;
- we only recognize our respective share of the losses and/or residual returns generated by the companies if they occur; and
- we do not have controlling financial interest in, do not maintain operational or management control of, do not control the board of directors of, and are not required to provide additional investment or financial support to any of these companies.

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The equity earnings from all of these three minority-owned joint ventures that are not consolidated are recorded as other income, net and totaled \$520,000 for 2011. Our equity earnings from the two-minority owned joint ventures that are not consolidated are recorded as other income, net and totaled \$259,000 and \$484,000 for 2010 and 2009, respectively.

Undistributed retained earnings relating to our investments in all these companies were \$23.8 million, \$16.3 million, and \$12.4 million as of December 31, 2011, 2010 and 2009, respectively. Net income recorded from all of these joint ventures was \$7.5 million, \$3.8 million, and \$1.3 million for the year ended December 31, 2011, 2010 and 2009, respectively.

We also maintain minority investments indirectly in privately-held companies through our consolidated joint ventures. These minority investments are accounted for under the equity method in the books of our consolidated joint ventures. As of December 31, 2011 and 2010, our consolidated joint ventures included these minority investments in "other assets" in the consolidated balance sheets with a carrying value of \$1.3 million and \$341,000, respectively.

All the minority investment entities that are not consolidated and accounted for under the equity method had the following summarized income information (in thousands) for the years ended December 31, 2011, 2010 and 2009, respectively.

	Years Ended			Our share for the Years Ended December 31,		
	2011	2010	2009	2011	2010	2009
Net Sales	\$21,340	\$13,009	\$11,660	\$4,886	\$3,252	\$2,915
Gross profit	7,576	3,697	4,063	1,638	924	1,016
Operating income	3,819	899	1,763	731	225	441
Net income	2,900	973	1,936	549	243	484

All the minority investment entities that are not consolidated and accounted for under the equity method had the following summarized balance sheet information (in thousands) as of December 31, 2011 and 2010, respectively.

	As of December 31,	
	2011	2010
Current assets:		
Cash	\$7,419	\$2,386
Accounts receivable, net	4,157	811
Notes receivable	1,412	957
Inventory	3,647	1,724
Other current assets	757	2,198
Total current assets	17,392	8,076
Property, plant and equipment, net	32,371	17,246
Other assets	1,407	1,261
Total assets	\$51,170	\$26,583
Current liabilities:		

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Accounts payable	\$6,444	\$1,899
Advances from customers	19	1
Long term debt, current portion	793	757
Other payables	7,266	567
Dividend payable	2,186	2,237
Total current liabilities	16,708	5,461
Long term debt, net of current portion	3,806	3,180
Other long term liabilities	—	260
Total liabilities	20,514	8,901
Total stockholders' equity	30,656	17,682
Total liabilities and stockholders' equity	\$51,170	\$26,583

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## Note 7. Other Investments

As of December 31, 2011, we maintain minority investments in two privately-held companies. Our investments in these privately-held companies are reviewed for other than temporary declines in value on a quarterly basis. These are accounted for under the cost method as we do not have the ability to exercise significant influence over their operations. We monitor our investments for impairment and record reductions in carrying value when events or changes in circumstances indicate that the carrying value may not be recoverable. Reasons for other than temporary declines in value include whether the related company would have insufficient cash flow to operate for the next twelve months, significant changes in the operating performance and changes in market conditions. As of December 31, 2011 and 2010, our investments in these two unconsolidated privately-held companies had a carrying value of \$392,000 and are included in “other assets” in the consolidated balance sheets.

## Note 8. Accrued Liabilities

The components of accrued liabilities are summarized below (in thousands):

	As of December 31,	
	2011	2010
Accrued compensation and related charges	\$1,807	\$1,694
Current portion of royalty payments	1,375	1,622
Accrued product warranty	1,003	740
Loan commitment for related party notes receivable	868	—
Accrued professional services	650	713
Other accrued liabilities	1,894	2,976
	\$7,597	\$7,745

## Note 9. Debt

We have a credit facility maintained by us with a bank with a \$3.0 million line of credit. As of December 31, 2011 and 2010, we have an unused \$3.0 million line of credit at an annual interest rate of approximately 1.5% over the current LIBOR (London InterBank Offered Rate) fixed funding rate.

## Note 10. Stockholders' Equity

The 883,000 shares of \$0.001 par value Series A preferred stock issued and outstanding as of December 31, 2011 and 2010, valued at \$3,532,000 are non-voting and non-convertible preferred stock with a 5.0% cumulative annual dividend rate payable when declared by the board of directors and \$4 per share liquidation preference over common stock, and must be paid before any distribution is made to common stockholders. These preferred shares were issued to Lyte Optronics, Inc. stockholders in connection with the completion of our acquisition of Lyte Optronics, Inc. on May 28, 1999.

