Rubicon Technology, Inc.
Form 10-K
March 14, 2013
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UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 10-K

(Mark one)

For the fiscal year ended December 31 2012

þ **Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2012**

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 001-33834

RUBICON TECHNOLOGY, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**36-4419301**
(State or Other Jurisdiction of	**(I.R.S. Employer Identification No.)**

Incorporation or Organization)

900 East Green Street

Bensenville, Illinois **60106**
(Address of Principal Executive Offices) **(Zip Code)**
Registrant s Telephone Number, Including Area Code: (847) 295-7000

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

Title of each class	Name of each exchange on which registered
Common Stock, Par Value $0.001 per share	The NASDAQ Global Market

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website, if 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). Yes þ No ¨

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer , accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act.

Large accelerated filer ¨ Accelerated filer þ Non-accelerated filer ¨ Smaller reporting company ¨

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

As of June 30, 2012, there were 14,727,858 shares of common stock outstanding held by nonaffiliates of the registrant, and the aggregate market value of the common stock (based upon the closing price of these shares on the NASDAQ Global Market) was approximately $150,224,152.

The number of shares of the registrant s common stock outstanding as of the close of business on March 8, 2013 was 22,579,203

Documents incorporated by reference:

Portions of the Registrant s Proxy Statement for its Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K provided, that if such Proxy Statement is not filed with the Commission within 120 days after the end of the fiscal year covered by this Form 10-K, an amendment to this Form 10-K shall be filed no later than the end of such 120-day period.

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PART I

All statements, other than statements of historical facts, included in this Annual Report on Form 10-K regarding our estimates, expectations, beliefs, intentions, projections or strategies for the future, results of operations, financial position, net sales, projected costs, prospects and plans and objectives of management for future operations may be forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995. We have based these forward-looking statements on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives and financial needs. These forward-looking statements can be identified by the use of terms and phrases such as believe, plan, intend, anticipate, target, estimate, expect, and the like, and/or future-tense or conditional constructions such as will, may, could, s the negative thereof). Items contemplating or making assumptions about actual or potential future sales, market size and trends or operating results also constitute forward-looking statements.

Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Before investing in our common stock, investors should be aware that the occurrence of the risks, uncertainties and events described in the section entitled Risk factors and elsewhere in this Annual Report could have a material adverse effect on our business, results of operations and financial condition.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, forward-looking statements are inherently subject to known and unknown risks and business, economic and other risks and uncertainties that may cause actual results to be materially different from those discussed in these forward-looking statements. 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 assume no obligation to update any forward-looking statements in order to reflect any event or circumstance that may arise after the date of this Annual Report, other than as may be required by applicable law or regulation. If one or more of these risks or uncertainties materialize, or if the underlying assumptions prove incorrect, our actual results may vary materially from those expected or projected.

This Annual Report also contains statistical data and estimates, including those relating to market size and growth rates of the markets in which we participate, that we obtained from industry publications and reports generated by market research firms. These publications typically indicate that they have obtained their information from sources they believe to be reliable, but do not guarantee the accuracy and completeness of their information. Although we have assessed the information in the publications and found it to be reasonable and believe the publications are reliable, we have not independently verified their data.

You should read this Annual Report and the documents that we reference in this Annual Report and have filed with the Securities and Exchange Commission (the SEC) as exhibits with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

Unless otherwise indicated, the terms Rubicon, the Company, we, us, and our refer to Rubicon Technology, Inc.

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ITEM 1. BUSINESS

OVERVIEW

We are an advanced electronic materials provider that develops, manufactures and sells monocrystalline sapphire and other innovative crystalline products for light-emitting diodes (LEDs), radio frequency integrated circuits (RFICs), blue laser diodes, optoelectronics and other optical applications. The emergence of sapphire in commercial volumes at competitive prices has enabled the development of new technologies such as high-brightness (HB) white, blue and green LEDs and highly-integrated RFICs. We apply our proprietary crystal growth technology to produce high-quality sapphire products efficiently to supply our end-markets, and we work closely with our customers to meet their quality and delivery needs. We believe we are the leading supplier of sapphire products to the LED industry.

We are a vertically integrated manufacturer of high-quality sapphire substrates and optical windows that are used in a variety of high-growth, high-volume end market applications. During 2012 and 2011, our largest product sales were six-inch polished sapphire wafers (substrates) for use in LED applications and in Silicon-on-Sapphire (SoS) RFICs. Two through four-inch diameter sapphire cores were our second largest product sales category during 2012 and 2011, and comprised the majority of our sales prior to 2011. Cores are sold to sapphire polishers who make wafers for use in LEDs and blue laser diodes. We also sell sapphire products used for windows and lenses in military, aerospace, sensor and other applications. We have extended our technology, giving us the ability to produce cores and wafers of up to twelve inches in diameter to support next generation LED and RFIC production.

We believe that LED and SoS RFIC production are following a similar path to that of production of integrated circuits on silicon substrates, which gradually migrated to production on increasingly larger substrates in order to reduce manufacturing costs. We feel that this migration to larger substrates and the related efficiency gains will help reduce the prices of LED devices and thereby facilitate greater adoption of LED technology in the backlighting and general lighting markets.

Our fully integrated in-house capabilities enable us to maintain our high- quality standards while controlling costs. We design, assemble and maintain our own proprietary crystal growth furnaces to grow high-purity, low-stress, ultra-low-defect-density sapphire crystals. In addition, we possess state-of-the-art capabilities in high-precision core drilling, wafer slicing, surface lapping, edge bevel grinding and wafer cleaning processes. We foster a strong sense of innovation and agility in our product development teams in an attempt to develop new products more effectively and to rapidly capture market growth.

We plan to leverage our technological advantage in efficiently producing high-quality, large-diameter sapphire products to maintain our leadership position and capitalize on future growth opportunities. To attain this goal, we are investing in research and development activities, continuing to enhance our operational capabilities, increasing our brand recognition and diversifying into new market segments.

We are a Delaware corporation incorporated on February 7, 2001. Our common stock is listed on the NASDAQ Global Market under the symbol RBCN.

INDUSTRY OVERVIEW

Integrated circuits and other semiconductor devices have traditionally been fabricated on silicon substrates. However, for certain advanced applications, new electronic materials have emerged as the substrates of choice due to evolving integration and performance considerations. For example, sapphire is the preferred substrate material for HB white, blue and green LED applications due to its crystal lattice compatibility with the aluminum gallium nitride (AlGaN) epitaxial layers, thermal expansion properties, commercial availability and cost efficiency.

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LED applications

Advancements in solid state lighting utilizing HB white, blue and green LEDs over the past decade represent a disruptive technology in the lighting industry, providing significant performance, environmental and economic improvements compared to traditional incandescent or fluorescent lighting. For example, traditional incandescent lamps are inefficient and costly, emitting over 90% of consumed power as heat and lasting only 1,500 to 2,000 hours. Fluorescent lamps produce light by passing electricity through toxic mercury vapor, which creates an environmental disposal problem. LEDs do not contain mercury or lead and are 4.0 to 6.6 times as efficient as traditional incandescent lamps, while providing 35,000 to 50,000 hours of light. These factors, along with their durability, small form factor, excellent color performance and decreasing costs, have led to growing demand for LEDs in applications such as small displays for mobile devices, flashes for digital cameras, backlighting units (BLUs) for displays used in notebook computers, desktop monitors, LCD televisions, public display signs, automotive lights, street lights, traffic signals and general and specialty lighting. Applications using LEDs have unit volumes in the billions and are expected to grow significantly over the next several years. The majority of HB LEDs are produced on sapphire substrates. Therefore, as the HB LED market grows, we believe the sapphire substrate market will grow as well.

Mobile devices. LEDs are used in color displays for mobile phones and other portable electronics such as GPS systems, MP3 players and digital camera flashes. LEDs are well suited for mobile devices due to their low current drain which extends battery life and durability while generating less heat. For these reasons, the vast majority of mobile devices utilize LED lighting.

LED backlighting units for large displays. LED BLUs now frequently replace conventional fluorescent BLUs in LCD flat panel televisions, notebook computers and desktop monitors. Benefits of LED BLUs in these applications are reduced power consumption/extended battery life, thinner displays, quicker response time and better color rendition. Displays made with LED BLUs also have no toxic materials, which helps electronics manufacturers to comply with environmental regulations.

