LUNA INNOVATIONS INC
Form S-1/A
April 10, 2006
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As filed with the Securities and Exchange Commission on April 10, 2006

Registration No. 333-131764

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 2

to

FORM S-1

REGISTRATION STATEMENT

Under

The Securities Act of 1933

LUNA INNOVATIONS INCORPORATED

(Exact name of Registrant as specified in its charter)

Delaware	**8731**	**54-1560050**
(State or other jurisdiction of incorporation or organization)	**(Primary Standard Industrial Classification Code Number)**	**(I.R.S. Employer Identification Number)**

10 South Jefferson Street, Suite 130

Roanoke, Virginia 24011

(540) 552-5128

(Address, including zip code, and telephone number, including area code, of Registrant s principal executive offices)

Kent A. Murphy, Ph.D.

President, Chief Executive Officer and Chairman

Luna Innovations Incorporated

10 South Jefferson Street, Suite 130

Roanoke, Virginia 24011

(540) 552-5128

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Trevor J. Chaplick, Esq.	**Aaron S. Hullman, Esq.**	**Marjorie Sybul Adams, Esq.**
Mark R. Fitzgerald, Esq.	**Vice President and General Counsel**	**Daniel I. Goldberg, Esq.**
Wilson Sonsini Goodrich & Rosati,	**Luna Innovations Incorporated**	**DLA Piper Rudnick Gray Cary US LLP**
Professional Corporation	**10 South Jefferson Street, Suite 130**	**1251 Avenue of the Americas**
Two Fountain Square,	**Roanoke, Virginia 24011**	**New York, New York 10020**
Reston Town Center	**(540) 552-5128**	**(212) 835-6000**
11921 Freedom Drive, Suite 600		
Reston, Virginia 20190		
(703) 734-3100		

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this Registration Statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ¨

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ¨

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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The information contained in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS **SUBJECT TO COMPLETION, DATED APRIL 10, 2006**

Shares

Common Stock

$ per Share

This is the initial public offering of shares of common stock by Luna Innovations Incorporated.

We are offering shares of our common stock. We expect the initial public offering price to be between $ and $ per share. Prior to this offering, there has been no public market for our common stock.

We have applied to have the common stock included for quotation on the Nasdaq National Market under the symbol LUNA.

Investing in our common stock involves risks. See Risk factors beginning on page 8 to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Total
Initial public offering price	$	$
Underwriting discount	$	$
Proceeds, before expenses, to Luna Innovations Incorporated	$	$

We have granted the underwriters the right to purchase up to an additional shares of common stock from us at the initial public offering price less the underwriting discount to cover any over-allotments. The underwriters can exercise this right at any time within 30 days after the offering. We expect that delivery of the shares will be made to investors on or about ,

2006.

ThinkEquity Partners LLC

WR Hambrecht + Co

Merriman Curhan Ford & Co.

, 2006

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You should rely only on the information contained in this prospectus. We have not, and the underwriters have not, authorized anyone to provide you with different information. We are not making an offer of these securities in any state where the offer or sale is not permitted. You should not assume that the information contained in this prospectus is complete and accurate as of any date other than the date on the front cover, regardless of the time of delivery, of this prospectus.

We obtained statistical data and certain other industry forecasts used throughout this prospectus from publicly available information, including market research and industry publications. We have not independently verified such data or

sought the consent of the sources to refer to their reports in this prospectus.

Until , all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

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Prospectus summary

This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before buying shares in this offering. Therefore, you should read this entire prospectus carefully, including the Risk factors section beginning on page 8 and the financial statements and the related notes. Unless the context requires otherwise, the words we, us and our refer to Luna Innovations Incorporated and its consolidated subsidiaries.

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify technologies that can fulfill identified market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.

- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution, and defense applications.

We have a successful track record in executing our market-driven business model. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our aggregate revenues from January 1, 2003 through December 31, 2005 were $56.6 million, and our aggregate cost of revenues during that same period were $37.3 million. However, we had a net loss of $2.0 million for the year ended December 31, 2005, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Contract Research Group. Our Contract Research Group provides applied research to customers in our areas of focus. Our engineers and scientists collaborate with our network of government, academic and industry experts to identify technologies and ideas with promising market potential. After these promising technologies are identified, our Contract Research Group competes to win fee-for-service contracts from government agencies and industrial clients who seek innovative solutions to practical problems that require new technology. We focus primarily on contract research opportunities where we can retain partial or full rights to the intellectual property developed, and generally obtain full funding of the costs of contracts we undertake from our customers. This approach allows us to cover the costs of early-stage technology development with

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contract research revenues. Our contract research revenues grew from $10.4 million in 2003 to $13.8 million in 2004 and to $15.4 million in 2005. During this same period, our contract research costs increased from $8.9 million in 2003, to $11.0 million in 2004, and to $12.6 million in 2005. Our Contract Research Group seeks to continually supply our product pipeline with new opportunities.

Commercialization Strategy Group. Our Commercialization Strategy Group works closely with our network of federal and industrial customers to identify new market opportunities for our technologies. After ideas are driven to proof of concept in the Contract Research Group, our Commercialization Strategy Group develops detailed business plans for commercially viable products. It is at this stage that we first consider investing our own funds to finance the continued development of a product, which is then managed in our Products Group.

Products Group. Our Products Group currently consists of the following three divisions:

- **Luna Advanced Systems Division.** Most new product opportunities that are approved for further development by our management team are initially allocated to our Luna Advanced Systems Division. Products currently managed in this division include medical diagnostic instruments using our innovative ultrasound technologies, non-destructive industrial testing and homeland security devices, remote and secure wireless asset monitoring systems, flame retardants, multi-functional protective coating systems and blast and ballistic resistant materials. We transfer products to existing or new divisions within our Products Group with the resources needed for the successful commercialization of the technology if we determine that a product line is broad enough or that the market opportunity is sufficiently large.

- **Luna nanoWorks Division.** Our Luna nanoWorks Division develops and commercializes innovative products based on nanomaterials made from carbon, or carbon nanomaterials, that have broad potential applications. This division is developing MRI contrast agents, which are materials that can help physicians identify diseased tissues using MRI and that are designed to be potentially safer than, and technically superior to, contrast agents currently on the market. We currently supply nanomaterials to research laboratories and plan to supply proprietary high value-added carbon nanomaterials to customers who manufacture products such as solar cells, strong and light-weight composites and coatings to shield devices from electromagnetic interference.

- **Luna Technologies Division.** Our Luna Technologies Division manufactures and markets test and measurement equipment and integrated sensing solutions. This division s products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and gas production, aerospace and defense applications. Our products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

We expect that the capital raised in this offering will provide us greater flexibility in funding the commercialization of new technologies and will provide us the opportunity to increase the speed, quality and volume of products that we can develop.

Our Growth Strategy

We have the following key strategies to achieve our goal of accelerating the development and commercialization of innovative technologies and to create successful products in our areas of focus:

- **Focus on developing and commercializing a growing portfolio of innovative products.** We intend to build and commercialize a growing portfolio of high value-added products using innovative technologies and utilize our existing relationships to identify, prioritize and allocate resources to respond rapidly to market needs, and shorten the time to market for new products.

- **Transition our mix of revenues to a higher percentage of product sales and license revenues.** We plan to commercialize a growing number of products in order to increase the amount of revenues that we generate

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from product sales and license payments. To this end, we will seek to expand our distribution network and our ability to service our customers. We will also seek to allocate resources to improve our ability to manufacture and shorten the cycle time from idea to market and to monetize our intellectual property portfolio by licensing our technologies. As a result, we believe that product sales and license revenues will comprise a greater portion of our total revenues in the future.

- **Continue to strengthen our Contract Research Group.** We will seek to strengthen our Contract Research Group through increased resource allocation and hiring and by expanding our network of relationships with federal laboratories, major research universities and industry leaders. These steps will provide us the opportunity to grow our applied research business, remain informed of the latest technological advances and increase the quality and volume of high potential technologies that will support our product pipeline.

- **Expand our intellectual property portfolio in our areas of focus.** We will seek to expand our intellectual property portfolio by applying our disciplined processes to generate know-how and intellectual property through our network of relationships and our own research and development efforts. By continuing to expand our intellectual property, we will seek to enhance our competitive position and develop additional products in these areas.

Challenges in Executing our Growth Strategy

We face several challenges to the successful implementation of our growth strategy. In addition, our business is subject to numerous risks, which we highlight in the section entitled Risk factors immediately following this prospectus summary. For example, our ability to grow by developing and commercializing multiple products simultaneously requires that we manage a diverse range of projects, expand our personnel resources and broaden our geographic presence. Our inability to do any of these could prevent us from successfully implementing our growth strategy. In addition, the success of our business model depends on our ability to identify correctly market needs for new technologies. If we are not successful in identifying market needs or in developing new products to meet those needs, we may not be successful in growing our product revenues or transitioning our revenues mix from contract research revenues to product sales and license revenues.

We believe that sustained growth at a higher rate will place a strain on our management, as well as on our other human resources. If we are unable to attract and retain qualified personnel as we grow our operations, we may be unable to staff and manage projects adequately, which may slow the development process, result in the commercialization of fewer products or compromise the quality of our work. Moreover, the products that we have developed or are currently developing will compete with other technologically innovative products as well as products incorporating conventional materials and technologies. Our competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. If we are unable to compete successfully against current or new competitors, our product revenues may not increase or may decline.

In addition, our commercial success will depend in part on our obtaining and maintaining intellectual property protection for our technologies as well as successfully enforcing and defending our intellectual property rights against third-party challenges. Moreover, if the commercial versions of our products that are currently under development do not incorporate our proprietary technologies, our intellectual property portfolio may not afford us a competitive advantage.

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Company Information

We were incorporated as a Virginia corporation in July 1990. In December 1998 we changed our name from FEORC, Inc. to F&S Technologies, Inc., and in July 1999, we changed our name to Luna Innovations Incorporated. In April 2003, we reincorporated through a merger as a Delaware corporation and retained the name Luna Innovations Incorporated. Our principal offices are located at 10 South Jefferson Street, Suite 130, Roanoke, Virginia 24011. Our telephone number is (540) 552-5128. You can access our web site at www.lunainnovations.com. Information contained on our website does not constitute part of this prospectus.