## Note 11. Employee Benefit Plans and Stock-based Compensation

## Stock Option Plans and Equity Incentive Plans

In July 1997, our board of directors approved the 1997 Stock Option Plan (“1997 Plan”), which provides for the grant of incentive and non-qualified stock options to our employees, consultants and directors. Under the 1997 Plan, 5,423,583 shares of common stock have been authorized for issuance. Options granted under the 1997 Plan are generally for periods not to exceed ten years (five years if the option is granted to a 10% stockholder) and are granted at the fair

market value of the stock at the date of grant as determined by the board of directors. Options granted under the 1997 Plan generally vest 25% at the end of one year and 2.1% each month thereafter, with full vesting after four years.

In May 2007, our shareholders approved our 2007 Equity Incentive Plan (the "2007 Plan"). The 2007 Plan is a restatement of the 1997 Plan which was scheduled to expire in 2007. The share reserve of the 1997 Plan became the reserve of the 2007 Plan, together with 1,300,000 additional shares approved for issuance under the 2007 Plan. As of December 31, 2007, approximately 2.9 million shares remained available for grant under the 2007 Plan. Awards may be made under the 2007 Plan of stock options, stock appreciation rights, restricted stock, restricted stock units, performance shares, performance units, deferred compensation awards and other stock-based awards. Stock options and stock appreciation rights awarded under the 2007 Plan may not be repriced without stockholder approval. Stock options and stock appreciation rights may not be granted below fair market value. Stock options or stock appreciation rights generally shall not be fully vested over a period of less than three years from the date of grant and cannot be exercised more than 10 years from the date of grant. Restricted stock, restricted stock units, and performance awards generally shall not vest faster than over a three-year period (or a twelve-month period if vesting is based on a performance measure). In December 2008, the 2007 Plan was amended to comply with the applicable requirements under Section 409A of the Internal Revenue Code. As of December 31, 2011, approximately 919,000 shares were available for grant under the 2007 Plan.



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The following summarizes our stock option activity under the 1997 Plan and the 2007 Plan, and the related weighted average exercise price within each category for each of the years ended December 31, 2009, 2010, and 2011 (in thousands, except per share data):

Stock Options	Number of Options Outstanding	Weighted- average Exercise Price	Weighted- average Remaining Contractual Life (in years)	Aggregate Intrinsic Value
Balance as of December 31, 2008	2,764	\$2.74	6.61	\$92
Granted	789	1.87		
Exercised	(247 )	1.42		
Canceled	(426 )	3.73		
Balance as of December 31, 2009	2,880	2.46	5.70	3,850
Granted	399	5.93		
Exercised	(876 )	1.71		
Canceled	(123 )	7.26		
Balance as of December 31, 2010	2,280	3.10	6.40	17,030
Granted	367	4.79		
Exercised	(251 )	2.54		
Canceled	(16 )	27.98		
Balance as of December 31, 2011	2,380	\$3.25	6.25	\$3,456
Options vested and expected to vest as of December 31, 2011	2,322	\$3.22	6.18	\$3,426
Options exercisable as of December 31, 2011	1,412	\$2.72	4.56	\$2,646

The options outstanding and exercisable as of December 31, 2011 were in the following exercise price ranges (in thousands, except per share data):

Range of Exercise Price	Options Outstanding as of December 31, 2011			Options Vested and Exercisable as of December 31, 2011	
	Shares	Weighted-average Exercise Price	Weighted-average Remaining Contractual Life	Shares	Weighted-Average Exercise Price
\$1.18 - \$1.38	407	\$1.31	2.48	407	\$1.31
\$1.40 - \$1.40	1	\$1.40	3.20	1	\$1.40
\$1.59 - \$1.59	328	\$1.59	7.29	194	\$1.59
\$1.88 - \$1.91	8	\$1.90	2.74	8	\$1.90
\$2.04 - \$2.04	442	\$2.04	7.82	224	\$2.04
\$2.19 - \$3.11	260	\$2.36	1.10	260	\$2.36
\$3.14 - \$4.09	18	\$3.34	3.32	18	\$3.34
\$4.79 - \$4.79	366	\$4.79	9.82	0	\$0.00
\$4.81 - \$5.09	65	\$4.84	4.99	64	\$4.84
\$5.83 - \$9.69	485	\$6.22	7.68	236	\$6.51
	2,380	\$3.25	6.25	1,412	\$2.72

The total intrinsic value of options exercised for the years ended December 31, 2011, 2010 and 2009 were \$1.6 million, \$4.3 million and \$142,000, respectively. Total fair value of stock options vested during the years ended December 31, 2011, 2010 and 2009 was \$705,000, \$426,000 and \$699,000, respectively. Cash received from option exercises for the years ended December 31, 2011, 2010 and 2009 were \$637,000, \$1.5 million, and \$351,000, respectively.