Automotive lighting. Automobile manufacturers are increasingly using LEDs in car and truck headlights, turning and tail light functions as well as interior lighting. Benefits include near-instant response time, reduced power usage and more stylish and effective designs. Increased LED usage in other transportation vehicles such as motorcycles and commercial jets offers additional growth potential.

Commercial signage/displays. LEDs are widely used as light sources on large signs, LED displays and outdoor displays, such as jumbo screens used in sporting arenas and electronic billboard displays.

General illumination. LEDs are increasingly being used for outdoor and indoor commercial and public lighting, architectural lighting, street lights, traffic signals, retail displays, residential lighting, replacement lamps and off-grid lighting for developing countries. General illumination is expected to be one of the fastest growing applications for HB LEDs.

SoS RFIC and optical applications

SoS integrated circuits consist of a thin layer of silicon grown on a sapphire substrate and are primarily used in advanced wireless and military applications, such as RFICs. In particular, SoS RFICs are currently used in high volumes for mobile phones, broadband television set-top boxes, satellites and radiation-hardened applications for the defense industry. We believe SoS devices also represent a large potential market opportunity for sapphire due to sapphire s outstanding properties as an insulating substrate material with outstanding thermal conductivity and crystal lattice compatibility with silicon, which, among other things, enables monolithic integration in RFICs.

Sapphire is utilized for windows and optics for aerospace, sensor, medical and laser applications due to its wide-band transmission, superior strength, scratch resistance and high strength-to-weight ratio. Sapphire s

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physical properties make it very well suited for jet fighter targeting pod windows, forward-looking infrared (FLIR) windows for commercial and business jets as well as unmanned air vehicles or drones, rocket domes and transparent armor for military vehicles. Sapphire substrates are also used in the production of blue laser diodes. Blue laser diode technology allows much higher data storage for HD-DVD applications. Blue laser diodes are just beginning to penetrate potentially high-volume applications, such as the Blu-ray Disc DVD players and leading-edge video game systems.

Sapphire substrate industry supply chain

The production process for sapphire substrates is substantially similar to that of silicon wafers. A typical process flow consists of crystal growth, fabrication, slicing, lapping and polishing steps. Output quality is measured in flatness, desired crystal planar orientation, etch pitch density and crystalline structure uniformity. A great emphasis is placed on continuously improving yields and increasing production efficiency to drive costs lower to take advantage of emerging high-volume opportunities. Device manufacturers are seeking larger diameter sapphire wafers to allow them to gain efficiency in their production processes through higher throughput and reduced edge loss. Historical methods of sapphire crystal growth, which rely on lower-volume batch processes, are less able to meet the needs of leading end-market customers for high-quality crystals, demanding dimensional tolerances, high production volumes, cost efficiency and on-time delivery. Sapphire is the material on which the entire value chain is built.

THE RUBICON SOLUTION

As a leading producer of sapphire and provider of other crystals, we believe that the following are our principal competitive advantages:

Proprietary technology for crystal growth

We refer to the proprietary technology, equipment and processes we use in the production of our sapphire crystals as ES2, which stands for evolving science, evolving solutions. Due to our understanding of sapphire crystal growth seeding and crystal growth furnace operational parameters, we have developed a full in-house capability to design, build and maintain ES2 crystal growth furnaces with proprietary features. Our ES2 technology enables us to maintain a highly scalable, efficient operation and to produce large diameter sapphire wafers that we believe exceed the quality of any other sapphire producer today. Our competitors primarily employ the Kyropoulos, Czochralski (CZ) or Edge-defined Film-fed Growth (EFG) method to grow sapphire crystals. We believe that our ES2 technology, which employs an enhanced Kyropoulos methodology, significantly outperforms other methods of sapphire production with respect to capital costs, operating costs, throughput, quality and diameter size. Using our ES2 technology, we currently have the capability to produce sapphire products with diameters of up to eight inches in production volumes and we have produced wafers as large as twelve inches in diameter in our research and development.

High-quality sapphire products

We believe our sapphire crystal wafers are best-in-class in terms of quality. Our quality advantage is exhibited by our ability to produce crystals without defects such as grain boundaries and with low density of dislocations (10-100 per square centimeter) that is significantly better than the industry standard range. According to Sapphire Material, Manufacturing, Applications by E. Dobrovinskaya, L. Lytvynov and V. Pishchik (Springer 2009), sapphire grown using other methods have grain boundaries with different angles of disorientation, and significantly larger density of dislocations (5,000-100,000 per square centimeter). Our sapphire also has ultra-high-purity levels at least as high as 99.996%. Our high-purity sapphire helps our customers realize high yields in their processing. In addition, because of the high-purity of our products, our customers have the ability to utilize our sapphire for optical applications requiring high transmission in the ultraviolet through mid-infrared spectral ranges. Through our operational expertise in crystal growth, post-growth

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processing and in-process manufacturing controls of sapphire wafer production, we are able to meet or exceed our customers key product specifications, such as crystalline quality, dimensional tolerances and crystal orientation, while maintaining high production yields.

Vertical integration

We possess critical know-how and proprietary processes and metrology for crystal growth and sapphire processing. We grow sapphire crystals and have extensive capabilities to process sapphire into products that meet our customers needs, from cores, wafers and window blanks to large diameter epi-polished wafers. We have recently developed the capability to process powdered aluminum oxide into the raw material used in our crystal growth process, providing both cost reduction and greater quality control. In the areas of fabrication and slicing, we employ high-volume manufacturing techniques and utilize customized tooling and metrology to hold very tight dimensional and orientation tolerances for sapphire cores and wafers. We also have high-precision lapping, edge bevel grinding and annealing capabilities for as-ground wafers and window blanks. We have proprietary six and eight-inch polishing and ultra-cleaning equipment and processes for LED, SoS RFIC and other applications that demand larger-diameter epi-polished wafers. By vertically integrating our processes, we are able to achieve significant operating efficiencies and produce high-quality, high-precision products that offer cost and quality benefits to our customers. This vertical integration also helps us expand our range of products, protect our technology and manufacturing trade secrets and improve our reliability as a supplier.

High volume and flexible manufacturing capability

We provide a high-volume and stable supply of products for our customers. We offer reliable, consistent on-time delivery to our customers through our flexible and scalable production operations. We have developed automated manufacturing and metrology platforms at each stage of our production process that enable us to increase capacity rapidly and switch products in manufacturing easily so that we can meet our customers specific product demands.

Lowest total cost for customers

We compete on the quality of our products and our service levels to supplement our competitive pricing. We believe our high sustained yields, our dedication to consistent production and performance and our commitment to lasting customer relationships help assure our customers of a reliable source of high-quality sapphire products at stable prices. Our in-process quality control practices lead to predictable customer process yields, reduced inspection costs and overall high customer satisfaction. In addition, we work closely with our customers to understand their product specifications and then align our operations to meet their needs. Through close collaboration with our customers, we help them develop new applications for our advanced sapphire products and establish ourselves as a preferred supplier. As such, we believe our solution offers the lowest total cost for our customers.

STRATEGY

Our goal is to be the leading global provider of advanced monocrystalline substrate and window materials to the solid state lighting, SoS RFIC, aerospace and optical markets. A key element of our strategy has been to increase the proportion of our shipments of six-inch and greater diameter products. Six-inch wafers made up 73% of our revenue in 2012. The percentage of revenue coming from six-inch wafer sales in 2012 was particularly high due to pricing for cores and our decision to sell less of this product in that period. We expect sales of six-inch polished wafers to continue to represent the majority of our revenue as more LED chip manufacturers are expected to move to a large diameter substrate platform. However, the nature of our crystal growth process is such that even when maximizing the amount of large-diameter material harvested from each boule, some smaller diameter material is also yielded. Therefore we expect to continue to have a significant proportion of our sales in smaller-diameter products in the future.

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The manufacturing processes and metrology required to meet customer requirements for flatness and smoothness of large diameter wafers are more sophisticated than those required for two-inch wafers and, as a result the large-diameter market has fewer sapphire competitors. As the first to market with large-diameter sapphire wafers, we have gained significant experience and expertise. As LED manufacturers gravitate toward larger substrates, we believe we have an advantage as a proven supplier of these products. We have provided eight-inch wafers for research and development purposes to both the LED and SoS industry.