LUNA INNOVATIONS is a registered trademark in the United States. Our unregistered trademarks include: our logo (a black and white image of a moth design); TRIMETASPHERES; EDAC; and ACCELERATING THE INNOVATION PROCESS.

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The Offering

Proposed Nasdaq National Market symbol	LUNA
Common stock offered by us	shares
Common stock outstanding after this offering	shares
Use of proceeds	We intend to use the net proceeds from this offering principally to fund further development and expansion of our products and product candidates, in particular our nanomaterial and ultrasound-related product candidates, and for general working capital purposes. We may also use such proceeds for potential acquisitions of complementary products, technologies or businesses. See Use of proceeds.

The number of shares of common stock that will be outstanding after this offering is based on 10,630,935 shares outstanding as of December 31, 2005 and excludes:

- 7,033,517 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of $0.38 per share, which includes 5,246,017 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share and 1,587,500 shares of common stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share;

- 409,860 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;

- 6,494 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of $12.92 per share, which includes 3,858 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $1.00 per share;

- 1,885,490 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory notes issued to Carilion Health System on December 30, 2005 and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for a maximum period of up to eight years, up to an additional 905,035 shares of common stock; and

- 122,745 shares of common stock issued or reserved for issuance in connection with the acquisition of Luna Technologies, Inc. that were held in escrow on that date, and 429 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 per share held in escrow as of that date.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval, which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

Unless otherwise indicated, all information in this prospectus assumes:

- Ø a -for- split of our common stock, to be effected immediately prior to the effectiveness of this offering;
- Ø the conversion, in accordance with our certificate of incorporation, of all our shares of outstanding Class A Common Stock, Class B Common Stock and Class C Common Stock into shares of our common stock;
- Ø that the underwriters do not exercise their over-allotment option; and
- Ø the adoption of our amended and restated certificate of incorporation and bylaws.

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Summary historical and pro forma financial data

The following table presents summary historical and unaudited pro forma consolidated financial data. We derived the summary consolidated statements of operations data for the years ended December 31, 2003, 2004 and 2005 from our audited consolidated financial statements.

The unaudited pro forma consolidated statement of operations data give effect to our September 30, 2005 purchase of Luna Technologies, Inc. and the issuance of shares of our common stock to former Luna Technologies stockholders in connection with that transaction as if it had occurred on January 1, 2005.

You should read the following information together with the more detailed information contained in Selected consolidated financial data, Management s discussion and analysis of financial condition and results of operations, and the financial statements and the accompanying notes included elsewhere in this prospectus.

(in thousands, except share and per share data)	Years Ended December 31,		
	2003	2004	2005
Consolidated Statements of Operations Data:			
Revenues:			
Contract research revenues	$10,358	$13,835	$15,380
Product sales and license revenues	7,234	8,752	1,074
Total revenues	17,592	22,587	16,454
Cost of revenues:			
Contract research costs	8,949	10,985	12,552
Product sales and license costs	1,543	2,881	410
Total cost of revenues	10,492	13,866	12,962
Gross profit	7,099	8,721	3,492
Operating expense	4,856	4,190	6,004
Operating income (loss)	2,243	4,532	(2,512)
Other income (expense)(1)	(138)	(257)	2
Interest income (expense), net	(87)	(90)	(41)
Income (loss) before income taxes	2,018	4,184	(2,551)
Income tax expense (benefit)	886	128	(557)
Net income (loss)	$1,132	$4,056	$(1,994)
Net income (loss) per common share:			
Basic	$0.23	$0.79	$(0.30)

Diluted	$0.22	$0.64	$(0.30)
Weighted-average shares:			
Basic	5,030,428	5,136,001	6,609,364
Diluted	5,141,003	6,301,484	6,609,364

(1) Includes minority interests and excludes interest expense.

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Summary historical and pro forma financial data

(in thousands, except share and per share data)	Pro Forma Year Ended December 31, 2005 (unaudited)
Pro Forma Consolidated Statement of Operations Data:	
Revenues	$18,642
Cost of revenues	14,036
Gross profit	4,606
Operating expense	7,497
Operating income (loss)	(2,891)
Miscellaneous income	1
Interest income (expense), net	(53)
Income (loss) before income taxes	(2,943)
Income tax expense (benefit)	(557)
Net income (loss)	$(2,386)
Net income (loss) per common share:	
Basic	$(0.36)
Diluted	$(0.36)
Weighted-average number of shares used in per share calculations:	
Basic	6,609,364
Diluted	6,609,364

The following table presents selected balance sheet data as of December 31, 2005 on an actual basis and on an as adjusted basis to give effect to the sale by us of shares of our common stock in this initial public offering at an assumed price of $ per share, the mid-point of the range on the front cover of this prospectus, after deducting the underwriting discount and estimated offering expenses.

(in thousands)	As of December 31, 2005	
	Actual	As Adjusted
	(unaudited)	
Consolidated Balance Sheet Data:		
Cash and cash equivalents	$12,515	$

Working capital (deficit)	11,843
Total assets	24,134
Total current liabilities	6,993
Total debt(1)	5,431
Stockholders equity	10,854

(1) Includes capital lease obligations.

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Risk factors

An investment in our common stock offered by this prospectus involves a substantial risk of loss. You should carefully consider these risk factors, together with all of the other information included in this prospectus, before you decide to purchase shares of our common stock. The occurrence of any of the following risks could harm our business. In that case, the trading price of our common stock could decline, and you may lose part or all of your investment.

Risks Related to Our Business and Technologies

If we are unable to manage our growth effectively, our revenues and profits could be adversely affected.

While historically we have developed and commercialized only a few products at a time, we plan to grow by developing and commercializing multiple products concurrently across many industries, technologies and markets. Our ability to grow by developing and commercializing multiple products simultaneously requires that we manage a diverse range of projects, expand our personnel resources and broaden our geographic presence. Our inability to do any of these could prevent us from successfully implementing our growth strategy, and our revenues and profits could be adversely affected.

As of December 31, 2005, we had 68 research contracts covering a broad range of technologies, industries and markets. To advance the development of multiple promising potential products concurrently, we need to manage effectively the logistics of maintaining the requisite corporate, operational, administrative and financing functions for each of these products. Expanding our operations into new geographic areas and relying on multiple facilities to develop and manufacture different products concurrently pose additional challenges. We have little experience in managing these functions simultaneously for multiple projects in development or in building new infrastructure and integrating the operations of various facilities. If we cannot manage this process successfully, we may be subject to operating difficulties, additional expenditures and reduced revenues.

We need to expand our personnel resources to grow our business effectively. We believe that sustained growth at a higher rate will place a strain on our management, as well as on our other human resources. To manage this growth, we must continue to attract and retain qualified management, professional, scientific and technical and operating personnel. If we are unable to do so, we may be unable to staff and manage projects adequately, which may slow the development process, result in the commercialization of fewer products or compromise the quality of our work.

We have incurred recent losses, and because our strategy for expansion may be costly to implement, we may experience continuing losses which may be significant.

We incurred consolidated net losses of approximately $2.0 million for the year ended December 31, 2005. We expect to continue to incur significant additional expenses as we expand our business, including increased expenses for research and development, sales and marketing, manufacturing, finance and accounting personnel and expenses associated with being a public company. We

may also grow our business in part through acquisitions of additional companies and complementary technologies which could cause us to incur greater than anticipated transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we expect that we may likely continue to incur losses for the foreseeable future, and these losses could be substantial.

Because of the numerous risks and uncertainties associated with our business and our expansion strategy, we are unable to predict when or if we will be able to achieve profitability again. If our revenues do not increase, or if our expenses increase at a greater rate than our revenues, we will continue to experience losses. Even if we do achieve profitability, we may not be able to sustain or increase our profitability on a quarterly or annual basis.

We may not be successful in identifying market needs for new technologies and developing new products to meet those needs.

The success of our business model depends on our ability to identify correctly market needs for new technologies. We intend to identify new market needs, but we may not always have success in doing so, in part, because our contract research largely

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centers on technologies characterized by constant change and unpredictable markets. Furthermore, we must identify the most promising technologies from a sizable pool of projects. For example, we had 68 contract research projects as of December 31, 2005. If our Commercialization Strategy Group fails to identify the projects with the highest commercial potential or if management does not ensure that only the highest potential projects advance to the commercialization stage, we may not successfully commercialize new products and grow our revenues.

Our growth strategy requires that we not only identify new technologies that meet market needs, but that we also develop successful commercial products that address those needs. We face several challenges in developing successful new products. Many of our existing products and those currently under development including our Trimetasphere carbon nanomaterials, which are nanomaterials in the form of a carbon sphere with three metal atoms enclosed inside are technologically innovative and require significant and lengthy product development efforts. These efforts include planning, designing, developing and testing at the technological, product and manufacturing-process levels. These activities require us to make significant investments. Although there are many potential applications for our technologies, our resource constraints require us to focus on specific products and to forgo other opportunities. We expect that one or more of the potential products we choose to develop will not be technologically feasible or will not achieve commercial acceptance, and we cannot predict which, if any, of our products we will successfully develop or commercialize. The technologies we research and develop are new and steadily changing and advancing. The products that are derived from these technologies may not be applicable or compatible with the state of technology or demands in existing markets. Our existing products and technologies may become uncompetitive or obsolete if our competitors adapt more quickly than we do to new technologies and changes in customers requirements. Furthermore, we may not be able to identify if and when new markets will open for our products given that future applications of any given product may not be readily determinable, and we cannot reasonably estimate the size of any markets that may develop. If we are not able to successfully develop new products, we may be unable to increase our product revenues.

We rely and will continue to rely on contract research for a significant portion of our revenues. Any decrease in these revenues, including Small Business Innovation Research, or SBIR, revenues, could adversely affect our business.

We derive a significant portion of our revenues from contract research which we perform for third parties. Contract research accounted for approximately 61.3% and 93.5% of our consolidated total revenues for the years ended December 31, 2004 and 2005, respectively. SBIR revenues accounted for approximately 43.3% and 59.8% of our consolidated total revenues for the years ended December 31, 2004 and 2005, respectively, and 40.2% and 52.8% of our pro forma consolidated total revenues, which include the operations of Luna Technologies for the years ended December 31, 2004 and 2005, respectively. Contract research will remain a significant portion of our consolidated total revenues for the foreseeable future. Our strategy for developing innovative technologies and products depends in large part on our ability to continue to enter into and generate revenues from contract research, including SBIR contracts, for which we must comply with certain eligibility criteria. Our contract research customer base includes government agencies, academic institutions and corporations. Our customers are not obligated to extend their agreements with us. In addition, our contracts with government agencies, which accounted for approximately 86.1% and 93.3% of our contract research revenues for the years ended December 31, 2004 and 2005, respectively, provide that the U.S. government may terminate funding prior to the expiration of these contracts, regardless of whether we have demonstrated technological feasibility or have met specified milestones. In addition, we may not be successful in securing future contracts. Our customers priorities regarding funding for certain projects may change and funding resources may no longer be available at previous levels.