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As of December 31, 2011, the total unamortized stock-based compensation cost related to unvested stock options granted to employees under our stock option plans was approximately \$1.9 million, net of estimated forfeitures of \$136,000. This cost is being amortized on a straight-line basis over a weighted-average period of approximately 2.6 years and will be adjusted for subsequent changes in estimated forfeitures. We did not capitalize any stock-based compensation to inventory as of December 31, 2011 and 2010, as the amounts are not significant.

## Restricted stock awards

A summary of activity related to restricted stock awards for the years ended December 31, 2009, 2010 and 2011 is presented below:

Stock Awards	Shares	Weighted-Average Grant Date Fair Value
Non-vested as of December 31, 2008	78,544	\$ 2.12
Granted	120,908	0.88
Vested	(28,792 )	2.32
Non-vested as of December 31, 2009	170,660	1.21
Granted	121,237	5.29
Vested	(69,092 )	1.48
Forfeited	(4,400 )	5.83
Non-vested as of December 31, 2010	218,405	3.30
Granted	97,986	5.21
Vested	(93,264 )	2.51
Non-vested as of December 31, 2011	223,127	\$ 4.47

Total fair value of stock awards vested during the years ended December 31, 2011, 2010 and 2009 was \$234,000, \$102,000 and \$67,000, respectively. As of December 31, 2011, we had \$854,000 of unrecognized compensation expense, net of forfeitures, related to restricted stock awards, which will be recognized over the weighted average period of 2.5 years.

## Stock-based Compensation

We recorded \$896,000, \$655,000 and \$766,000 of stock-based compensation in our consolidated statements of operations for the years ended December 31, 2011, 2010 and 2009, respectively. We utilized the Black-Scholes valuation model for estimating the fair value of the stock compensation granted both before and after the adoption of ASC 718. The following table summarizes compensation costs related to our stock-based compensation awards (in thousands, except per share data):

	Years Ended December 31,		
	2011	2010	2009
Stock-based compensation in the form of employee stock options and restricted stock, included in:			
Cost of revenue	\$84	\$36	\$39
Selling, general and administrative	766	562	672
Research and development	46	57	55
Total stock-based compensation	896	655	766
Tax effect on stock-based compensation	—	—	—
Net effect on net income/loss	\$896	\$655	\$766

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Shares used in computing basic net income per share	31,872	31,008	30,500
Shares used in computing diluted net income per share	33,061	32,512	30,500
Effect on basic net income/loss per share	\$(0.03 )	\$(0.02 )	\$(0.03 )
Effect on diluted net income/loss per share	\$(0.03 )	\$(0.02 )	\$(0.03 )

We estimate the fair value of stock options using a Black-Scholes valuation model. The weighted-average grant date fair value of our stock options granted to employees during 2011, 2010, and 2009 was \$2.65, \$3.11, and \$0.99 per share, respectively. The fair value of options granted was estimated at the date of grant using the following weighted-average assumptions:

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	Years Ended December 31,					
	2011		2010		2009	
Risk-free interest rate	0.80	%	1.00	%	2.04	%
Expected life (in years)	4.0		4.0		4.0	
Dividend yield	—		—		—	
Volatility	74.99	%	69.84	%	69.0	%
Estimated forfeitures	4.4	%	7.2	%	7.5	%

The dividend yield of zero is based on the fact that we have never paid cash dividends and have no present intention to pay cash dividends. Expected volatility is based on the historical volatility of our Company's common stock. The risk-free interest rates are taken from the Daily Federal Yield Curve Rates as of the grant dates as published by the Federal Reserve and represent the yields on actively traded Treasury securities for terms equal to the expected term of the options. The expected term calculation for stock options is based on the observed historical option exercise behavior and post-vesting forfeitures of options by our employees.

ASC 718, Stock Compensation, requires us to estimate forfeiture rates at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. We use historical forfeitures to estimate its future forfeiture rates. We decreased our forfeiture rate for stock options from 7.2% in 2010 to 4.4% in 2011 due to lower historical cancellation rates, which did not materially impact stock compensation expense. The forfeiture rate for restricted stock awards remained 0% for both 2011 and 2010.

#### Retirement Savings Plan

We have a 401(k) Savings Plan ("Savings Plan") which qualifies as a thrift plan under Section 401(k) of the Internal Revenue Code. All full-time U.S. employees are eligible to participate in the Savings Plan after 90 days from the date of hire. Employees may elect to reduce their current compensation by up to the statutory prescribed annual limit and have the amount of such reduction contributed to the 401(k) Plan. We provide matching to employee contributions up to 4% of the employees' base pay if employees contribute at least 6% of their base pay. If the contribution rate is less than 6% of the base pay, the matching percentage is prorated. Our consolidated joint ventures in China also contribute to the retirement saving plans for the full-time employees in China. Our contributions to the retirement savings plans were \$610,000, \$485,000, and \$453,000 for the years ended December 31, 2011, 2010 and 2009, respectively.