Our strategy includes the following key elements:

Extend our technology and manufacturing leadership position

We believe our specialized manufacturing processes and proprietary technology and trade secrets provide us with significant competitive advantages. We have designed and developed product, equipment and process technology platforms from which we can rapidly increase capacity and stay flexible to meet our customers needs. At each phase of our manufacturing process, we have developed and standardized automated equipment that employs similar processes to produce a full range of products. For example, most of our furnaces can grow sapphire crystals of the same size in various orientations to produce two through six-inch wafers and cores. At our crystal growth facility in Batavia, Illinois, we have installed larger furnaces that grow sapphire crystals large enough to produce two through eight-inch wafers and cores. This flexibility in crystal growth production reduces our operating costs and significantly improves our product development cycles. We have further extended our technology and now have the ability to produce up to twelve-inch cores and wafers and produce even larger diameter optical material. We intend to continue to develop advanced technology platforms to further increase the size of crystals produced and offer market-leading product specifications, while maintaining product quality and manufacturing efficiencies.

Capitalize on opportunities in high-growth markets

Our sapphire products are used in multiple applications in the high-growth LED and SoS RFIC markets. We also participate in optical market segments where sapphire is being adopted rapidly in new applications. We intend to continue to expand our opportunities by adding new categories and sizes of products with the goal of providing our customers in multiple high-growth end markets with a robust set of sapphire solutions. For example, one of the largest market segment opportunities is likely to come from the solid state lighting market, which in 2012 became the largest and fastest growing market for LED chips. Solid-state lighting will require higher brightness, lower-cost white LEDs that require larger-size LED chips. Larger LED chips are increasingly being manufactured in volume on four and six-inch sapphire wafers. Our process to manufacture large diameter, high-quality sapphire wafers is well suited to this market and we believe our processes will help enable its growth. We already have high volume production capability for polished sapphire wafers up to eight inch in diameter and are ready to provide eight-inch sapphire products in production volume as soon as the market requires them. We continue to evolve our technology to produce even larger sizes, as evidenced by the addition of our twelve inch diameter capabilities. We believe that LED chip manufacturers will continue to focus on using larger diameter substrates in order to further drive efficiencies in their manufacturing processes.

Enhance operational excellence

Our unique expertise in producing high-quality sapphire products in many sizes gives us a significant edge in process and product technology. We plan to further refine our proprietary ES2 crystal growth techniques, sapphire processing platforms and process controls to produce even higher quality crystals at greater yields. Our engineering efforts focus on the capability to design, build and maintain ES2 crystal growth furnaces with new proprietary features. We seek to continuously improve our sapphire processing and material inspection capabilities. We also promote operational excellence through lowering cycle times, raising yields and reducing overhead costs. Our ability to understand our customers design and manufacturing processes enhances our ability to reach these goals. We employ Six Sigma methodologies to continuously improve our operational

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platforms and we provide extensive training to current and new employees. Our patented technologies and process knowledge also make us more effective at reducing product cost.

Expand our sales and marketing efforts

We plan to enhance our brand recognition worldwide by increasing our marketing and communications programs and resources. For example, we have sponsored several LED conferences and we plan to extend our sponsorships into other markets, such as SoS RFICs and aerospace. We plan to further enhance our website, extend our public relations campaigns and increase our brand visibility in trade publications and with technical organizations. We rely on direct sales for the majority of our business. Although we have already entered multiple markets globally, we plan to increase the scale and geographical coverage of our sales efforts.

Penetrate new market segments

We target high-growth market segments where we believe we can gain a leadership position. Although production of sapphire cores and wafers is our focus today, we intend to leverage our crystal growth and processing know-how to develop high-quality crystal products for new substrate and window applications. Sapphire is becoming increasingly popular and is replacing quartz and glass in high-performance and harsh environment applications in the aerospace, petroleum and laser industries. For example, the U.S. military uses sapphire optical windows to construct targeting mechanisms for its jet fighters and drones and transparent armor for land vehicles. We plan on extending our existing proprietary manufacturing technology and using our deep understanding of crystal growth to develop new technologies to produce additional single crystal materials that can be used in optical applications as well as alternative substrates for certain electronic materials applications. For example, in 2012 we were contracted by the U.S. military to develop a new sapphire crystal growth process to produce large, thick rectangular windows. As the electronics and optical industries continue to develop new applications that take advantage of the unique properties of both sapphire and other single crystal products, our goal is to be the provider of choice for these applications.

TECHNOLOGY

Rubicon, as a vertically integrated manufacturer, has developed proprietary advanced technology at every stage of production from raw material processing through crystal growth, fabrication, wafer finishing and cleaning.

Our proprietary ES2 crystal growth technique produces high-quality sapphire crystals for use in our sapphire products. ES2 is derived from the standard Kyropoulos method of crystal growth. We developed this technique with the goal of establishing greater control over the crystal growth process while maintaining minimal temperature variations. Unlike other techniques, during the ES2 technique, the growing sapphire crystal exists in an unconstrained, low stress environment inside a closed growth chamber. The closed system allows for enhanced control of the melt, resulting in higher quality crystals. The temperature gradient between the melt and the crystal in the ES2 technique is significantly lower than in other crystal growth techniques. These aspects of the ES2 technique enable us to grow crystals that have a significantly lower dislocation density, higher crystal purity and higher uniformity than sapphire crystals grown using other techniques. The ES2 technique provides an inherent annealing process once the crystal is fully grown. This thermal annealing is an integral means of relieving stress in the crystal during the ES2 process. We believe we can readily scale our ES2 technology in a production environment while maintaining high crystal quality even as crystal boule size is increased. As a result of our proprietary ES2 technology, we believe that we currently offer the most efficient method for manufacturing large form factor, high-quality sapphire in the market today.

We have automated the crystal growth process of our proprietary ES2 technique. Our furnace environments are controlled by closed-loop control systems and the overall crystal growth process is run with minimal operator intervention, which reduces the potential for human error. In addition, a single operator can supervise the control of multiple ES2 furnaces simultaneously, which reduces costs.

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We believe our proprietary ES2 process provides significant advantages over other crystal growth methods such as CZ and EFG. Unlike the ES2 technique, the CZ and EFG methods grow crystals with much higher levels of stress. This stress can decrease the overall quality of the sapphire crystal and requires increased processing time to relieve this stress, which increases production costs and decreases throughput, especially in larger diameter crystals. During the EFG process, the crystal is grown in a sheet form by pulling it through a die directly from the melt; while in the CZ process, the crystal must be rotated and pulled as the aluminum oxide melt is consumed. These constrained growth environments with higher thermal gradients increase stress and decrease crystal quality.

Our research and development (R&D) activity plays a vital role in supporting our technology, product and revenue roadmaps. In 2012, 2011 and 2010, our R&D expenses totaled $2.3 million, $1.8 million and $1.1 million, respectively. Our R&D is focused on three key areas:

- very large area sapphire growth and fabrication;
- higher precision sapphire processing; and
- patterned substrates for the LED market which would integrate a downstream process into the wafer manufacturing flow providing efficiency for the LED wafer customer.

Our technical staff possesses deep and broad expertise in materials science and engineering. We also develop and utilize sophisticated metrology equipment to perform material and process characterization.

PRODUCTS

We offer a wide variety of sapphire products designed to meet the stringent specifications of our customers. Using our proprietary ES2 technology, we grow high-quality sapphire boules. We fabricate our products from the boules and sell them in four general categories: core, as-cut, as-ground and polished. We currently offer two, three, four, six and eight-inch diameter wafers, in C, R, A, and M planar orientations. A sapphire crystal has multiple orientation planes resulting from its crystalline structure symmetry.

Each orientation of the crystal structure is represented by a letter and differs in lattice structure. These variations result in different chemical, electrical and physical properties depending on the particular orientation plane. As a result, customers require different orientation planes depending on the intended application. For example, LED manufacturers typically request C plane crystals while SoS manufacturers typically request R plane crystals.

While we continue to offer all of the following products, our sales efforts are now focused on selling two through four inch cores to our polishing customers and six and eight-inch polished wafers to our semiconductor device manufacturing customers.