We rely and will continue to rely on contracts and grants awarded under the SBIR program for a significant portion of our revenues. A finding by the Small Business Administration, or SBA, that we no longer qualify to receive SBIR funding could adversely affect our business.

We may not qualify to participate in the Small Business Administration s, or SBA s, SBIR program or receive an SBIR award from any federal agency in the future. In order to qualify for SBIR contracts and grants, at least 51% of our equity must be

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Risk factors

owned and controlled by U.S. citizens or permanent resident aliens, or by another entity that is at least 51% owned or controlled by U.S. citizens or permanent resident aliens, and we must have 500 or fewer employees. These eligibility criteria are applied as of the time of the award of a contract or grant. In determining whether we satisfy the 51% equity ownership requirement, agreements to merge, stock options, convertible debt and other similar instruments are given present effect by the SBA, as though the underlying security were actually issued unless the exercisability or conversion of such securities is speculative, remote or beyond the control of the security holder. We therefore believe our outstanding options and warrants held by eligible individuals may be counted as, and our convertible debt may be excluded from, outstanding equity for purposes of meeting the 51% equity ownership requirement. As of December 31, 2005, giving present effect to our outstanding options, approximately 73% of our equity was owned by U.S. citizens or permanent resident aliens. Upon the completion of this offering, approximately % of our equity will be owned by U.S. citizens or permanent resident aliens (and approximately % assuming exercise of the underwriters over-allotment option).

We believe that we are currently in compliance with the SBIR eligibility criteria but we cannot provide assurance that the SBA will interpret its regulations in our favor. We must be able to certify that we meet the SBIR ownership and size requirements as of the time we enter into each SBIR contract or grant, and SBA may review our size status in connection with each SBIR contract or grant. As we grow our business, it is foreseeable that we will eventually exceed the SBIR eligibility limitations and we may need to find other sources to fund our research and development efforts. If we are unsuccessful in obtaining additional contracts or funding grants because we cannot meet the eligibility requirements or if our customers decide to reduce or discontinue support of our products, we may be required to seek alternative sources of revenues or capital.

The SBA could determine that, as a result of Carilion Health System s equity ownership, the number of our employees exceeds the size limitation placed on SBA contract and SBIR grant recipients, and therefore we will not be eligible to receive future SBA contracts and SBIR grants.

In addition to the U.S. ownership eligibility criteria discussed above, to be eligible for SBA contracts and SBIR grants, the number of our employees including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2005, we, including all of our divisions, had 131 full-time and 12 part-time employees. However, in determining whether we are affiliated with any other entity, the SBA analyzes whether another entity controls or has the power to control us. If the SBA determines that another entity controls or has the power to control us, it will aggregate that entity s employees (and the employees of its subsidiaries and affiliates) with our own for purposes of applying the 500 employee test.

The SBA may make an affiliation determination based on stock ownership. For example, the SBA may presume that two or more entities have the power to control a company if the entities each own, control or has the power to control, less than 50 percent of the company s stock, such minority holdings are equal or approximately equal in size, and the aggregate of the minority holdings is large as compared to any other stock holding. However, this presumption may be rebutted by showing that such control or power to control does not in fact exist. Prior to this offering, Carilion Health System held 35.5% of the voting power of our common stock, and Dr. Kent Murphy owned 43.9% of the voting power of our common stock, and after the offering, these ownership percentages will be approximately equal to % and %, respectively. Thus, applying the criteria stated above, the SBA could find that both Carilion Health System and Dr. Murphy own less than 50% of the stock, their percentages are roughly equal, and their respective percentages are large compared to any other stock holding. We believe that the relative beneficial ownership of our individual stockholders rebuts the presumption of control by Carilion Health System because the shares held by our executive officers and directors constitute the controlling interest in us. However, if the SBA were to make a determination that we are affiliated with Carilion Health System, we would exceed the size limitations as Carilion Health System has over 500 employees, and we therefore would lose eligibility for SBA contracts, public contracts, grants and other awards that are set aside for small businesses, including SBIR grants.

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We depend on government-funded research contracts for most of our contract research revenues, and a decline in government funding of existing or future government research contracts could adversely affect our revenues and cash flows and our ability to fund our growth.

Government-funded research accounted for approximately 86.1% and 93.3% of our contract research revenues and 52.8% and 87.2% of our consolidated total revenues for the years ended December 31, 2004 and 2005, respectively. On a pro forma consolidated basis, which includes the results of operations of Luna Technologies as if acquired on January 1, 2004, government-funded research accounted for 49.0% and 76.9% of our pro forma consolidated total revenues for the years ended December 31, 2004 and 2005, respectively. As a result, we are vulnerable to adverse changes in our revenues and cash flows if a significant number of our government research contracts and subcontracts are simultaneously delayed or canceled for budgetary, performance or other reasons. The U.S. government may cancel these contracts at any time without cause and without penalty or may change its requirements, programs or contract budget, any of which could reduce our revenues and cash flows from U.S. government research contracts. Our revenues and cash flows from U.S. government research contracts could also be reduced by declines or other changes in U.S. defense, homeland security and other federal agency budgets. In addition, we compete as a small business for some of these contracts, and in order to maintain our eligibility to compete as a small business, we (together with any affiliates) must continue to meet size and revenue limitations established by the U.S. government.

In addition to contract cancellations and changes in agency budgets, our future financial results may be adversely affected by curtailment of the U.S. government s use of contract research providers, including curtailment due to government budget reductions and related fiscal matters. These or other factors could cause U.S. defense and other federal agencies to conduct research internally rather than through commercial research organizations, to reduce their overall contract research requirements or to exercise their rights to terminate contracts. Any of these actions could limit our ability to obtain new contract awards and adversely affect our revenues and cash flows and our ability to fund our growth.

If we cannot successfully transition our revenues mix from contract research revenues to product sales and license revenues, we may not be able to fully execute our business model or grow our business.

Our business model and future growth depend on our ability to transition to a revenues mix that contains significantly larger product sales and license revenues components. Product sales and license revenues potentially offer greater scalability than services-based contract research revenues. Our current plan is to increase our portfolio of commercial products and, accordingly, we expect that our future product sales and license revenues will represent a larger percentage of total revenues. However, if we are unable to develop and grow our product sales and license revenues to augment our contract research revenues, our ability to execute our business model or grow our business could suffer.

We face and will face substantial competition in several different markets that may adversely affect our results of operations.

We face or will face substantial competition from a variety of companies in several different markets. Our competitors in contract research include, but are not limited to, companies such as General Dynamics Corporation, Lockheed Martin Corporation, SAIC, Inc. and SRA International, Inc. In the molecular technology solutions products market, our competitors include, but are not limited to, large public manufacturers such as The Dow Chemical Company, E.I. du Pont de Nemours and Company, Rohm and Haas Company and 3M Company, as well as emerging companies. In addition, in the MRI contrast agent market our competitors include

Amersham Plc, Berlex Laboratories, Inc., Bracco Diagnostics, Inc., and Mallinckrodt Inc. In the sensor solutions products market, our competitors include, but are not limited to, large companies such as Agilent Technologies, Inc., Analog Devices, Inc., Freescale Semiconductor, Inc., JDS Uniphase Corp., Robert Bosch GmbH and Silicon Sensing, as well as emerging companies.

The products that we have developed or are currently developing will compete with other technologically innovative products as well as products incorporating conventional materials and technologies. We expect that our products will compete with

companies in a wide range of industries, including semiconductors, electronics, biotechnology, textiles, alternative energy, military, defense, healthcare, telecommunications, industrial measurement, security applications and consumer electronics.

Many of our competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, sales and marketing, manufacturing, distribution, technical and other resources than we do. These competitors may be able to adapt more quickly to new or emerging technologies and changes in customer requirements. In addition, current and potential competitors have established or may establish financial or strategic relationships among themselves or with existing or potential customers or other third parties. Accordingly, new competitors or alliances among competitors could emerge and rapidly acquire significant market share. We cannot assure you that we will be able to compete successfully against current or new competitors, in which case our net revenues may fail to increase or may decline.

A substantial portion of our technology is subject to retained rights of our licensors, and we may not be able to prevent the loss of those rights or the grant of similar rights to third parties.

A substantial portion of our technology is licensed from academic institutions, corporations and government agencies. Under these licensing arrangements, a licensor may obtain rights over the technology, including the right to require us to grant a license to one or more third parties selected by the licensor or that we provide licensed technology or material to third parties for non-commercial research. For example, under the Trimetasphere nanomaterials license, we have been required to supply Trimetasphere nanomaterials to three foreign and five domestic university research institutions and one corporate industrial research laboratory and may be required to supply such materials to other organizations for non-commercial research. The grant of a license for any of our core technologies to a third party could have a material and adverse effect on our business. In addition, our licensors retained certain rights under the licenses including the right to grant additional licenses to a substantial portion of our core technology to third parties for noncommercial academic and research use. It is difficult to monitor and enforce such noncommercial academic and research uses, and we cannot predict whether the third party licensees would comply with the use restrictions of such licenses. We could incur substantial expenses to enforce our rights against them. We also may not fully control the ability to assert or defend those patents or other intellectual property which we have licensed from other entities, or which we have licensed to other entities.

In addition, some of our licenses with academic institutions give us the right to use certain technology previously developed by researchers at these institutions. In certain cases we also have the right to practice improvements on the licensed technology to the extent they are encompassed by the licensed patents and within our field of use. Our licensors may currently own and may in the future obtain additional patents and patent applications that are necessary for the development, manufacture and commercial sale of our anticipated products. We may be unable to agree with one or more academic institutions from which we have obtained licenses that certain intellectual property developed by researchers at these academic institutions is covered by our existing licenses. In the event that the new intellectual property is not covered by our existing licenses, we would be required to negotiate a new license agreement. We may not be able to reach agreement with current or future licensors on commercially reasonable terms, if at all, or the terms may not permit us to sell our products at a profit after payment of royalties, which could harm our business.