#### Note 12. Guarantees

##### Indemnification Agreements

We enter into standard indemnification arrangements in the ordinary course of business. Pursuant to these arrangements, we indemnify, hold harmless, and agree to reimburse the indemnified parties for losses suffered or incurred by the indemnified party, generally their business partners or customers, in connection with any U.S. patent, or any copyright or other intellectual property infringement claim by any third party with respect to our products. The term of these indemnification agreements is generally perpetual anytime after the execution of the agreement. The maximum potential amount of future payments we could be required to make under these agreements is unlimited. We have never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, we believe the estimated fair value of these agreements is minimal.

We have entered into indemnification agreements with our directors and officers that may require us to indemnify our directors and officers against liabilities that may arise by reason of their status or service as directors or officers, other

than liabilities arising from willful misconduct of a culpable nature; to advance their expenses incurred as a result of any proceeding against them as to which they could be indemnified; and to obtain directors' and officers' insurance if available on reasonable terms, which we currently have in place.

#### Product Warranty

We warrant our products for a specific period of time, generally twelve months, against material defects. We provide for the estimated future costs of warranty obligations in cost of sales when the related revenue is recognized. The accrued warranty costs represent the best estimate at the time of sale of the total costs that we expect to incur to repair or replace product parts, which fail while still under warranty. The amount of accrued estimated warranty costs are primarily based on historical experience as to product failures as well as current information on repair costs. On a quarterly basis, we review the accrued balances and update the historical warranty cost trends. The following table reflects the change in our warranty accrual included in "accrued liabilities" during 2011 and 2010 (in thousands):

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	Years Ended December 31,	
	2011	2010
Beginning accrued warranty and related costs	\$740	\$1,082
Charges/(benefit) to cost of revenue	263	(286 )
Actual warranty expenditures	—	(56 )
Ending accrued warranty and related costs	\$1,003	\$740

## Note 13. Income Taxes

Consolidated income (loss) before provision for income taxes includes non-U.S. income of approximately \$22.0 million, \$14.5 million and \$3.3 million for the years ended December 31, 2011, 2010 and 2009, respectively. We recorded a current tax provision of \$2.8 million, \$2.3 million and \$471,000 for the years ended December 31, 2011, 2010 and 2009, respectively. The components of the provision (benefit) for income taxes are summarized below (in thousands):

	Years Ended December 31,		
	2011	2010	2009
Current:			
Federal	\$—	\$—	\$(68 )
State	259	130	(38 )
Foreign	2,536	2,193	577
Total current	2,795	2,323	471
Deferred:			
Federal	—	—	—
State	—	—	—
Total deferred	—	—	—
Total net provision for income taxes	\$2,795	\$2,323	\$471

A reconciliation of the effective income tax rates and the U.S. statutory federal income tax rate is summarized below:

	Years Ended December 31,					
	2011		2010		2009	
Statutory federal income tax rate	35.0	%	35.0	%	35.0	%
State income taxes, net of federal tax benefits	0.6		0.4		2.4	
Change in valuation allowance	(11.5	)	(13.3	)	(61.5	)
Stock compensation	0.3		(0.4	)	(13.8	)
Foreign rate differences	(17.1	)	(12.3	)	56.9	
Dividend from PRC investee	3.2		—		(86.7	)
Net loss from privately-held PRC investments	(0.7	)	(0.4	)	16.4	
Other	—		1.2		5.7	
Effective tax rate	9.8	%	10.2	%	(45.6	)%

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Deferred tax assets and liabilities are summarized below (in thousands):

	As of December 31,	
	2011	2010
Deferred tax assets:		
Net operating loss	\$43,583	\$47,357
Accruals and reserves not yet deductible	4,494	4,240
Credits	1,488	1,488
	49,565	53,085
Deferred tax liabilities:		
Unrepatriated foreign earnings	—	—
	—	—
Net deferred tax assets	49,565	53,085
Valuation allowance	(49,565 )	(53,085 )
Net deferred tax assets	\$—	\$—

As of December 31, 2011, we have federal and state net operating loss carryforwards of approximately \$128.8 million and \$43.1 million, respectively, which will expire beginning in 2022 and 2017, respectively. In addition, we have federal tax credit carryforwards of approximately \$1.5 million, which will expire beginning in 2019.

The deferred tax assets valuation allowance as of December 31, 2011 is attributed to U.S. federal, and state deferred tax assets, which result primarily from future deductible accruals, reserves and tax depreciation expense, net operating loss carryforwards, and tax credit carryforwards. We believe that, based on a number of factors, the available objective evidence creates sufficient uncertainty regarding the realizability of the deferred tax assets such that a full valuation allowance has been recorded. These factors include our history of losses, and the lack of carryback capacity to realize deferred tax assets. The valuation allowance decreased by \$3.5 million and \$1.6 million for the years ended December 31, 2011 and 2010, respectively.