Product	Size	Orientation	Applications
Core	2, 3, 4	C, R, A, M	LED
			Optical windows
			Blue laser diode
As-Cut	2, 3, 4, 6 , 8	C, R, A, M	Wafers for LED
			Wafers for blue laser diodes
			Wafers for SOS RFICs
As-Ground	2, 3, 4, 6 , 8	C, R, A, M	Wafers for LED

			Wafers for SOS RFICs Blanks for optical windows Wafer carriers
Polished	6 , 8	C, R, A	Epi-polished wafers for SOS RFICs Polished optical windows Double-side polished wafer carriers

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Core

Our core product line consists of our sapphire cores drilled from sapphire boules with high-precision. In 2012, 2011 and 2010, sales of core accounted for 15%, 46% and 70% of our revenue, respectively. Revenue from sapphire cores increased through the first half of 2011, then declined due to excess inventory at polishers and LED manufacturers. Major suppliers of sapphire, including us, added capacity in 2010 and 2011, resulting in excess supply during 2012 which caused lower product prices. We chose to sell fewer sapphire cores in 2012 awaiting price improvement. Core prices have continued to be depressed in early 2013. We expect that pricing will recover to some extent when LED production volume increases.

As-cut

Our as-cut product line consists of sapphire cores sliced using a wire saw machine. We believe we are able to offer our customers one of the highest-precision cut sapphire wafers in the market. This is especially important to customers who require precise orientation planes for applications such as LEDs, SoS, RFICs and blue laser diodes. In 2012, 2011 and 2010, sales of as-cut wafers accounted for less than 10% of our revenue.

As-ground

Our as-ground product line consists of cut sapphire wafers that undergo a double-sided lapping and edge grinding process. The lapping process ensures that the surface of the wafer is flat and smooth and has a high degree of parallelism. The grinding process bevels the edges of the wafers, making them more durable and less susceptible to chipping and cracking. In 2012, 2011 and 2010, sales of as-ground wafers accounted for less than 10% of our revenue.

Polished

Our polished product line primarily consists of finely polished, ultra-clean, six and eight-inch sapphire wafers. Our polished wafers undergo two polishing phases including both a mechanical and a chemical mechanical planarization phase. We believe we are currently one of a small number of fully vertically integrated firms offering six and eight-inch, high-quality C-plane and R-plane polished wafers. In 2012, 2011 and 2010 sales of polished wafers accounted for 75%, 49% and 25% of our revenue, respectively. Sales of six-inch polished sapphire wafers increased with the growth in the SoS RFICs market and with certain LED chip manufacturers migrating to a six-inch production platform. The percentage of revenue coming from six-inch wafer sales in 2012 was particularly high due to reduced sales of sapphire core in that period. While we expect six-inch polished wafer sales to continue to represent the majority of our revenue, we expect demand for sapphire cores to improve which may result in the percentage of revenue from six-inch polished wafer sales to be less than current levels. Demand from the LED market for six-inch polished wafers is expected to be limited in the first quarter of 2013 due to excess inventory at our customers but demand is expected to strengthen for this product in the second quarter of 2013.

Other

We also offer optically-polished windows and ground window blanks of sapphire and various fluoride compounds, such as calcium, barium and magnesium fluoride. We provide sapphire and other crystal products in many sizes, shapes and product formats for specialty applications.

MANUFACTURING

The process of growing the crystal begins by heating the raw material, aluminum oxide, until it reaches an ideal temperature above its melting point. This ideal temperature is essential for our process because it allows us to produce high-purity crystals with very low defect rates. Following the heating, a seed rod is inserted in the

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melted material as the material is being cooled to crystallize into a boule. Following the growth process, each boule is rigorously inspected by using polarized lighting and magnification to find imperfections, such as bubbles, dislocations and granular deposits within the crystal.

We then drill the resulting boules into cylindrical cores using our custom high-precision crystal orientation equipment and proprietary processes. We use wire saws to slice each core into wafers of precise size and shape. These wafers are then pre-polished using precision lapping and edge-grinding equipment and then are ready to be polished into epitaxial wafers. All of these processes are performed in clean environments to reduce the chance of crystal contamination. Epi-polishing and wafer cleaning are performed in Class 10,000 and Class 100 clean-room environments, respectively.

We are dedicated to quality assurance throughout our entire operation. We employ detailed material traceability from raw material to finished product. Our quality system is certified as ISO9001:2000, and we have in-house expertise at the Six Sigma Black Belt level.

All of our long-lived assets are located in the U.S. and Malaysia.

SALES AND MARKETING

We market and sell our products through our direct sales force to customers in Asia, North America and Europe. Our direct sales force includes experienced and technically sophisticated sales professionals and engineers who are knowledgeable in the development, manufacturing and use of sapphire substrates, windows and other optical materials. Our sales staff works with customers during all stages of the substrate manufacturing process, from developing the precise composition of the substrate through manufacturing and processing the substrate to the customer s specifications.

A key component of our marketing strategy is developing and maintaining strong relationships with our customers, especially at the senior management level. We achieve this through working closely with our customers to optimize our products for their production processes. In addition, we are able to develop long-term relationships with key customers by offering product specification assistance, providing direct access to enable them to evaluate and audit our operations, delivering high-quality products and providing superior customer service. We believe that maintaining close relationships with senior management and providing technical support improves customer satisfaction and provides us with a competitive advantage when selling our products.

In order to increase brand recognition of our products and of Rubicon in general, we publish technical articles, advertise in trade journals, distribute promotional materials and participate in industry trade shows and conferences.

CUSTOMERS

Our principal customers are semiconductor device manufacturers and wafer polishing companies. A significant portion of our sales have been to relatively few customers. In 2012 our top two customers accounted for approximately 67% of our revenue. In 2011 and 2010, our top three customers accounted for approximately 69% and 46% of our revenue, respectively. Although we are attempting to diversify and expand our customer base, we expect our sales to continue to be concentrated among a small number of customers. However, we also expect that our significant customers may change from time to time. In 2012, sales to LG Innotek and Peregrine Semiconductor Corporation represented approximately 38% and 29% of our revenues, respectively. In 2011, sales to LG Innotek, Tera Xtal Technology Corp. and Crystalwise Technology represented approximately 38%, 19% and 12% of our revenues, respectively. In 2010, sales to LG Innotek, Tera Xtal Technology Corp. and Iljin Display Co, Ltd. represented approximately 17%, 15% and 14% of our revenues, respectively. No other customer accounted for 10% or more of our revenues during those periods.

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In 2012, 48% of our sales were made to customers in Asia, 17% of our sales were made to customers in North America and 35% of our sales were made to customers in Europe. In 2011, 87% of our sales were made to customers in Asia, 9% of our sales were made to customers in North America and 4% of our sales were made to customers in Europe. In 2010, 90% of our sales were made to customers in Asia, 8% of our sales were made to customers in North America and 2% of our sales were made to customers in Europe. Our customer supply agreements tend to be for short periods of time, typically 90 days. Therefore, fluctuations in demand could cause our quarterly revenue to vary significantly. Our standard arrangement with most customers includes payment terms.

INTELLECTUAL PROPERTY

Our ability to compete successfully depends upon our ability to protect our proprietary technologies and other confidential information. We rely primarily upon a combination of trade secret laws and non-disclosure agreements with employees, customers and potential customers to protect our intellectual property. We have two patents and four pending patent applications with the U.S. Patent and Trademark Office, mostly covering aspects of our core production, wafer grinding and lapping technologies. However, we believe that factors such as the technological and innovative abilities of our personnel, the success of our ongoing product development efforts and our efforts to maintain trade secret protection are more important than patents in maintaining our competitive position. We pursue the registration of certain of our trademarks in the U.S. and currently have three registered trademarks.

COMPETITION

We participate in an innovative, specialized and competitive industry. The products we produce must meet certain demanding requirements to succeed in the marketplace. Although we account for a significant percentage of the total market volume today, we face significant competition from other established providers of similar products as well as from new and potential entrants into our markets.

We have several competitors that compete directly with us. In recent years, certain companies that formerly competed with us only in sapphire cores have entered into wafer polishing and are trying to establish positions in the large-diameter wafer market. These companies tend to focus on providing core and as-cut products rather than offering polished products. There are a limited number of companies that are substantially larger than we are that compete with us in a relatively small segment of their overall business. These larger companies tend to focus on providing polished products to customers rather than providing core, as-cut and as-ground products.