Some of our patents may cover inventions that were conceived or first reduced to practice under, or in connection with, U.S. government contracts or other federal funding agreements. With respect to inventions conceived or first reduced to practice under a federal funding agreement, the U.S. government may retain a nonexclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the invention throughout the world. We may not have succeeded in

our efforts to retain title in patents, maintain ownership of intellectual property or in limiting the U.S. government s rights in our proprietary technologies and intellectual property whether such intellectual property was developed in the performance of a federal funding agreement or developed at private expense.

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Risk factors

Our proprietary rights may not adequately protect our technologies.

Our commercial success will depend in part on our obtaining and maintaining patent, trade secret, copyright and trademark protection of our technologies in the United States and other jurisdictions as well as successfully enforcing this intellectual property and defending this intellectual property against third-party challenges. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable intellectual property protections, such as patents or trade secrets, cover them. In particular, we place considerable emphasis on obtaining patent and trade secret protection for significant new technologies, products and processes. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. Moreover, the degree of future protection of our proprietary rights is uncertain for products that are currently in the early stages of development such as the Trimetasphere carbon nanomaterials products because we cannot predict which of these products will ultimately reach the commercial market or whether the commercial versions of these products will incorporate proprietary technologies.

Our patent position is highly uncertain and involves complex legal and factual questions. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. For example:

- we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents;
- we or our licensors might not have been the first to file patent applications for these inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies;
- it is possible that none of our pending patent applications or the pending patent applications of our licensors will result in issued patents;
- our issued patents and issued patents of our licensors may not provide a basis for commercially viable technologies, or may not provide us with any competitive advantages, or may be challenged and invalidated by third parties; and
- we may not develop additional proprietary technologies that are patentable.

Patents may not be issued for any pending or future pending patent applications owned by or licensed to us, and claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Moreover, protection of certain of our intellectual property may be unavailable or limited in the United States or in foreign countries, and certain of our products including our Trimetasphere carbon nanomaterials products do not have foreign patent protection. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated, or circumvented, and the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, and in the case of certain products no foreign patents were filed or can be filed. This could make it easier for competitors

to capture or increase their market share with respect to related technologies. Although we are not currently involved in any legal proceedings related to intellectual property, we could incur substantial costs to bring suits in which we may assert our patent rights against others or defend ourselves in suits brought against us. An unfavorable outcome of any such litigation could have a material adverse effect on our business and results of operations.

We also rely on trade secrets to protect our technology, especially where we believe patent protection is not appropriate or obtainable. However, trade secrets are difficult to protect. We vigorously pursue confidentiality agreements and contractual provisions with our collaborators, employees, and consultants to protect our trade secrets and proprietary know-how. These agreements may be breached and or may not have adequate remedies for such breach. While we use reasonable efforts to protect our trade secrets, our employees, consultants, contractors or scientific and other advisors, or those of our strategic partners, may unintentionally or willfully disclose our information to competitors. If we were to enforce a claim that a third party

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had illegally obtained and was using our trade secrets, our enforcement efforts would be expensive and time consuming, and the outcome would be unpredictable. In addition, courts outside the United States are sometimes unwilling to protect trade secrets. Moreover, if our competitors independently develop equivalent knowledge, methods and know-how, it will be more difficult for us to enforce our rights and our business could be harmed.

If we are not able to defend the patent or trade secret protection position of our technologies, then we will not be able to exclude competitors from developing or marketing competing technologies, and we may not generate enough revenues from product sales to justify the cost of development of our technologies and to achieve or maintain profitability.

We also rely on trademarks to establish a market identity for Luna and Luna products. We currently have one registered trademark in the United States and three pending trademark applications filed with the U.S. Patent and Trademark Office. To maintain the value of our trademarks, we might have to file lawsuits against third parties to prevent them from using trademarks confusingly similar to or dilutive of our registered or unregistered trademarks. Also, we might not obtain registrations for our pending trademark applications, and might have to defend our registered trademark and pending trademark applications from challenge by third parties. Enforcing or defending our registered and unregistered trademarks might result in significant litigation costs and damages, including the inability to continue using certain trademarks.

Third parties may claim that we infringe their intellectual property, and we could suffer significant litigation or licensing expense as a result.

Various U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in our technology areas. Such third parties may claim that we infringe their patents. Because patent applications can take several years to result in a patent issuance, there may be currently pending applications, unknown to us, which may later result in issued patents that our technologies may infringe. For example, we are aware of competitors with patents in technology areas applicable to our optical test equipment products. Such competitors may allege that we infringe these patents. There could also be existing patents of which we are not aware that our technologies may inadvertently infringe. If third parties assert claims against us alleging that we infringe their patents or other intellectual property rights including third parties that have asserted claims against businesses that we have acquired prior to our acquisition of these businesses we could incur substantial costs and diversion of management resources in defending these claims, and the defense of these claims could have a material adverse effect on our business, financial condition, and results of operations. In addition, if third parties assert claims against us and we are unsuccessful in defending against these claims, these third parties may be awarded substantial damages, as well as injunctive or other equitable relief against us, which could effectively block our ability to make, use, sell, distribute, or market our products and services in the United States or abroad. For example, we acquired a business that had received a letter in 2002 from a competitor alleging infringement of certain patents. The competitor sent an additional letter on January 14, 2004 to the business that we acquired, again alleging infringement of the competitor s patents. Neither we nor the business that we acquired have received any further communications from this third party. We cannot currently predict whether this third party, or any other third party, will assert a claim against us, or whether any third parties that have asserted such claims against businesses that we have acquired will assert claims or pursue infringement litigation against us; nor can we predict the ultimate outcome of any such potential claims or litigation.

Commercial application of nanotechnologies, or technologies involving nanomaterials, is new and the scope and breadth of patent protection is uncertain. Consequently, the patent positions of companies involved in nanotechnologies have not been tested and complex legal and factual questions for which important legal principles will be developed or may remain unresolved. In addition, it is not clear whether such patents will be subject to interpretations or legal doctrines that differ from conventional patent law

principles. Changes in either the patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our nanotechnology-related intellectual property. Accordingly, we cannot predict the breadth of claims that may be allowed or enforced in our nanotechnology-related patents or in third party patents.

In the event that a claim relating to intellectual property is asserted against us, or third parties not affiliated with us hold pending or issued patents that relate to our products or technology, we may seek licenses to such intellectual property or

challenge those patents. However, we may be unable to obtain these licenses on commercially reasonable terms, if at all, and our challenge of the patents may be unsuccessful. Our failure to obtain the necessary licenses or other rights could prevent the sale, manufacture, or distribution of our products and, therefore, could have a material adverse effect on our business, financial condition, and results of operations.

For example, we are a party to an exclusive license agreement with NASA for certain patented ultrasound technology. The field of this license is limited to measurement of intracranial pressure and compartment syndrome. We currently engage in ultrasound product development activities in bone strength measurement, embolus detection and detection of concealed weapons. To the extent that these activities are covered by the licensed NASA patents, we may be required to acquire an additional license from NASA. We cannot currently predict whether NASA would grant an additional license to us for these fields of use, if such a license were required.

As a provider of contract research to the U.S. government, we are subject to federal rules, regulations, audits and investigations, the violation or failure of which could adversely affect our business.

We must comply with and are affected by laws and regulations relating to the award, administration and performance of U.S. government contracts. Government contract laws and regulations affect how we do business with our government customers and, in some instances, impose added costs on our business. A violation of specific laws and regulations could result in the imposition of fines and penalties or the termination of our contracts or debarment from bidding on contracts. In some instances, these laws and regulations impose terms or rights that are more favorable to the government than those typically available to commercial parties in negotiated transactions. For example, the U.S. government may terminate any of our government contracts and, in general, subcontracts, at their convenience, as well as for default based on performance.

In addition, U.S. government agencies, including the Defense Contract Audit Agency and the Department of Labor, routinely audit and investigate government contractors. These agencies review a contractor s performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. The U.S. government also may review the adequacy of, and a contractor s compliance with, its internal control systems and policies, including the contractor s purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allocated to a specific contract will not be reimbursed, while such costs already reimbursed must be refunded. If an audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, suspension of payments, fines and suspension or prohibition from doing business with the U.S. government. In addition, we could suffer serious reputational harm if allegations of impropriety were made against us.

In March 2003, the Office of Inspector General of the Department of Commerce advised us that the government was investigating anonymous allegations of contract improprieties. We have cooperated fully and extensively with that investigation through interviews and document production. In April 2003, the government advised our regulatory counsel that to date no wrongdoing had been identified, although the government indicated that we may not have fully complied with contractual reporting requirements in one or two instances, which the government did not specify. We believe that the investigation has been resolved favorably, based on statements by the government investigator to our employees in June 2003, and that this matter effectively is at an end absent any advice or communication from the government to the contrary. However, there can be no assurance as to how or whether our relationships, business, financial condition or results of operations will ultimately be affected, if at all, by the investigation.

On November 9, 2004, we received a subpoena from the Department of Defense Office of the Inspector General covering certain government research contracts awarded to us between January 1, 1998 and November 9, 2004 to determine if we had duplicated work in our submission of project reports to the government. In connection with the investigation, the government alleged that duplication occurred in three research reports that we prepared under the contracts. We submitted a response to the Inspector General in September 2005 challenging the government s findings. On November 15, 2005, we entered into a

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settlement agreement with the government and received a general release with respect to the civil and administrative claims in this matter in return for a payment of $165,333.

In addition to the risk of government audits and investigations, U.S. government contracts and grants impose requirements on contractors and grantees relating to ethics and business practices, which carry civil and criminal penalties ranging from monetary fines, assessments, loss of the ability to do business with the U.S. government and certain other criminal penalties.

We may also be prohibited from commercially selling certain products that we develop under our Contract Research Group or related products based on the same core technologies if the U.S. government determines that the commercial availability of those products could pose a risk to national security. For example, certain of our wireless technologies have been classified as secret by the U.S. government and as a result we cannot sell them commercially. Any of these determinations would limit our ability to generate product sales and license revenues.

We are subject to significant foreign and domestic government regulations, including environmental and health and safety regulations, and failure to comply with these regulations could harm our business.