Our consolidated subsidiaries in China have enjoyed various tax holidays since 2000, some of which expired as of December 31, 2007. Benefits under the tax holidays vary by jurisdiction.

In accordance with Section 382 of the Internal Revenue Code, the amounts of and benefits from net operating loss and tax credit carryforwards may be impaired or limited in certain circumstances. Events which cause limitations in the amount of net operating losses or credits that we may utilize in any one year include, but are not limited to, a cumulative ownership change of more than 50% as defined, over a three year period.

As a result of the implementation of Interpretation 48, we recognized \$16.4 million of liability for unrecognized tax benefits. Of this amount, none was accounted for as a reduction to the January 1, 2007 balance of retained earnings. The amount decreased tax loss carryforwards in the U.S., which are fully offset by a valuation allowance.

We recognize interest and penalties related to uncertain tax positions in income tax expense. Income tax expense for the year ended December 31, 2011 includes no interest and penalties. As of December 31, 2011, we have no accrued interest and penalties related to uncertain tax positions.

We file income tax returns in the U.S. federal, various states and foreign jurisdictions. We have substantially concluded all U.S. federal and state income tax matters through December 31, 2010.

A reconciliation of the beginning and ending amount of the gross unrecognized tax benefits is as follows (in thousands):



Gross unrecognized tax benefits balance as of December 31, 2010	\$ 16,403
Add:	
Additions based on tax positions related to the current year	—
Additions for tax positions of prior years	—
Gross unrecognized tax benefits balance as of December 31, 2011	\$ 16,403

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Excluding the effects of recorded valuation allowances for deferred tax assets, \$16.4 million of the unrecognized tax benefit would favorably impact the effective tax rate in future periods if recognized.

## Note 14. Net income (loss) per Share

A reconciliation of the numerators and denominators of the basic and diluted net income (loss) per share calculations is as follows (in thousands, except per share data):

	Years Ended December 31,		
	2011	2010	2009
Numerator:			
Net income (loss) attributable to AXT, Inc	\$20,320	\$18,653	\$(1,898 )
Less: Preferred stock dividends	(177 )	(177 )	(177 )
Net income (loss) to common stockholders	\$20,143	\$18,476	\$(2,075 )
Denominator:			
Denominator for basic net income (loss) per share—weighted average common shares	31,872	31,008	30,500
Effect of dilutive securities:			
Common stock options	1,093	1,380	—
Restricted stock awards	96	124	—
Denominator for dilutive net income (loss) per share	33,061	32,512	30,500
Basic net income (loss) per share:			
Net income (loss) attributable to AXT, Inc	\$0.64	\$0.60	\$(0.06 )
Net income (loss) to common stockholders	\$0.63	\$0.60	\$(0.07 )
Diluted net income (loss) per share:			
Net income (loss) attributable to AXT, Inc	\$0.61	\$0.57	\$(0.06 )
Net income (loss) to common stockholders	\$0.61	\$0.57	\$(0.07 )
Options excluded from diluted net income (loss) per share as the impact is anti-dilutive	478	14	2,880
Restricted stock excluded from diluted net income (loss) per share as the impact is anti-dilutive	116	127	55

## Note 15. Segment Information and Foreign Operations

## Segment Information

We operate in one segment for the design, development, manufacture and distribution of high-performance compound semiconductor substrates and sale of materials. In accordance with ASC topic 280, Segment Reporting, our chief operating decision-maker has been identified as the Chief Executive Officer, who reviews operating results to make decisions about allocating resources and assessing performance for the Company. Since we operate in one segment, all financial segment and product line information can be found in the consolidated financial statements.

## Product Type

The following table represents revenue amounts (in thousands) by type:

	Years Ended December 31,		
	2011	2010	2009
Product type:			

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GaAs	\$63,697	\$67,591	\$41,054
InP	5,182	4,038	2,375
Ge	11,635	8,955	5,440
Raw materials	23,606	14,884	6,440
Other	1	25	55
	\$104,121	\$95,493	\$55,364

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## Geographical Information

The following table represents revenue amounts (in thousands) reported for products shipped to customers in the corresponding geographic region:

	Years Ended December 31,		
	2011	2010	2009
Product revenue:			
North America*	\$20,471	\$20,739	\$10,701
Europe	21,082	18,838	10,489
Japan	13,749	11,857	7,777
Taiwan	9,813	14,834	10,453
Asia Pacific (excluding Japan and Taiwan)	39,006	29,225	15,944
	\$104,121	\$95,493	\$55,364

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\* Primarily the United States

Long-lived assets consist primarily of property, plant and equipment, and are attributed to the geographic location in which they are located. Long-lived assets by geographic region were as follows (in thousands):

	As of December 31,	
	2011	2010
Long-lived assets:		
United States of America	\$484	\$543
China	33,798	23,697
	\$34,282	\$24,240

## Note 16. Foreign Exchange Contracts and Transaction Gains/Losses

As of December 31, 2011, and 2010, we had no outstanding commitments with respect to foreign exchange contracts.