We believe that the key competitive factors in our markets are:

- consistently producing high-quality products in the desired size, orientation and finish;
- driving innovation through focused research and development efforts;
- possessing sufficient supply capacity to meet end-market customer demands;
- offering solutions through collaborative efforts with customers;
- pricing; and
- providing a low total cost-of-ownership for customers.

Although we face significant competition, we believe that our proprietary ES2 crystal growth technology, our fabrication and polishing capabilities and our business practices allow us to compete effectively on all of the above factors.

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ENVIRONMENTAL REGULATION

In our manufacturing process, we use water, oils, slurries, acids, adhesives and other industrial chemicals. We are subject to a variety of federal, state and local laws regulating the discharge of these materials into the environment or otherwise relating to the protection of the environment. These include statutory and regulatory provisions under which we are responsible for the management of hazardous materials we use and the disposition of hazardous wastes resulting from our manufacturing processes. Failure to comply with such provisions, whether intentional or inadvertent, could result in fines and other liabilities to the government or third parties, injunctions requiring us to suspend or curtail operations or other remedies, which could have a material adverse effect on our business.

EMPLOYEES

As of December 31, 2012, we had 322 full-time employees, of which 294 work in technology and operations. None of our employees are represented by a labor union. We consider our employee relations to be good.

OTHER INFORMATION

You may access, free of charge, our reports filed with the SEC (for example, our Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K and any amendments to those forms) indirectly through our Internet website (www.rubicon-es2.com). Reports filed with or furnished to the SEC will be available as soon as reasonably practicable after they are filed with or furnished to the SEC. Alternatively, if you would like a paper copy of any such SEC report (without exhibits) or document, write to Investor Relations, Rubicon Technology, Inc., 900 East Green Street, Bensenville, Illinois 60106, and a copy of such requested document will be provided to you, free of charge. The information found on our website is not part of this or any other report filed with or furnished to the SEC.

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ITEM 1A. RISK FACTORS

You should carefully read the risk factors set forth below, together with the financial statements, related notes and other information contained in this Annual Report on Form 10-K. Our business is subject to a number of important risks and uncertainties, some of which are described below. The risks described below, however, are not the only risks that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also impair our business operations. Any of these risks may have a material adverse effect on our business, financial condition, results of operations and cash flows. Please refer to the discussion of forward-looking statements on page one of this Annual Report on Form 10-K in connection with your consideration of the risk factors and other important factors that may affect future results described below.

Our results of operations, financial condition and business will be harmed if we are unable to effectively match our capacity with customer demand.

The markets we serve, particularly the LED and SoS products, are emerging markets. As a result, there can be significant fluctuations in demand for our products, which may result in our manufacturing facilities being underutilized from time to time, which can negatively impact our gross margins and overall business. Currently, sapphire supply is in excess of demand due to weaker demand from the LED market and excess sapphire capacity in the marketplace. As a result, we currently are not fully utilizing our manufacturing facilities. We expect this underutilization of some of our manufacturing facilities to continue into the first half of 2013. There can be no assurance that such sudden market changes will not occur again in the future adversely affecting our profitability.

We plan to continue to expand our production capacity as demand for our products strengthens. Our capacity expansion involves significant risks, including the availability of capital equipment and the timing of its installation, availability and timing of required electric power, management of expansion costs, timing of production ramp-up, qualification of our new equipment and demands on management s time. If our business does not grow fast enough to utilize this new capacity effectively, our business and financial results could be adversely affected. Conversely, delays in expanding our manufacturing capacity could impact our ability to meet future demand for our products. As a result, we might not be able to fulfill customer orders in a timely manner, which could adversely affect our customer relationships and operating results. Moreover, our efforts to increase our production capacity may not succeed in enabling us to manufacture the required quantities of our products in a timely manner or at the gross margins that we achieved in the past. There can be no assurance that we will be able to successfully reach our production, timing and cost goals for our expansion.

The average selling prices of products in the LED supply chain have historically been volatile.

Historically, our industry has experienced volatility in product demand and pricing. Changes in average selling prices of our products as a result of competitive pricing pressures, increased sales discounts and new product introductions by our competitors could have a significant impact on our profitability. Although we attempt to optimize our product mix, introduce new products, reduce manufacturing costs and pass along certain increases in costs to our customers in order to lessen the effect of decreases in selling prices, we may not be able to successfully do so in a timely manner and our results of operations and business may be harmed. In addition, rapid changes in market conditions have, at times, caused financial hardship for our customers, resulting is some write-offs of our accounts receivable. While we monitor the financial health of our customers, rapid changes in market conditions may result in additional accounts receivable write-offs in the future which could affect our results of operations.

If LED lighting does not achieve greater market acceptance, or if alternative technologies are developed and gain market traction, prospects for our growth and profitability would be limited.

Our future success largely depends on increased market acceptance of LED lighting. Approximately 52% and 93% of our revenue during 2012 and 2011, respectively, was from sales of our products for use in the manufacture of LED products. Potential customers for LED lighting systems may be reluctant to adopt LED

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lighting as an alternative to traditional lighting technology because of its higher initial cost and relatively low light output per unit in comparison with the most powerful traditional lighting devices. In addition, our potential customers may have substantial investments and know-how related to their existing lighting technologies, and may perceive risks relating to the novelty, complexity, reliability, quality, usefulness and cost-effectiveness of LED products compared to other lighting sources available in the market. If acceptance of LED lighting does not increase significantly, then opportunities to increase our revenues and operate profitably would be limited.

Moreover, if effective new sources of light other than LED devices are developed, our current products and technologies could become less competitive or obsolete. Any of these factors could have a material and adverse impact on our growth and profitability.

The technology used in the LED industry continues to change rapidly, and if we are unable to modify our products to adapt to future changes in the LED industry, we will be unable to attract or retain customers.

We do not design or manufacture LEDs. Our ability to expand into new applications in the LED market depends on continued advancement in the design and manufacture of LEDs by others. The LED industry has been characterized by a rapid rate of development of new technologies and manufacturing processes, rapid changes in customer requirements, frequent product introductions and ongoing demands for greater functionality. Our future success will depend on our ability to develop new products for use in LED applications and to adjust our product specifications, such as our previous development of larger diameter wafers, in response to these developments in a timely manner. If our development efforts are not successful or are delayed, or if our newly developed products do not achieve market acceptance, we may be unable to attract or retain customers and our operating results could be harmed. In addition, although sapphire is currently the preferred substrate material for HB white, blue and green LED applications, we cannot assure you that the LED market will continue to demand the performance attributes of sapphire. Silicon carbide is another substrate material currently used for certain LED applications, including some that also use sapphire substrates. Other substrates being investigated and used in research and development for certain LED applications are silicon, aluminum nitride, zinc oxide and bulk gallium nitride. If sapphire is displaced as the substrate of choice for certain LED applications, our financial condition and results of operations would be materially and adversely affected unless we were able to successfully offer the competing substrate material.

Our continuing efforts to enhance our current products and to develop new products involve several risks, including:

- our ability to anticipate and respond in a timely manner to changes in customer requirements;
- the possibility that sapphire may in the future be replaced as a preferred substrate in certain LED applications;
- the significant research and development investment that we may be required to make before market acceptance of a particular new or enhanced product;
- the possibility that the LED industry may not accept our new or enhanced products after we have invested a significant amount of resources in development; and
- competition from new technologies, processes and products introduced by our current and/or future competitors.

If the development and acceptance of our products for the SoS RFIC market do not meet our expectations, our future operating results may be harmed.

The level of market acceptance of our SoS RFIC products may impact our future operating results. Our success in the SoS RFIC market depends on a number of factors, including the success of our customers products in current applications and the acceptance of SoS RFIC products for newly targeted applications.

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In addition, it is possible that other solutions, such as silicon-on-insulator, may become preferred over SoS. We cannot assure you that the RFIC market will continue to require the performance attributes of SoS solutions. If our products are not accepted more broadly in the RFIC market, our results of operations and business may be harmed.

We depend on a few customers for a major portion of our sales and our results of operations would be adversely impacted if they reduced their order volumes.