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of foreign, federal, state, and local laws and regulations relating to health and safety, protection of the environment, and the storage, use, disposal of, and exposure to, hazardous materials and wastes. We could incur costs, fines and civil and criminal penalties, personal injury and third party property damage claims, or could be required to incur substantial investigation or remediation costs if we were to violate or become liable under environmental, health and safety laws. Moreover, a failure to comply with environmental laws could result in fines and the revocation of environmental permits, which could prevent us from conducting our business. Liability under environmental laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental health and safety laws will not occur in the future as a result of the inability to obtain permits, human error, equipment failure or other causes. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our business. Accordingly, violations of present and future environmental laws could restrict our ability to expand facilities, pursue certain technologies, and could require us to acquire costly equipment, or to incur potentially significant costs to comply with environmental regulations.

The European Union Directive 2002/96/EC on Waste Electrical and Electronic Equipment, known as the WEEE Directive, requires producers of certain electrical and electronic equipment, including monitoring instruments, to be financially responsible for specified collection, recycling, treatment and disposal of past and present covered products placed on the market in the European Union. As a manufacturer of covered products, we may be required to register as a producer in some European Union countries, and we may incur some financial responsibility for the collection, recycling, treatment and disposal of both new product sold, and product already sold prior to the WEEE Directive s enforcement date, including the products of other manufacturers where these are replaced by our own products. European Union Directive 2002/95/EC on the Restriction of the use of Hazardous Substances in electrical and electronic equipment, known as the RoHS Directive, restricts the use of certain hazardous substances, including mercury, lead and cadmium in specified covered products; however, the RoHS Directive currently exempts monitoring instruments from its requirements. If the European Commission were to remove this exemption in the future, we would be required to change our manufacturing processes and redesign products regulated under the RoHS Directive in order to be able to continue to offer them for sale within the European Union. For some products, substituting certain components containing regulated hazardous

substances may be difficult, costly or result in production delays. We will continue to review the applicability and impact of both directives on the sale of our products within the European Union, and although we cannot currently estimate the extent of such impact, they are likely to result in additional costs and could require us to redesign or change how we manufacture our products, any of which could adversely affect our operating results. Failure to comply with the directives could result in the imposition of fines and penalties, inability to sell covered products in the European Union and loss of revenues.

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Compliance with foreign, federal, state and local environmental laws and regulations represents a small part of our present budget. If we fail to comply with any such laws or regulations, however, a government entity may levy a fine on us or require us to take costly measures to ensure compliance. Any such fine or expenditure may adversely affect our development. We are committed to complying with and, to our knowledge, are in compliance with, all governmental regulations. We cannot predict the extent to which future legislation and regulation could cause us to incur additional operating expenses, capital expenditures, or restrictions and delays in the development of our products and properties.

Our ability to develop and market certain of our current and potential products may be hindered as a result of FDA regulatory requirements and a lengthy and expensive approval process.

Certain of our current and potential products will require regulatory clearances or approvals prior to commercialization. In particular, our Trimetasphere nanomaterial-based MRI contrast agent and our ultrasound diagnostic devices for measuring certain medical conditions will be considered a drug and medical devices, respectively, under the Federal Food, Drug & Cosmetic Act, or FDC Act. Drugs and medical devices are subject to rigorous preclinical testing and other approval requirements by the Food and Drug Administration, or FDA, pursuant to the FDC Act, and regulations under the FDC Act, as well as by similar health authorities in foreign countries. Various federal statutes and regulations also govern or influence the testing, manufacturing, safety, labeling, packaging, advertising, storage, registration, listing and recordkeeping related to marketing of these products. The process of obtaining these clearances or approvals and the subsequent compliance with appropriate federal statutes and regulations require the expenditure of substantial resources. We cannot be certain that any required FDA or other regulatory approval will be granted or, if granted, will not be withdrawn. Our failure to obtain the necessary regulatory approvals, or our failure to obtain them in a timely manner, will prevent or delay our commercialization of new products and our business could suffer.

Our failure to attract, train and retain skilled employees would adversely affect our business and operating results.

The availability of highly trained and skilled technical and professional personnel is critical to our future growth and profitability. Competition for scientists, engineers, technicians and professional personnel is intense and competitors aggressively recruit key employees. Although we have not previously experienced material difficulties in hiring or retaining these personnel, our growth strategy and future needs for additional experienced personnel, particularly in highly specialized areas such as nanomaterial manufacturing and innovative ultrasound technologies, may make it more difficult to meet all of our needs for these employees in a timely manner. Although we intend to continue to devote significant resources to recruit, train and retain qualified employees, we may not be able to attract and retain these employees, especially in technical fields where the supply of experienced qualified candidates is limited. Any failure to do so would have an adverse effect on our business.

In addition, our future success depends in a large part upon the continued service of key members of our senior management team. In particular, our Chairman, CEO and founder, Kent A. Murphy, Ph.D., is essential to our overall management as well as the development of our technologies, our culture and our strategic direction. All of our executive officers and key employees are at-will employees, and, except with respect to Kent A. Murphy, Ph.D., we do not maintain any key-person life insurance policies. The loss of any of our management or key personnel could seriously harm our business.

We might require additional capital to support business growth, and this capital might not be available.

We intend to continue to make investments to support our business growth and may require additional funds to respond to business challenges, including the need to develop new products or enhance our existing products, enhance our operating infrastructure, complete our development activities, build our commercial scale manufacturing facilities and acquire complementary businesses and technologies. Accordingly, we may need to engage in equity or debt financings to secure additional funds for these investments. If we raise additional funds through issuances of equity or convertible debt securities,

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our existing stockholders could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of holders of our common stock, including shares of common stock sold in this offering. Furthermore, such financings may jeopardize our ability to apply for SBIR grants or qualify for SBIR contracts or grants, and our dependence on SBIR grants may restrict our ability to raise additional outside capital. Our ability to obtain additional capital could be restricted by the covenants in our existing senior secured credit facility with First National Bank. Among other things, these covenants restrict us, without the prior approval of First National Bank, from guaranteeing the debt of an affiliate or subsidiary or incurring in excess of $200 thousand non-First National Bank debt annually. Any debt financing obtained by us in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities, including potential acquisitions. In addition, we may not be able to obtain continued SBIR funding, or other additional financing on terms favorable to us, if at all. In order to retain SBIR eligibility, we may be restricted in our ability to raise certain forms of equity capital from institutional investors. For example, in connection with the closing of our financing with Carilion Health System on December 30, 2005, we were not able to raise all proceeds through the issuance of equity without potentially jeopardizing our SBIR eligibility. We therefore elected to issue debt in the amount of $5.0 million of the total $8.0 million raised in such financing to maintain SBIR eligibility. Under the terms of these notes, we agreed that we will not draw down any amount under our existing senior secured credit facility with First National Bank or incur additional indebtedness other than under certain limited conditions. If we are unable to obtain adequate financing or financing on terms satisfactory to us, when we require it, our ability to continue to support our business growth and to respond to business challenges could be significantly limited.

We have limited experience manufacturing our products in commercial quantities in a cost-effective manner, which could adversely impact our business.

We have produced most of our products on a custom order basis rather than pursuant to large contracts that require production on a large volume basis. Accordingly, other than the commercial manufacture of products by our Luna Technologies Division, we have no experience manufacturing products in large volume. Because our experience in large scale manufacturing is limited, we may encounter unforeseen difficulties in our efforts to manufacture other products or materials in commercial quantities. For example, we may need to develop or in-license Trimetasphere nanomaterial purification and isolation technology, which would result in manufacturing delays or shortfalls. We may also encounter difficulties and delays in manufacturing our products for the following reasons:

- Ø we plan to expand our manufacturing operations, and our production processes may have to change to accommodate this growth;
- Ø to increase our manufacturing output significantly, we will have to attract and retain qualified employees, who are in short supply, for the assembly and testing operations;
- Ø we might have to sub-contract to outside manufacturers which might limit our control of costs and processes; and
- Ø our manufacturing operations may have to comply with government specifications including FDA regulations.

If we are unable to keep up with demand for our products, our revenues could be impaired, market acceptance for our products could be adversely affected and our customers might instead purchase our competitors products. Moreover, failure to develop

and maintain a U.S. market for goods developed with U.S. government-licensed technology may result in the cancellation of the relevant U.S. government licenses. Our inability to manufacture our products successfully would have a material adverse effect on our revenues.

Even if we are able to manufacture our products on a commercial scale, the cost of manufacturing our products may be higher than we expect. If the costs associated with manufacturing are not significantly less than the prices at which we can sell our products, we may not be able to operate at a profit.

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We depend on third-party vendors for specialized components in our manufacturing operations, making us vulnerable to supply shortages and price fluctuations that could harm our business.

We primarily rely on third-party vendors for the manufacture of the specialized components used in our products. Although we do not have any sole source suppliers of materials, the highly specialized nature of our supply requirements poses risks that we may not be able to locate additional sources of the specialized components required in our business. For example, we are aware of only two manufacturers that produce the special lasers used in our optical test equipment. Moreover, none of these third-party vendors is obligated to continue to supply us with components. Our reliance on these vendors subjects us to a number of risks that could impact our ability to manufacture our products and harm our business, including interruption of supply.

Any significant delay or interruption in the supply of components, or our inability to obtain substitute components or materials from alternate sources at acceptable prices in a timely manner, could impair our ability to meet the demand of our customers and harm our business.

Our nanotechnology-enabled products are new and may be, or may be perceived as being, harmful to human health or the environment.

While we believe that none of our current products contain chemicals known by us to be hazardous or subject to environmental regulation, it is possible our current or future products, particularly carbon-based nanomaterials, may become subject to environmental regulation. We intend to develop and sell carbon-based nanomaterials as well as nanotechnology-enabled products, which are products that include nanomaterials as a component to enhance those products performance. Nanomaterials and nanotechnology-enabled products have a limited historical safety record. Because of their size or shape or because they may contain harmful elements, such as gadolinium and other rare-earth metals, our products could pose a safety risk to human health or the environment. These characteristics may also cause countries to adopt regulations in the future prohibiting or limiting the manufacture, distribution or use of nanomaterials or nanotechnology-enabled products. Such regulations may inhibit our ability to sell some end user products containing those materials and thereby harm our business or impair our ability to develop commercially viable products.

The subject of nanotechnology has received negative publicity and has aroused public debate. Government authorities could, for social or other purposes, prohibit or regulate the use of nanotechnology. Ethical and other concerns about nanotechnology could adversely affect acceptance of our potential products or lead to government regulation of nanotechnology-enabled products.