We incurred foreign currency transaction exchange gains (losses) of \$(100,000), \$614,000, and \$(76,000) for the years ended December 31, 2011, 2010, and 2009, respectively.

## Note 17. Commitments and Contingencies

## Legal Matters

We are subject to legal proceedings and claims, either asserted or unasserted, that arise in the ordinary course of business. While the outcome of these proceedings and claims cannot be predicted with certainty, management does not believe that the outcome of any of these legal matters will have a material adverse effect on our consolidated financial position, results of operations or cash flows.

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## Leases

We lease certain office space, manufacturing facilities and equipment under long-term operating leases expiring at various dates through November 2015. The lease agreement for the facility at Fremont, California with approximately 27,760 square feet commenced on December 1, 2008 for a term of seven years, with an option by us to cancel the lease after five years, upon forfeiture of the security deposit and payment of one-half of the fifth year's rent. Total rent expenses under these operating leases were \$460,000, \$308,000 and \$298,000 for the years ended December 31, 2011, 2010 and 2009, respectively. Total minimum lease payments under these leases as of December 31, 2011 are summarized below (in thousands):

	Lease Payments
2012	\$ 376
2013	371
2014	315
2015	286
	\$ 1,348

## Royalty Agreement

We entered into a royalty agreement with a vendor effective December 3, 2010 with a term of eight years, terminating December 31, 2018. We and our related companies are granted a worldwide, nonexclusive, royalty bearing, irrevocable license to certain patents for the term on the agreement. We shall pay a total of \$7.0 million royalty payment over eight years that began in 2011 based on future royalty bearing sales. Royalty expense under this agreement was \$1.3 million for the year ended December 31, 2011 and was included in cost of revenue. Total royalty payments under this agreement as of December 31, 2011 are summarized below (in thousands):

	Royalty Payments
2012	\$ 1,375
2013	800
2014	800
2015	800
2016	575
Thereafter	1,150
	\$ 5,500

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## Note 18. Unaudited Quarterly Consolidated Financial Data

	Quarter			
	First	Second	Third	Fourth
	(in thousands, except per share data)			
2011:				
Revenue	\$ 24,566	\$ 30,031	\$ 28,305	\$ 21,219
Gross profit	10,660	14,026	*12,263	7,833
Net income attributable to AXT, Inc	4,208	7,062	6,484	2,566
Net income attributable to AXT, Inc per share, basic	\$ 0.13	\$ 0.22	\$ 0.20	\$ 0.08
Net income attributable to AXT, Inc per share, diluted	\$ 0.13	\$ 0.21	\$ 0.19	\$ 0.08
2010:				
Revenue	\$ 18,641	\$ 23,177	\$ 26,809	\$ 26,866
Gross profit	6,732	8,535	10,531	10,697
Net income attributable to AXT, Inc	2,580	5,535	5,639	4,899
Net income attributable to AXT, Inc per share, basic	\$ 0.08	\$ 0.18	\$ 0.18	\$ 0.16
Net income attributable to AXT, Inc per share, diluted	\$ 0.08	\$ 0.17	\$ 0.17	\$ 0.15

\*Certain reclassifications have been made between cost of revenue and selling, general and administrative expenses. The reclassifications have no impact on reported total assets, stockholders' equity and net income.

## Note 19. Subsequent Event

In January 2012, we agreed with the Administrative Commission of Tianjin Economy and Technology Development Zone to establish a second manufacturing facility in Tianjin, China. The arrangement provides us with land use rights for approximately 32 acres of industrial land located in Yixian Scientific and Industrial Park to construct a compound semiconductor substrate manufacturing facility that would be completed in phases by 2017. We have committed to invest \$12.5 million in the first phase of the construction of the facility and have an understanding with our BoYu joint venture that it will commit the RMB 32.0 million, or approximately \$5.0 million, that is anticipated to be required for the portion of the project devoted to crystal support, in exchange for land use rights, enterprise and individual income tax rebates, employee hiring and development subsidies, and other benefits.

In January 2012, we increased the credit facility line of credit maintained by us with a bank from \$3.0 million to \$10.0 million at an annual interest rate of approximately 1.65% above the current 30-day LIBOR (London Interbank Offered Rate). The annual interest rate is currently approximately 2.0%.

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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, thereto duly authorized.

AXT, Inc.