Historically, we have earned, and believe that in the future we will continue to earn, a substantial portion of our revenue from a small number of customers. In 2012, our top two customers accounted for approximately 67% of our revenue and in 2011, sales to our top three customers represented approximately 69% of our revenue. If we were to lose one of our major customers or have a major customer significantly reduce its volume of business with us, our revenues and profitability would be materially reduced unless we are able to replace such demand with other orders promptly. We expect to continue to be dependent on our significant customers, the number and identity of which may change from period to period.

We generally sell our products on the basis of purchase orders. Delays in product orders could cause our quarterly revenue to vary significantly. A number of factors could cause our customers to cancel or defer orders, including interruptions to their operations due to a downturn in their industries, natural disasters, delays in manufacturing their own product offerings into which our products are incorporated, securing other sources for the products that we manufacture or developing such products internally.

Our manufacturing processes may be interrupted or our production may be delayed if we cannot maintain sufficient electrical supply, which could adversely affect our business, financial condition and operating results.

Our manufacturing process requires a stable source of electricity. From time to time, we have experienced limited disruptions in our supply of electricity. Such disruptions, depending upon their duration, could result in a significant drop in throughput and yield of in-process crystal boules and create delays in our production. Although we use generators and other back-up sources of electricity, these replacement sources of electricity are only capable of providing effective back-up for limited periods of time. We cannot assure you that we will be successful in avoiding future disruptions in power or in mitigating the effects of such disruptions. Any material disruption in electrical supply could delay our production and could adversely affect our business, financial condition and operating results.

Our gross margins and profitability may be adversely affected by energy costs.

Most of our power consumption takes place in our crystal growth facilities in the U.S. Electricity prices could increase due to overall changes to the price of energy due to conditions in the Middle East, natural gas shortages in the U.S. and other economic conditions and uncertainties regarding the outcome and implications of such events. Once our current agreements expire, if electricity prices increase significantly, we may not be able to pass these price increases through to our customers on a timely basis, if at all, which could adversely affect our gross margins and results of operations.

Our contract with the City of Batavia for electricity requires us to purchase certain minimum amounts in order to retain the pricing under the contract. If the amount we use is less than the required minimum, the difference is resold at the then prevailing market price and, if the resale price is lower than our contract price, we will experience a loss on that resale, which could adversely affect our gross margins and operating results.

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Our future operating results may fluctuate significantly, which makes our future results difficult to predict and could cause our operating results for particular periods to fall below expectations.

Our revenues and operating results have fluctuated in the past and are likely to fluctuate in the future. These fluctuations are due to a number of factors, many of which are beyond our control. These factors include, among others:

- timing of orders from and shipments to major customers;
- the gain or loss of significant customers;
- fluctuations in gross margins as a result of changes in capacity utilization, product mix or other factors;
- market acceptance of our products and our customers products;
- our ability to develop, introduce and market new products and technologies on a timely basis;
- the need to pay higher labor costs as we grow;
- announcements of technological innovations, new products or upgrades to existing products by us or our competitors;
- competitive market conditions, including pricing actions by our competitors and our customers competitors;
- developments in trade secrets, patent or other proprietary rights by us or our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships or divestitures;
- interruption of operations at our manufacturing facilities or the facilities of our suppliers;
- the level and timing of capital spending of our customers;
- additions or departures of key personnel;
- potential seasonal fluctuations in our customers business activities; and

natural disasters, such as floods, hurricanes and earthquakes, as well as interruptions in power supply resulting from such events or due to other causes.

The foregoing factors are difficult to forecast, and these, as well as other factors, could materially adversely affect our quarterly or annual operating results. If our revenues or operating results fall below the expectations of investors or any securities analysts that may publish research on our company, the price of our common stock would likely decline.

Our gross margins could decline as a result of changes in our product mix and other factors, which may adversely impact our operating results.

We anticipate that our gross margins will fluctuate from period to period as a result of the mix of products that we sell in any given period. If our sales mix shifts to lower margin products in future periods, our overall gross margin levels and operating results would be adversely impacted. Increased competition and the adoption of alternatives to our products, more complex engineering requirements, lower demand and other factors may lead to a further downward shift in our product margins, leading to price erosion and lower revenues for us in the future.

Our proprietary intellectual property rights may not adequately protect our products and technologies, and the failure to protect such rights could harm our competitive position and adversely affect our operating results.

To protect our technology, we have chosen to rely primarily on trade secrets rather than seeking protection through publicly filed patents. Trade secrets are inherently difficult to protect. While we believe we use reasonable efforts to protect our trade secrets, our directors, employees, consultants or contractors may

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unintentionally or willfully disclose our information to competitors, whether during or after the termination of their services to our company. If we were to seek to enforce a claim that a third party had illegally obtained and was using our trade secrets, it would be expensive and time consuming, and the outcome would be unpredictable.

In addition, courts outside the U.S. are sometimes less willing to protect trade secrets than U.S. courts. Moreover, if our competitors independently develop equivalent knowledge, methods and know-how, it will be more difficult for us to protect our intellectual property and our business could be harmed.

We have two issued patents covering our products and technologies and four patent applications pending. There can be no assurance that these patents will be issued or that any patents issued will be of significant value to our business. Our commercial success will depend on obtaining and maintaining trade secret, patent and other intellectual property protection of our products and technologies. We will only be able to protect products and technologies from unauthorized use by third parties to the extent that valid, protectable and enforceable trade secrets, patents or other intellectual property rights cover them.

If we are not able to defend the trade secret or patent protection positions of our products and technologies, then we may not be able to successfully compete with competitors developing or marketing competing products and we may not generate enough revenue from product sales to justify the cost of development of our products and to achieve or maintain profitability.

The protection of our intellectual property rights and the defense of claims of infringement against us by third parties may subject us to costly litigation.

Other companies might allege that we are infringing certain of their patents or other rights. If we are unable to resolve these matters satisfactorily, or to obtain licenses on acceptable terms, we may face litigation. Any litigation to enforce patents issued to us, to protect trade secrets or know-how possessed by us or to defend us or indemnify others against claimed infringement of the rights of others could have a material adverse effect on our financial condition and operating results. Regardless of the validity or successful outcome of any such intellectual property claims, we may need to expend significant time and expense to protect our intellectual property rights or to defend against claims of infringement by third parties, which could have a material adverse effect on us. If we lose any such litigation where we are alleged to infringe the rights of others, we may be required to:

- pay substantial damages;
- seek licenses from others; or
- change, or stop manufacturing or selling, some or all of our products.

Any of these outcomes could have an adverse effect on our business, results of operations or financial condition.

The markets in which we operate are very competitive, and many of our competitors and potential competitors are larger, more established and better capitalized than we are.

The markets for selling high-quality sapphire products are very competitive and have been characterized by rapid technological change. This competition could result in increased pricing pressure, reduced profit margins, increased sales and marketing expenses, and failure to increase, or the loss of, market share or expected market share, any of which would likely seriously harm our business, operating results and financial condition.

Some of our competitors and potential competitors are substantially larger and have greater financial, technical, marketing and other resources than we do. Given their capital resources, the large companies with which we compete, or may compete in the future, are in a better position to substantially increase their manufacturing capacity and research and development efforts or to withstand any significant reduction in orders by customers in our markets. Such larger companies typically have broader product lines and market focus and

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thus are not as susceptible to downturns in a particular market. In addition, some of our competitors have been in operation much longer than we have and therefore may have more long-standing and established relationships with our current and potential domestic and foreign customers.

We would be at a competitive disadvantage if our competitors bring their products to market earlier, if their products are more technologically capable than ours, or if any of our competitors products or technologies becomes preferred in the industry. Moreover, we cannot assure you that existing or potential customers will not develop their own products, or acquire companies with products that are competitive with our products. Any of these competitive threats could have a material adverse effect on our business, operating results or financial condition.

We are subject to risks from international sales that may harm our operating results.

In 2012 and 2011 revenue from international sales was approximately 83% and 91%, respectively, of our total revenue. We expect that revenue from international sales will continue to constitute a significant portion of our total revenue for the foreseeable future. Our international sales are subject to a variety of risks, including risks arising from:

- trading restrictions, tariffs, trade barriers and taxes;
- differing intellectual property laws;
- economic and political risks, wars, acts of terrorism, political unrest, pandemics, such as a recurrence of the SARS outbreak or avian flu, boycotts, curtailments of trade and other business restrictions;
- the difficulty of enforcing contracts and collecting receivables through some foreign legal systems;
- unexpected changes in regulatory requirements and other governmental approvals, permits and licenses;
- sales variability as a result of transacting our foreign sales in U.S. dollars as prices for our products become less competitive in countries with currencies that are low or are declining in value against the U.S. dollar and more competitive in countries with currencies that are high or increasing in value against the U.S. dollar; and
- periodic foreign economic downturns.