We face risks associated with our international business.

Our Luna Technologies Division and our Luna nanoWorks Division currently conduct business internationally and we might considerably expand our international activities in the future. Our international business operations are subject to a variety of risks associated with conducting business internationally, including:

- changes in or interpretations of foreign regulations that may adversely affect our ability to sell our products, perform services or repatriate profits to the United States;
- the imposition of tariffs;
- hyperinflation or economic or political instability in foreign countries;
- imposition of limitations on or increase of withholding and other taxes on remittances and other payments by foreign subsidiaries or joint ventures;
- conducting business in places where business practices and customs are unfamiliar and unknown;
- the imposition of restrictive trade policies;

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Risk factors

- Ø the imposition of inconsistent laws or regulations;
- Ø the imposition or increase of investment and other restrictions or requirements by foreign governments;
- Ø uncertainties relating to foreign laws and legal proceedings;
- Ø having to comply with a variety of U.S. laws, including the Foreign Corrupt Practices Act;
- Ø having to comply with U.S. export control regulations and policies that restrict our ability to communicate with non-U.S. employees and supply foreign affiliates and customers; and
- Ø having to comply with licensing requirements.

We do not know the impact that these regulatory, geopolitical and other factors may have on our international business in the future.

Risks Related to This Offering

Our common stock has never been publicly traded, and we expect that the price of our common stock will fluctuate substantially.

Before this initial public offering, there has been no public market for our common stock. An active public trading market may not develop after completion of this offering or, if developed, may not be sustained. The initial public offering price may not be indicative of prices that will prevail in the trading market. The public trading price for our common stock after this offering will be affected by a number of factors, including:

- Ø changes in earnings estimates, investors perceptions, recommendations by securities analysts or our failure to achieve analysts earning estimates;
- Ø changes in our status as an entity eligible to receive SBIR contracts and grants;
- Ø quarterly variations in our or our competitors results of operations;
- Ø

general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors;

- announcements by us, or our competitors, of acquisitions, new products, significant contracts, commercial relationships or capital commitments;
- commencement of, or involvement in, litigation;
- any major change in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- announcements related to patents issued to us or our competitors and to litigation;
- a lack of, limited or negative industry or security analyst coverage; and
- developments in our industry.

In addition, the stock prices of many technology companies have experienced wide fluctuations that have often been unrelated to the operating performance of those companies. These factors may materially and adversely affect the market price of our common stock.

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Risk factors

New investors in our common stock will experience immediate and substantial dilution.

Our initial public offering price is substantially higher than the book value per share of our common stock. If you purchase common stock in this offering, you will incur immediate dilution of $ in net tangible book value per share of common stock. This amount represents the difference between the assumed initial public offering price of $ per share, which is based on the mid-point of the range on the front cover of this prospectus, and the net tangible book value per share of common stock after the offering of $. In addition, the number of shares available for issuance under our stock plans may increase annually without further stockholder approval. Investors will incur additional dilution upon the exercise of stock options and warrants. See Dilution.

If there are substantial sales of our common stock, our stock price could decline.

If our existing stockholders sell a large number of shares of our common stock or the public market perceives that these sales may occur, the market price of our common stock could decline. Upon the closing of this offering, assuming no outstanding options are exercised prior to the closing of this offering, we will have approximately shares of common stock outstanding. The shares to be sold under this prospectus will be freely tradable without restriction or further registration under the federal securities laws, unless purchased by our affiliates. Taking into consideration the effect of the 180-day lock-up agreements that have been entered into by certain of our stockholders, we estimate that the remaining shares of our common stock outstanding upon the closing of this offering will be available for sale pursuant to Rule 144, Rule 144(k) and Rule 701, as follows:

- Ø shares will be immediately eligible for sale in the public market without restriction pursuant to Rule 144(k);
- Ø additional shares will be eligible for sale in the public market under Rule 144 or Rule 701 beginning 90 days after the date of this prospectus, subject to volume, manner of sale, and other limitations under those rules;
- Ø additional shares will become eligible for sale, subject to the provisions of Rule 144, Rule 144(k) or Rule 701, beginning 180 days after the date of this prospectus, upon the expiration of agreements not to sell such shares entered into between the underwriters and such stockholders; and
- Ø additional shares will be eligible for sale from time to time thereafter upon expiration of their respective one-year holding periods, but could be sold earlier if the holders exercise any available registration rights. Of such shares subject to the provisions of Rule 144, 2,639,688 and 1,131,294 shares may be sold by Carilion Health System beginning August 4, 2006 and December 30, 2006, respectively, and 183,120 shares may be sold by three individuals beginning November 22, 2006.

Existing stockholders holding an aggregate of shares of common stock (including shares of our common stock purchasable pursuant to warrants to purchase our common stock), based on shares outstanding as of December 31, 2005, have rights with respect to the registration of these shares of common stock with the SEC. See Description of capital stock Registration Rights. If we register these shares of common stock, these holders will be able to sell immediately those shares in the public market.

Within three months following the completion of this offering, we intend to file a registration statement to register 12,715,000 shares of common stock reserved for issuance under our 2003 Stock Plan (including an increase of 1,715,000 shares since December 31, 2005) and 2006 Equity Incentive Plan, thus permitting the resale of such shares. As of December 31, 2005, shares were subject to outstanding options, of which options were vested.

Once we register these shares, they can be freely sold in the public market upon issuance, subject to the underwriter lock-up agreements, our stock purchase restriction agreements and restrictions on our affiliates.

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Risk factors

In addition, holders of warrants exercisable for up to shares of common stock may exercise those rights and subsequently sell the underlying shares in the public market.

ThinkEquity Partners LLC, on behalf of the underwriters, may in its sole discretion, at any time without notice, release all or any portion of the shares subject to the lock-up agreements, which would result in more shares being available for sale in the public market at earlier dates. Sales of common stock by existing stockholders in the public market, the availability of these shares for sale, our issuance of securities or the perception that any of these events might occur could materially and adversely affect the market price of our common stock.

In addition, employees holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 20.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. Certain members of our management holding options exercisable for shares of our common stock have entered into an agreement not to sell more than 15.0% of such shares in any year during the five years following the effective date of this offering, provided, any share subject to such annual limit not sold in a year may be sold in subsequent years notwithstanding such limitation. We have the right to waive any of these resale restrictions for employees and management at our discretion, and in such instance, the shares would become freely tradable.

Our management will have broad discretion over the use of the proceeds to us from this offering and might not apply the proceeds of this offering in ways that increase the value of your investment.

Our management will have broad discretion to use the net proceeds from this offering, and you will be relying on the judgment of our management regarding the application of these proceeds. They might not apply the net proceeds of this offering in ways that increase the value of your investment. We expect to use the net proceeds from this offering for general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and potential acquisitions of complementary products, technologies or businesses. We have not allocated these net proceeds for any specific purposes. Our management might not be able to yield a significant return, if any, on any investment of these net proceeds.

Our directors and management will collectively control over % of our outstanding common stock.

Immediately after this offering, our directors and executive officers and their affiliates will collectively control approximately % of our outstanding common stock or approximately % if the underwriters exercise their over-allotment option in full. As a result, these stockholders, if they act together, will be able to influence our management and affairs and all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. You and other stockholders will have minimal influence over these actions. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might adversely affect the market price of our common stock.

Our financial results may vary significantly from period to period which may reduce our stock price.

Our financial results may fluctuate as a result of a number of factors, many of which are outside of our control, which may cause the market price of our common stock to fall. For these reasons, comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. Our financial results may be negatively affected by any of the risk factors listed in this Risk factors section and, in particular, the following risks:

- Ø a reduction of contract research funding;

- Ø decisions by government agencies, academic institutions or corporations not to exercise contract options or to modify, curtail or terminate our major contracts;

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Risk factors

- Ø failure to estimate or control contract costs;
- Ø adverse judgments or settlements in legal disputes;
- Ø expenses related to acquisitions, mergers or joint ventures; and
- Ø other one-time financial charges.

We will incur increased costs as a result of being a public company.

As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. We will incur costs associated with our public company reporting requirements. We also anticipate that we will incur costs associated with corporate governance requirements, including requirements under the Sarbanes-Oxley Act of 2002, as well as new rules implemented by the SEC and the National Association of Securities Dealers, Inc., or NASD. We expect these rules and regulations to increase our legal and financial compliance costs and to make some activities more time-consuming and costly. We also expect these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers. We cannot predict or estimate the amount of additional costs we may incur or the timing of such costs.

Investors could lose confidence in our financial reports, and our stock price may be adversely affected, if our internal control over financial reporting are found not to be effective by management or by an independent registered public accounting firm or if we make disclosure of existing or potential significant deficiencies or material weaknesses in those controls.

Beginning with our Annual Report for the year ending December 31, 2007, Section 404 of the Sarbanes-Oxley Act of 2002 requires us to include an internal control report with our Annual Report on Form 10-K. That report must include management s assessment of the effectiveness of our internal control over financial reporting as of the end of the fiscal year. Additionally, our independent registered public accounting firm will be required to issue a report on management s assessment of our internal control over financial reporting and a report on their evaluation of the operating effectiveness of our internal control over financial reporting.

We continue to evaluate our existing internal control over financial reporting against the standards adopted by the Public Company Accounting Oversight Board, or PCAOB. During the course of our ongoing evaluation of the internal controls, we may identify areas requiring improvement, and may have to design enhanced processes and controls to address issues identified through this review. Remedying any deficiencies, significant deficiencies or material weaknesses that we or our independent registered public accounting firm may identify, may require us to incur significant costs and expend significant time and management resources. We cannot assure you that any of the measures we implement to remedy any such deficiencies will effectively mitigate or remedy such deficiencies. Investors could lose confidence in our financial reports, and our stock price may be adversely affected, if our internal controls over financial reporting are found not to be effective by management or by an independent registered public accounting

firm or if we make disclosure of existing or potential significant deficiencies or material weaknesses in those controls.

Our independent auditors have identified material weaknesses and significant deficiencies in our internal controls, and if we are unable to develop, implement and maintain appropriate controls we will not be able to comply with applicable regulatory requirements imposed on reporting companies.