By: /s/ RAYMOND A. LOW  
Raymond A. Low  
Chief Financial Officer and Corporate  
Secretary  
(Principal Financial Officer)

Date: March 15, 2012

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Morris S. Young and Raymond A. Low, and each of them, his true and lawful attorney-in-fact and agent, with full power of substitution, each with power to act alone, to sign and execute on behalf of the undersigned any and all amendments to this Report on Form 10-K, and to perform any acts necessary in order to file the same, with all exhibits thereto and other documents in connection therewith with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requested and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or their or his or her substitutes, shall do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ MORRIS A. YOUNG Morris A. Young	Chief Executive Officer and Director (Principal Executive Officer)	March 15, 2012
/s/ RAYMOND A. LOW Raymond A. Low	Chief Financial Officer and Corporate Secretary (Principal Financial Officer and Principal Accounting Officer)	March 15, 2012
/s/ JESSE CHEN Jesse Chen	Chairman of the Board of Directors	March 15, 2012
/s/ DAVID C. CHANG David C. Chang	Director	March 15, 2012
/s/ LEONARD LEBLANC Leonard LeBlanc	Director	March 15, 2012

/s/ NAI-YU PAI  
Nai-yu Pai

Director

March 15, 2012

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AXT, Inc.

## EXHIBITS

TO

## FORM 10-K ANNUAL REPORT

For the Year Ended December 31, 2011

Exhibit Number	Description
3.1(1)	Restated Certificate of Incorporation
3.2(2)	Certificate of Amendment of Certificate of Incorporation
3.3(3)	Certificate of Amendment to the Restated Certificate of Incorporation
3.4(4)	Certificate of Designation, Preferences and Rights of Series A Preferred Stock (which is incorporated herein by reference to Exhibit 2.1 to the registrant's form 8-K dated May 28, 1999).
3.5(5)	Second Amended and Restated By Laws
3.6(6)	Amended and Restated Section 5.1 of Article V of the Second Amended and Restated Bylaws of AXT, Inc.
3.7(7)	Certificate of Amendment to By Laws
4.1(8)	Rights Agreement dated April 24, 2001 by and between AXT, Inc. and ComputerShare Trust Company, Inc.
10.1(9)	Form of Indemnification Agreement for directors and officers*
10.2(10)	1997 Stock Option Plan and forms of agreements thereunder*
10.3(11)	Purchase and Sale Agreement by and between Limar Realty Corp #23 and AXT, Inc. dated April 1998
10.4(12)	Bond Purchase Contract between Dain Rauscher Incorporated and AXT, Inc. dated December 1, 1998
10.5(13)	Remarketing Agreement between Dain Rauscher Incorporated and AXT, Inc. dated December 1, 1998
10.6(14)	Reimbursement Agreement between Wells Fargo Bank National Association and AXT, Inc. dated April 7, 2003
10.7(15)	Asset purchase agreements dated September 4, 2003 by and between Dalian Luming Science and Technology Group, Ltd and AXT, Inc. and by and between Lumei Optoelectronics Corp., AXT, Inc., Lyte Optronics, Inc., Beijing Tongmei Xtal Technology and Xiamen Advanced Semiconductor Co., Ltd.
10.8(16)	Agreement respecting severance payment between the Company and Dr. Morris S. Young.*
10.9(17)	Employment agreement between the Company and Mr. Davis Zhang*
10.10(18)	Purchase and Sale Agreement by and between Car West Auto Body, Inc., a California corporation and AXT, Inc. dated February 19, 2008
10.11(19)	Lease agreement dated July 2, 2008 between AXT, Inc. and T. Drive Partners, L.P., a California partnership
10.12(20)	6-inch Supply Agreement dated December 31, 2008 between AXT, Inc. and IQE plc**
10.13(21)	4-inch Supply Agreement dated December 31, 2008 between AXT, Inc. and IQE plc**
10.14(22)	2007 Equity Incentive Plan (amended December 8, 2008)
10.15(23)	Forms of agreements under the 2007 Equity Incentive Plan*
10.16(24)	Employment Letter Agreement between the Company and Mr. Raymond Low*
10.17(25)	Employment Letter Agreement between the Company and Mr. Davis Zhang*
10.18(26)	Employment Letter Agreement between the Company and Mr. Robert G. Ochrym*
10.20(28)	Supply Agreement signed January 29, 2010 between AXT, Inc. and AZUR SPACE Solar Power GmbH**

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10.21(29)	2011 Executive Bonus Plan*
<u>10.22</u>	2012 Executive Bonus Plan*
<u>10.23</u>	Credit Line Account Application and Agreement for Organizations and Businesses between AXT, Inc. and UBS Bank USA dated December 15, 2008
<u>10.24</u>	Notice of Credit Line Account Increase between AXT, Inc. and UBS Bank USA dated January 17, 2012
21.1(30)	List of Subsidiaries
<u>23.1</u>	Consent of Independent Registered Public Accounting Firm, Burr Pilger Mayer, Inc
24.1	Power of Attorney (see signature page)
<u>31.1</u>	Certification by principal executive officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
<u>31.2</u>	Certification by principal financial officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
<u>32.1</u>	Certification by Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
<u>32.2</u>	Certification by Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	XBRL Instance.
101.SCH*	XBRL Taxonomy Extension Schema.
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase.
101.DEF*	XBRL Taxonomy Extension Definition Linkbase.
101.LAB*	XBRL Taxonomy Extension Label Linkbase.
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase.