Our future success will depend on our ability to anticipate and effectively manage these and other risks associated with our international sales. Our failure to manage any of these risks could harm our operating results.

We are dependent on the continued services and performance of our senior management, the loss of any of whom could adversely affect our business, operating results and financial condition.

Our future success is dependent on the continued services and continuing contributions of our senior management who must work together effectively in order to design our products, expand our business, increase our revenues and improve our operating results. The loss of services of senior management, particularly Raja M. Parvez, our president and chief executive officer, and William F. Weissman, our chief financial officer, could significantly delay or prevent the achievement of our development and strategic objectives. In addition, key personnel may be distracted by activities unrelated to our business. The loss of the services, or distraction, of our senior management for any reason could adversely affect our business, operating results and financial condition.

If we are unable to attract or retain qualified personnel, our business and product development efforts could be harmed.

Our success depends on our continued ability to identify, attract, hire, train, retain and motivate highly skilled technical, managerial, manufacturing, administrative and sales and marketing personnel. Competition for these individuals is intense, and we may not be able to successfully recruit, assimilate or retain sufficiently

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qualified personnel. In particular, we may encounter difficulties in recruiting and retaining a sufficient number of qualified technical personnel. The inability to attract and retain necessary technical, managerial, manufacturing, administrative and sales and marketing personnel could harm our ability to obtain new customers and develop new products and could adversely affect our business and operating results.

We rely on a limited number of suppliers for raw materials and key components.

We depend on a small number of suppliers for certain raw materials, components, services and equipment used in manufacturing our products, including key materials such as aluminum oxide and certain furnace components. We generally purchase these items with purchase orders, and we have no guaranteed supply arrangements with such suppliers. We are subject to variations in the cost of raw materials and consumables from period to period. We do not control the time and resources that these suppliers devote to our business, and we cannot be sure that these suppliers will perform their obligations to us or do so on a timely basis. In addition, some of these suppliers are located in regions of the world that may experience periods of political or economic instability, which could inhibit their ability to supply necessary materials to us.

Any significant delay in product delivery or other interruption or variation in supply from our key suppliers could prevent us from meeting demand for our products and from obtaining future business. If we were to lose key suppliers or our key suppliers were unable to support our demand, our manufacturing operations could be interrupted and we could be required to attempt to establish supply arrangements with other suppliers. In addition, the inability of our suppliers to support our demand could be indicative of a marketwide scarcity of the materials, which could result in even longer interruptions. Any such delay or interruption would impair our ability to meet our customers needs and, therefore, could damage our customer relationships and have a material adverse effect on our business and operating results.

Our products must meet exacting specifications, and undetected defects may occur, which may cause customers to return or stop buying our products.

Our customers establish demanding specifications for quality, performance and reliability that our products must meet. While we inspect our products before shipment, they still may contain undetected defects. If defects occur in our products, we could experience lost revenue, increased costs, delays in, or cancellations or rescheduling of orders or shipments, product returns or discounts, or damage to our reputation, any of which would harm our operating results and our business.

We are subject to numerous environmental laws and regulations, which could expose us to environmental liabilities, increase our manufacturing and related compliance costs or otherwise adversely affect our business and operating results.

In our manufacturing process, we use water, oils, slurries, acids, adhesives and other industrial chemicals. We are subject to a variety of foreign, federal, state and local laws and regulations governing the protection of the environment. These environmental laws and regulations include those relating to the use, storage, handling, discharge, emission, disposal and reporting of toxic, volatile or otherwise hazardous materials used in our manufacturing processes. These materials may have been or could be released into the environment at properties currently or previously operated by us, at other locations during the transport of the materials, or at properties to which we send substances for treatment or disposal. If we were to violate or become liable under environmental laws and regulations or become non-compliant with permits required at some of our facilities, we could be held financially responsible and incur substantial costs, including investigation and cleanup costs, fines and civil or criminal sanctions, third-party property damages or personal injury claims. In addition, new laws and regulations or stricter enforcement of existing laws and regulations could give rise to additional compliance costs and liabilities.

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Our operations are concentrated in a small number of nearby facilities, and the unavailability of one or more of these facilities could harm our business.

Our manufacturing, research and development, sales and marketing, and administrative activities are concentrated in three facilities in the Chicago metropolitan area and one facility in Penang, Malaysia. Should a natural disaster, such as a tornado or flood, act of terrorism, war or outbreak of disease severely affect the Chicago area, our operations could be significantly impacted. We may not be able to replicate the manufacturing capacity and other operations of our Chicago facilities in our Malaysian facility or elsewhere, or such replication could take significant time and resources to accomplish. The disruption from such an event could adversely affect or interrupt entirely our ability to conduct our business. Similarly, should a disruption from such an event occur at our Malaysia facility, the disruption could adversely affect or interrupt our ability to conduct our business.

We may acquire other businesses, products or technologies; if we do, we may be unable to integrate them with our business effectively or at all, which may adversely affect our business, financial condition and operating results.

If we find appropriate opportunities, we may acquire complementary businesses, product lines or technologies. However, if we acquire a business, product line or technology, the process of integration may produce unforeseen operating difficulties and expenditures and may absorb significant attention of our management that would otherwise be available for the ongoing development of our business. Further, the acquisition of a business may result in the assumption of unknown liabilities or create risks with respect to our existing relationships with suppliers and customers. If we make acquisitions, we may issue shares of stock that dilute other stockholders, expend cash, incur debt, assume contingent liabilities or create additional expenses related to amortizing intangible assets, any of which may adversely affect our business, financial condition or operating results.

Our ability to comply with the required payments and financial covenant in our loan agreement depends primarily on our ability to generate sufficient operating cash flow.

Our ability to comply with the financial covenant under our loan agreement with Silicon Valley Bank will depend primarily on our success in generating sufficient operating cash flow and receivables. Under the loan agreement, we are required to maintain a specified ratio of (i) unrestricted cash plus net billed accounts receivable to (ii) obligations under the loan agreement plus current liabilities, which ratio is tested on a quarterly basis. Industry conditions and financial, business and other factors, including those we identify as risk factors in this and our other reports, will affect our ability to generate the cash flows and receivables we need to meet those requirements. Our failure to meet the requirements could result in a default and acceleration of repayment of the indebtedness under the credit facility. In such event, the bank would be entitled to stop extending credit to us, which will hinder our ability to operate, and would proceed against the collateral securing the indebtedness, which includes substantially all of our personal property (other than intellectual property assets).

We have incurred significant losses in prior periods and may incur losses in the future.

We have incurred significant losses in prior periods. As of December 31, 2012, we had an accumulated deficit of $97.3 million. While we had net income of $38.1 million in 2011 and $29.1 million in 2010, we incurred net losses of $5.5 million, $9.6 million and $2.9 million in 2012, 2009 and 2007, respectively. There can be no assurance that we will have sufficient revenue growth to offset expenses or to achieve profitability in future periods.

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RISKS RELATED TO OWNERSHIP OF OUR COMMON STOCK

The price of our common stock has fluctuated substantially and may continue to do so.

Our common stock has only been publicly traded since November 16, 2007, and the trading price of our common stock has fluctuated substantially. From our initial public offering through March 11, 2013, the trading price of our common stock has ranged from a low of $2.50 to a high of $35.90.

Factors related to our company and our business, as well as broad market and industry factors, may adversely affect the market price of our common stock, regardless of our actual operating performance. Factors that could cause fluctuations in our stock price include, among other things:

- changes in market valuations of other companies in our industry;
- changes in financial guidance or estimates by us, by investors or by any financial analysts who might cover our stock or our industry;
- our ability to meet the performance expectations of financial analysts or investors;
- announcements by us or our competitors of significant products, contracts, acquisitions or strategic partnerships;
- general market and economic conditions; and
- the size of the public float of our stock.