In connection with the audit of our financial statements for each of the three years in the period ended December 31, 2005, our independent registered public accounting firm identified certain weaknesses in our internal control over financial reporting,

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which they considered to be material weaknesses and significant deficiencies. Specifically, because we lack appropriate resources and personnel with sufficient experience, our independent registered public accounting firm noted weaknesses in our ability to account for certain complex accounting transactions relating to business combinations and consolidation matters, to account for share-based payments to employees and consultants, as well as weaknesses in our ability to prepare timely consolidated financial statements in accordance with U.S. generally accepted accounting principles and Regulation S-X under the Securities Exchange Act of 1934, as amended. We also lack adequate cutoff and accrual procedures which materially affected recognition of expenses and, in certain instances, related revenues. These weaknesses led to significant audit adjustments for each of the three years in the period ended December 31, 2005 which had a material effect on our financial statements.

Our business operations were relatively small for several years and, as a result, we have operated with very limited staffing of key accounting functions. Such limited staffing made it difficult for us to segregate certain accounting functions. Because of these circumstances, we have relied on outside consultants to supplement our internal accounting staff and to meet our financial reporting obligations.

We are actively recruiting key senior accounting and finance employees to include a new Chief Financial Officer and other accounting staff to enhance our internal control and procedures over financial reporting. Upon hiring a new Chief Financial Officer, our current Chief Financial Officer will continue to serve as our Executive Vice President, Corporate Development. We have recently hired a Chief Accounting Officer as well as an additional senior accountant. These individuals have prior experience handling external financial reporting in a public company environment and should improve our ability to prepare timely consolidated financial statements as well to address more complex accounting matters, such as business combinations and share-based payments. We also hired an additional accounts payable and payroll accountant to improve segregation of duties and redistribute the overall workload on our accounting staff.

We also intend to establish new and enhanced systems of internal control that we believe will be necessary to allow management to report on, and our independent auditors to attest to, our internal controls. To improve the timeliness of our financial reporting, we have instituted a new detailed closing schedule to enhance overall completeness and quality of our reporting. The new schedule was first implemented in March 2006 and provides guidance on routine processes, such as procedures for handling key account reconciliations, month end cutoff procedures for accounts payable and accrued expenses as well as cutoff procedures for revenue and related receivables. The documentation will be expanded in later periods to provide detailed guidance of our entire closing process including preparation of interim and year-end consolidated financial statements and related notes. We have also taken measures to improve our cutoff and accrual procedures. Specifically, we have implemented a process to improve our estimation of subcontractor expenses to ensure completeness of our direct costs and related revenue. We will continue to review this process to monitor the sufficiency of such policies and procedures.

Although we do not believe we have material weaknesses or significant deficiencies related to our policies and procedures that pertain to maintenance of records, authorizations of receipts and expenditures, or prevention or timely detection of unauthorized acquisition, use, or disposition of our assets, we have not performed specific tests to determine the effectiveness of key controls within these policies and procedures. We intend to monitor those policies and procedures in connection with the establishment of a formally documented system of internal control. We are beginning a comprehensive documentation of our internal controls processes in order to identify additional areas for improvement as well as in anticipation of our future requirements under the Sarbanes-Oxley Act of 2002. We have assigned personnel to begin the process with the expectation of completing documentation of certain key processes by the end of the second quarter of 2006.

While we anticipate being able to implement fully the requirements relating to internal controls and all other applicable requirements of the Sarbanes-Oxley Act of 2002 in a timely fashion, we cannot be certain as to the timing of the completion of our evaluation and testing and any necessary remediation or the impact of the same on our operations. Our development,

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implementation and maintenance of appropriate internal controls will depend materially both on our successful hiring and retention of key senior accounting personnel. If we are not able to complete the assessment required under Section 404 in a timely manner, we and our independent registered public accounting firm would be unable to conclude that our internal control over financial reporting is effective as of December 31, 2007.

If we are unable to attract and retain qualified personnel, to implement and integrate financial reporting and accounting systems or if we are unable to scale these systems to our growth, we may not have adequate, accurate or timely financial information, and we may be unable to meet our reporting obligations or comply with the requirements of the SEC, the Nasdaq National Market or the Sarbanes-Oxley Act of 2002, which could result in the imposition of sanctions, including the suspension or delisting of our common stock from the Nasdaq National Market and the inability of registered broker dealers to make a market in our common stock, or investigation by regulatory authorities. Any such action or other negative results caused by our inability to meet our reporting requirements or comply with legal and regulatory requirements or by disclosure of an accounting, reporting or control issue could adversely affect the price of our class common stock. Further and continued determinations that there are significant deficiencies or material weaknesses in the effectiveness of our internal control over financial reporting could also reduce our ability to obtain financing or could increase the cost of any financing we obtain and require additional expenditures to comply with applicable requirements.

Anti-takeover provisions in our amended and restated certificate of incorporation and bylaws and Delaware law could discourage a takeover.

Our amended and restated certificate of incorporation and bylaws and Delaware law contain provisions that might enable our management to resist a takeover. These provisions include:

- Ø a classified board of directors;
- Ø advance notice requirements to stockholders for matters to be brought at stockholder meetings;
- Ø a supermajority stockholder vote requirement for amending certain provisions of our amended and restated certificate of incorporation and bylaws; and
- Ø the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer.

These provisions might discourage, delay or prevent a change in control of our company or a change in our management. The existence of these provisions could adversely affect the voting power of holders of common stock and limit the price that investors might be willing to pay in the future for shares of our common stock. See Description of capital stock.

Changes in, or interpretations of, accounting rules and regulations, such as expensing of stock options, could result in unfavorable accounting charges or require us to change our compensation policies.

Accounting methods and policies, including policies governing revenues recognition, expenses, and accounting for stock options are subject to further review, interpretation and guidance from relevant accounting authorities, including the SEC. Changes to, or interpretations of, accounting methods or policies in the future may require us to reclassify, restate or otherwise change or revise our financial statements, including those contained in this prospectus. Prior to January 1, 2006, we were not required to record stock-based compensation charges if the employee s stock option exercise price equals or exceeds the fair market value of our common stock at the date of grant.

On December 16, 2004, the FASB issued SFAS No. 123 (revised 2004), *Share-Based Payment*, which is a revision of SFAS No. 123, *Accounting for Stock-Based Compensation* (SFAS No. 123R). SFAS No. 123R supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends SFAS No. 95, *Statement of Cash Flows*. Generally, the approach in SFAS No. 123R is similar to the approach described in SFAS No. 123. However, SFAS No. 123R requires all share-based

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payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. We are required to adopt SFAS No. 123R on January 1, 2006, and have adopted it as of that date.

As permitted by SFAS No. 123, we accounted for share-based payments to employees through December 31, 2005 using APB Opinion No. 25 s intrinsic value method and, as such, generally recognized no compensation cost for employee stock options. Accordingly, the adoption of SFAS No. 123R s fair value method will have a significant impact on the presentation of our results of operations, although it will have no impact on our overall financial position. The impact of adoption of SFAS No. 123R cannot be predicted at this time because it will depend on levels of share-based payments granted in the future and the assumptions for the variables which impact the computation.

We rely heavily on stock options to motivate existing employees and to attract new employees. When we are required to expense stock options, we may then choose to reduce our reliance on stock options as a motivation tool. If we reduce our use of stock options, it may be more difficult for us to attract and retain qualified employees. If we do not reduce our reliance on stock options, our reported earnings will decrease.

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Information regarding forward-looking statements

This prospectus, including the sections entitled Summary, Risk factors, Management s discussion and analysis of financial condition and results of operations and Business may contain forward-looking statements. These statements may relate to, but are not limited to, expectations of future operating results or financial performance, capital expenditures, introduction of new products, regulatory compliance, plans for growth and future operations, as well as assumptions relating to the foregoing. Forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified. These risks and other factors include, but are not limited to, those listed under Risk factors. In some cases, you can identify forward-looking statements by terminology such as may, will, should, could, expect, plan, anticipate, believe, estimate, predict, intend, pot or the negative of these terms or other comparable terminology. These statements are only predictions. Actual events and/or results may differ materially.

We believe that it is important to communicate our future expectations to our investors. However, there may be events in the future that we are not able to accurately predict or control and that may cause our actual results to differ materially from the expectations we describe in our forward-looking statements. Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements after we distribute this prospectus, whether as a result of any new information, future events or otherwise. Potential investors should not place undue reliance on our forward-looking statements. Before you invest in our common stock, you should be aware that the occurrence of any of the events described in the Risk factors section and elsewhere in this prospectus could harm our business, prospects, operating results and financial condition. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance or achievements. The forward-looking statements contained in this prospectus are excluded from the safe harbor protection provided by the Private Securities Litigation Reform Act of 1995 and Section 27A of the Securities Act of 1933, as amended.

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Use of proceeds

We estimate that the net proceeds from the sale of the shares of our common stock that we are selling in this offering will be approximately $ million, based on an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, after deducting the underwriting discount and estimated offering expenses. If the underwriters over-allotment option is exercised in full, we estimate that we will receive additional net proceeds of approximately $ million.

We intend to use the net proceeds from this offering principally to fund further development and expansion of our products and product candidates, in particular our nanomaterial and ultrasound-related product candidates, and for general working capital purposes. Specifically, in 2006 we anticipate spending:

- Ø approximately $6 million to develop our nanomaterial manufacturing capabilities, disease-targeting MRI contrast agents and other nanomaterial applications; and
- Ø approximately $2 million to develop our innovative ultrasound platform technology and related medical device products.

Thereafter, we intend to use the net proceeds of this offering to partially fund FDA clinical trials of our MRI contrast agent and ultrasound medical device products, with the remainder being available for general working capital purposes. However, due to the uncertainties inherent in the clinical trial process and given that our product candidates have not yet entered clinical development, we are unable to estimate the total costs that will be required to complete FDA clinical trials. As a result, we cannot estimate what amount of the net proceeds will be available for general working capital purposes.

We have not made specific plans with respect to the remaining proceeds of this offering and, therefore, cannot specify all uses for the net proceeds. Accordingly, our management will have broad discretion over the use of the net proceeds in this offering. The amounts and timing of our actual expenditures will depend upon numerous factors, including the status of our development and commercialization efforts and the amount of proceeds actually raised in this offering.