\* XBRL (Extensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, is deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, and is otherwise not subject to liability under these sections.

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- (1) Incorporated by reference to exhibit 3.1 to registrant's Form 10-K filed with the SEC on March 31, 1999.
- (2) Incorporated by reference to exhibit 3.1 to registrant's Form 10-Q filed with the SEC on August 14, 2000.
- (3) Incorporated by reference to exhibit 3.4 to registrant's Form 10-Q filed with SEC on August 5, 2004.
- (4) Incorporated by reference to exhibit 3.1 to registrant's Form 8-K filed with the SEC on June 14, 1999.
- (5) Incorporated by reference to exhibit 3.4 to registrant's Form 8-K filed with the SEC on May 30, 2001.
- (6) Incorporated by reference to exhibit 99.2 to registrant's Form 8-K filed with the SEC on August 1, 2007.
- (7) Incorporated by reference to exhibit 3.1 to registrant's Form 8-K filed with the SEC on October 26, 2010.
- (8) Incorporated by reference to exhibit 4.2 to registrant's Form 8-K filed with the SEC on May 30, 2001.
- (9) Incorporated by reference to exhibit 10.1 to registrant's Registration Statement on Form S-1 filed with the SEC on March 17, 1998.
- (10) Incorporated by reference to exhibit 10.3 to registrant's Registration Statement on Form S-1 filed with the SEC on March 17, 1998.
- (11) Incorporated by reference to exhibit 10.7 to registrant's Registration Statement on Amendment No. 2 to Form S-1 filed with the SEC on May 11, 1998.
- (12) Incorporated by reference to exhibit 10.10 to registrant's Form 10-K filed with the SEC on March 31, 1999.
- (13) Incorporated by reference to exhibit 10.11 to registrant's Form 10-K filed with the SEC on March 31, 1999.
- (14) Incorporated by reference to exhibit 10.15 to registrant's Form 10-Q filed with the SEC on May 9, 2003.
- (15) Incorporated by reference to exhibit 10.16 to registrant's Form 10-Q filed with the SEC on November 13, 2003.
- (16) Incorporated by reference to exhibit 99.1 to registrant's Form 8-K filed with the SEC on March 30, 2005.
- (17) Incorporated by reference to exhibit 99.1 to registrant's Form 8-K filed with the SEC on January 17, 2006.
- (18) Incorporated by reference to exhibit 10.25 to registrant's Form 8-K filed with the SEC on February 20, 2008.
- (19) Incorporated by reference to exhibit 10.28 to registrant's Form 8-K filed with the SEC on July 8, 2008.
- (20) Incorporated by reference to exhibit 10.29 to registrant's Form 8-K filed with the SEC on January 5, 2009.
- (21) Incorporated by reference to exhibit 10.30 to registrant's Form 8-K filed with the SEC on January 5, 2009.
- (22) Incorporated by reference to exhibit 10.31 to registrant's Form 10-K filed with the SEC on March 31, 2009.
- (23) Incorporated by reference to exhibit 10.20 to registrant's Form 10-K filed with the SEC on March 22, 2010.

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- (24) Incorporated by reference to exhibit 10.22 to registrant's Form 10-K filed with the SEC on March 22, 2010.
- (25) Incorporated by reference to exhibit 10.23 to registrant's Form 10-K filed with the SEC on March 22, 2010.
- (26) Incorporated by reference to exhibit 10.24 to registrant's Form 10-K filed with the SEC on March 22, 2010.
- (27) Incorporated by reference to exhibit 10.25 to registrant's Form 10-K filed with the SEC on March 22, 2010.
- (28) Incorporated by reference to exhibit 10.31 to registrant's Form 8-K filed with the SEC on February 2, 2010.
- (29) Incorporated by reference to exhibit 10.21 to registrant's Form 10-K filed with the SEC on March 16, 2011.
- (30) Incorporated by reference to exhibit 21.1 to registrant's Registration Statement on Amendment No. 1 to Form S-3 filed with the SEC on July 28, 2006.

\* Management contract or compensatory plan.

\*\* Confidential treatment has been requested of the SEC for portions of the exhibit.

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