Fluctuations caused by factors such as these may negatively affect the market price of our common stock. In addition, the other risks described elsewhere in this prospectus could adversely affect our stock price.

Our Board of Directors does not intend to declare or pay any dividends to our stockholders in the foreseeable future.

The declaration, payment and amount of any future dividends will be made at the discretion of our Board of Directors and will depend upon, among other things, the results of our operations, cash flows and financial condition, operating and capital requirements, and other factors the Board of Directors considers relevant. There is no plan to pay dividends in the foreseeable future, and if dividends are paid, there can be no assurance with respect to the amount of any such dividend.

The concentration of our capital stock ownership with the affiliates of one of our directors will limit your ability to influence corporate matters.

One of our directors, together with affiliates he controls, owns in the aggregate approximately 24% of our outstanding capital stock and voting power. For the foreseeable future, they will have significant influence over our management and affairs and over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger or other sale of our company or our assets. Their ownership may limit your ability to influence corporate matters and, as a result, the market price of our common stock could be adversely affected.

We could be the subject of securities class action litigation due to future stock price volatility.

The stock market in general, and market prices for the securities of companies like ours, have experienced extreme volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock, regardless of our operating performance. When the market price of a stock declines significantly, holders of

that stock have sometimes instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, our defense of the lawsuit could be costly and divert the time and attention of our management.

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Our certificate of incorporation, bylaws and Delaware law may discourage takeovers and business combinations that our stockholders might consider in their best interests.

A number of provisions in our certificate of incorporation and bylaws, as well as anti-takeover provisions of Delaware law, may have the effect of delaying, deterring, preventing or rendering more difficult a change in control of Rubicon that our stockholders might consider in their best interests. These provisions include:

- establishment of a classified board of directors;
- granting to the board of directors sole power to set the number of directors and to fill any vacancy on the board of directors, whether such vacancy occurs as a result of an increase in the number of directors or otherwise;
- limitations on the ability of stockholders to remove directors;
- the ability of our board of directors to designate and issue one or more series of preferred stock without stockholder approval, the terms of which may be determined at the sole discretion of the board of directors;
- prohibition on stockholders from calling special meetings of stockholders;
- prohibition on stockholders from acting by written consent; and
- establishment of advance notice requirements for stockholder proposals and nominations for election to the Board of Directors at stockholder meetings.

These provisions may prevent our stockholders from receiving the benefit from any premium to the market price of our common stock offered by a bidder in a takeover context. Even in the absence of a takeover attempt, the existence of these provisions may adversely affect the prevailing market price of our common stock if they are viewed as discouraging takeover attempts in the future.

The foregoing provisions of our certificate of incorporation and bylaws may also make it difficult for stockholders to replace or remove our management. These provisions may facilitate management entrenchment that may delay, deter, render more difficult or prevent a change in our control, which may not be in the best interests of our stockholders.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our executive, research and development and manufacturing functions are located on properties that we lease or own. We lease properties in Franklin Park, Illinois and Bensenville, Illinois. These facilities total approximately 102,600 square feet in seven buildings, which includes 30,000 square feet in our Bensenville, Illinois facility. The leases for these facilities terminate from July 2014 through August 2015. We own a 134,400 square foot facility in Batavia, Illinois. We also own a 65,000 square foot facility in Penang, Malaysia, which processes sapphire grown by us in our Illinois facilities into finished cores and wafers.

ITEM 3. LEGAL PROCEEDINGS

From time to time we may be named in claims arising in the ordinary course of business. Currently, there are no legal proceedings or claims pending against us or involving us that, in the opinion of our management, could reasonably be expected to have a material adverse effect on our business or financial condition.

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

Market Information

Our common stock began trading on the NASDAQ Global Market under the symbol RBCN on November 16, 2007. The following table sets forth the high and low sales prices for our common stock as reported on the NASDAQ Global Market for the periods indicated:

	High	Low
Fiscal year ended December 31, 2011		
First Quarter	$ 28.74	$ 17.65
Second Quarter	$ 29.79	$ 15.51
Third Quarter	$ 18.28	$ 10.50
Fourth Quarter	$ 12.82	$ 8.23

	High	Low
Fiscal year ended December 31, 2012		
First Quarter	$ 13.59	$ 8.20
Second Quarter	$ 10.92	$ 8.46
Third Quarter	$ 11.57	$ 8.28
Fourth Quarter	$ 9.96	$ 5.82

Holders

As of March 8, 2013, our common stock was held by approximately 27 stockholders of record and there were 22,579,203 shares of our common stock outstanding.

Dividend Policy

We have never declared or paid cash dividends on our common stock. We currently intend to retain future earnings to finance the growth and development of our business, and we do not anticipate declaring or paying any cash dividends in the foreseeable future.

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Performance Graph

The following graph compares the cumulative total stockholder return on our common stock during the period from November 16, 2007 (the first trading day following our initial public offering) through December 31, 2012, with the cumulative total returns of the NASDAQ Composite Index and the RDG Technology Composite Index. The graph assumes that the value of the investment in our common stock and in each of the indices (including reinvestment of dividends) was $100 on November 16, 2007.

	12/31/07	12/31/08	12/31/09	12/31/10	12/31/11	12/31/12
Rubicon Technology, Inc	100.00	17.94	85.52	88.76	39.54	25.73
NASDAQ Composite	100.00	59.03	82.25	97.32	98.63	110.78
RDG Technology Composite	100.00	56.89	85.04	103.10	103.14	117.75

The stock price performance reflected in this graph is not necessarily indicative of future stock price performance.

Recent Sales of Unregistered Securities

None.

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Issuer Purchases of Equity Securities

In August 2011, we announced a repurchase plan approved by our Board of Directors authorizing the purchase of up to $25.0 million of our outstanding common stock over a period of two years. The stock repurchase program authorizes us to purchase shares of our common stock in the open market at times and prices considered appropriate by us depending upon prevailing market conditions and other corporate considerations.

There were no purchases made during the quarter ended December 31, 2012 of equity securities that are registered by us pursuant to Section 12 of the Exchange Act.

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ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read in conjunction with Management s Discussion and Analysis of Financial Condition and Results of Operations and our consolidated financial statements and the related notes included elsewhere herein. The consolidated balance sheet data as of December 31, 2012 and 2011 and the consolidated statements of operations data for the years ended December 31, 2012, 2011 and 2010 are derived from our audited consolidated financial statements included elsewhere herein, which have been prepared in accordance with generally accepted accounting principles in the U.S. The consolidated balance sheet data as of December 31, 2010, 2009 and 2008 and the consolidated statements of operations data for the years ended December 31, 2009 and 2008 have been derived from our audited consolidated financial statements, which are not included in this Form 10-K.

SELECTED CONSOLIDATED FINANCIAL DATA

	Year ended December 31,				
	2012	2011	2010	2009	2008
	(In thousands, other than share and per share data)				
Consolidated statements of operations data:					
Revenue	$ 67,243	$ 134,000	$ 77,362	$ 19,808	$ 37,838
Cost of goods sold	67,283	64,365	36,205	23,427	25,746
Gross profit (loss)	(40)	69,635	41,157	(3,619)	12,092
Operating expenses:					
General and administrative	9,018	11,336	9,883	4,811	6,691
Sales and marketing	1,685	1,658	1,267	1,137	968
Research and development	2,274	1,806	1,079	801	862
Loss on disposal of assets	19	84	234		1,215
Total operating expenses	12,996	14,884	12,463	6,749	9,736
Income (loss) from operations	(13,036)	54,751	28,694	(10,368)	2,356
Other income (expense), net	450	(118)	346	738	2,003
Income (loss) before income taxes	(12,586)	54,633	29,040	(9,630)	4,359
Income tax benefit (expense)	7,048	(16,574)	71		(4)
Net income (loss)	$ (5,538)	$ 38,059	$ 29,111	$ (9,630)	$ 4,355
Net income (loss)					
Basic	$ (0.25)	$ 1.67	$ 1.34	$ (0.48)	$ 0.21
Diluted	$ (0.25)	$ 1.61	$ 1.28	$ (0.48)	$ 0.19
Weighted average common shares outstanding used in computing net income (loss) per common share					
Basic	22,523,951	22,852,205	21,726,090	20,117,543	20,892,040
Diluted	22,523,951	23,596,162	22,790,896		