Additional purposes of this offering are to establish a public market for our common stock and to facilitate our future access to public markets, if, for example, additional funds are required to complete FDA clinical trials. We may also use a portion of the net proceeds for the acquisition of, or investment in, companies, technologies, products or assets that complement our business. We have no present understandings, commitments or agreements to enter into any acquisitions or investments. Pending these uses, we intend to invest the net proceeds of this offering in short-term, investment-grade interest-bearing securities or guaranteed obligations of the United States government.

Dividend policy

We have never declared or paid any dividends on our capital stock. We anticipate that we will retain any earnings to support operations and to finance the growth and development of our business. Therefore, we do not expect to pay cash dividends in the foreseeable future. Any future determination relating to our dividend policy will be made at the discretion of our board of directors and will depend on a number of factors, including earnings, capital requirements, financial condition, prospects and other factors that our board of directors may deem relevant.

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Capitalization

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2005:

- Ø on an actual basis;
- Ø on an as adjusted basis to give effect to the sale by us of shares of common stock at an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, less the underwriting discount.

	As of December 31, 2005	
	Actual	As Adjusted
	(unaudited)	
Cash and cash equivalents	$12,514,839	$
Senior convertible promissory notes	5,214,955	
Redeemable common stock, 545,295 shares issued and outstanding; shares issued and outstanding, as adjusted(1)	504,984	
Stockholders equity:		
Common stock, $0.001 par value; 49,785,326 shares authorized, 10,085,641 shares issued and outstanding, actual; 100,000,000 shares authorized, shares issued and outstanding, as adjusted	10,085	
Additional paid-in capital	10,930,664	
Accumulated deficit	(86,872)	
Total stockholders equity and redeemable common stock	11,358,861	
Total capitalization	$16,573,816	

(1) Certain stockholders receiving shares of our Class B Common Stock in connection with our acquisition of Luna Technologies have the right to redeem a percentage of the outstanding shares issued pursuant to that transaction. This redemption right is extinguished upon the effectiveness of this offering.

The table above excludes, as of December 31, 2005:

- Ø 7,033,517 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of $0.38 per share, which includes 5,246,017 shares of common stock issuable upon exercise of options

outstanding at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share, and 1,587,500 shares of common stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share;

- Ø 409,860 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;

- Ø 6,494 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of $12.92 per share, which includes 3,858 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $1.00 per share;

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Capitalization

- 1,885,490 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory notes issued to Carilion Health System on December 30, 2005 and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for a maximum period of up to eight years, up to an additional 905,035 shares of common stock; and

- 122,745 shares of common stock issued or reserved for issuance in connection with the acquisition of Luna Technologies that were held in escrow on that date, and 429 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 per share held in escrow as of that date.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

The table should be read in conjunction with Management s discussion and analysis of financial condition and results of operations and our consolidated financial statements and related notes included elsewhere in this prospectus.

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Dilution

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the assumed initial public offering price of $ per share of our common stock and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value as of December 31, 2005 was $9.1 million, or $0.86 per share. Our net tangible book value per share set forth below represents our total tangible assets (total assets less intangible assets) less total liabilities, divided by the number of shares of our common stock outstanding on December 31, 2005.

Dilution per share to new investors represents the difference between the amount per share paid by new investors who purchase shares of common stock in this offering and the as adjusted net tangible book value per share of common stock immediately after the completion of this offering. Giving effect to the sale of shares of our common stock offered by us at the assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus, and after deducting the underwriting discount and estimated offering expenses, our as adjusted net tangible book value as of December 31, 2005 would have been approximately $ million. This amount represents an immediate increase in net tangible book value of $ per share to our existing stockholders and an immediate dilution in net tangible book value of $ per share to new investors purchasing shares of our common stock in this offering. The following table illustrates this dilution:

Assumed initial public offering price per share		$
Net tangible book value per share as of December 31, 2005	$0.86	
Increase in net intangible book value per share attributable to this offering per share to existing investors		
As adjusted net tangible book value per share after this offering		
Dilution per share to new investors		$

The following table sets forth, on an as adjusted basis, as of December 31, 2005, the differences between the number of shares of common stock purchased from us, the total consideration paid, and the average price per share paid by existing stockholders and new investors purchasing shares of our common stock in this offering, before deducting the underwriting discount and estimated offering expenses at an assumed initial public offering price of $ per share, the mid-point of the range on the front cover of this prospectus.

	Shares Purchased		Total Consideration		Average Price
	Number	Percent	Amount	Percent	Per Share
Existing stockholders	10,630,935	%	$11,445,733	%	$1.08
New investors					
Total		100.0%	$	100.0%	

The table above excludes, as of December 31, 2005:

- Ø 7,033,517 shares of common stock issuable upon exercise of options outstanding at a weighted-average exercise price of $0.38 per share, which includes 5,246,017 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.20 per share, 200,000 shares of common stock issuable upon exercise of options outstanding at an exercise price of $0.22 per share, and 1,587,500 shares of common stock issuable upon exercise of options outstanding at an exercise price of $1.00 per share;

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Dilution

- 409,860 shares of common stock reserved for future issuance upon the exercise of options available for grant under our 2003 Stock Plan;

- 6,494 shares of common stock issuable upon exercise of warrants (not subject to escrow) outstanding at a weighted-average exercise price of $12.92 per share, which includes 3,858 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $21.06 per share and 2,636 shares of common stock issuable upon exercise of outstanding warrants at an exercise price of $1.00 per share;

- 1,885,490 shares of common stock issuable upon the conversion of the principal amount outstanding under senior convertible promissory notes issued to Carilion Health System on December 30, 2005 and, assuming we elect to convert all of the accrued interest on these notes into shares of common stock after these notes remain outstanding for a maximum period of up to eight years, up to an additional 905,035 shares of common stock; and

- 122,745 shares of common stock issued or reserved for issuance in connection with the acquisition of Luna Technologies that were held in escrow on that date, and 429 shares of common stock issuable upon the exercise of warrants at an exercise price of $21.06 per share held in escrow as of that date.

Assuming the conversion in full of the senior convertible promissory notes as well as exercise in full of all options and warrants outstanding or reserved for future issuance as of December 31, 2005 the number of shares purchased by existing stockholders would be increased by 10,363,570 shares to 20,994,505 shares, total consideration paid by them would be increased by approximately $2,773,624 to $14,219,357 average price per share paid by them would be decreased by $0.40 per share to $0.68 per share.

Since December 31, 2005, we granted options to purchase an additional 1,537,250 shares pursuant to our 2003 Stock Plan at an exercise price of $1.00 per share. We also adopted our 2006 Equity Incentive Plan, subject to stockholder approval which will be effective upon the completion of this offering. In addition, on February 8, 2006, we issued warrants to purchase 101,773 shares at an exercise price of $1.00 per share.

If the underwriters exercise their over-allotment option in full, the percentage of shares of common stock held by existing stockholders will decrease to approximately % of the total number of shares of our common stock outstanding after this offering, and the number of shares held by new investors will be increased to , or approximately % of the total number of shares of our common stock outstanding after this offering.

Within three months following the completion of this offering, we intend to file a registration statement under the Securities Act to register the issuance of 12,715,000 shares of common stock reserved for issuance under the 2003 Stock Plan (including an increase of 1,715,000 shares since December 31, 2005) and the 2006 Equity Incentive Plan.

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Selected consolidated financial data

The tables below present selected consolidated statements of operations data for each of the five years ended December 31, 2001, 2002, 2003, 2004 and 2005 and selected consolidated balance sheet data as of December 31, 2001, 2002, 2003, 2004 and 2005. The consolidated statements of operations data for the years ended December 31, 2003, 2004 and 2005 and consolidated balance sheet data as of December 31, 2004 and 2005 were derived from our audited consolidated financial statements and notes thereto, which are included elsewhere in this prospectus. The consolidated statement of operations data for the year ended December 31, 2002 and consolidated balance sheet data as of December 31, 2003 were derived from our audited consolidated financial statements and notes thereto, which do not appear in this prospectus. The consolidated statements of operations data for the year ended December 31, 2001 and the consolidated balance sheet data as of December 31, 2001 and 2002 were derived from our unaudited consolidated financial statements, which do not appear in this prospectus.

When you read this selected consolidated financial data, it is important that you also read the historical consolidated financial statements and related notes included in this prospectus, as well as the section of this prospectus entitled Management s discussion and analysis of financial condition and results of operations. Historical results are not necessarily indicative of future results.

(In thousands, except share and per share data)	Years Ended December 31,				
	2001	2002	2003	2004	2005
	(unaudited)				
Consolidated Statements of Operations Data:					
Revenues:					
Contract research revenues	$7,725	$11,084	$10,358	$13,835	$15,380
Product sales and license revenues		4,643	7,234	8,752	1,074
Total revenues	7,725	15,726	17,592	22,587	16,454
Cost of revenues:					
Contract research costs	4,646	9,143	8,949	10,985	12,552
Product sales and license costs		3,884	1,543	2,881	410
Total cost of revenues	4,646	13,027	10,492	13,866	12,962
Gross profit	3,079	2,699	7,099	8,721	3,492
Operating expense	4,531	4,491	4,856	4,190	6,004
Operating income (loss)	(1,452)	(1,792)	2,243	4,532	(2,512)
Other income (expense)(1)	(101)	41	(138)	(257)	2
Interest income (expense), net	(263)	(469)	(87)	(90)	(41)
Income (loss) before income taxes	(1,816)	(2,220)	2,018	4,184	(2,551)
Income tax expense (benefit)	(582)	(652)	886	128	(557)

Net income (loss)	$(1,234)	$(1,568)	$1,132	$4,056	$(1,994)
Net income (loss) per common share:					
Basic	$(0.23)	$(0.31)	$0.23	$0.79	$(0.30)
Diluted	$(0.23)	$(0.31)	$0.22	$0.64	$(0.30)
Weighted-average number of shares used in per share calculations:					
Basic	5,363,318	5,092,545	5,030,428	5,136,001	6,609,364
Diluted	5,363,318	5,092,545	5,141,003	6,301,484	6,609,364

(1) Includes minority interests and excludes interest expense.

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Selected consolidated financial data

(in thousands)	As of December 31,				
	2001	2002	2003	2004	2005
	(unaudited)	(unaudited)			
Consolidated Balance Sheet Data:					
Cash and cash equivalents	$122	$1,293	$642	$610	$12,515
Working capital (deficit)	(1,762)	(5,325)	(3,008)	257	11,843
Total assets	1,967	6,807	5,497	7,747	24,134
Total current liabilities	3,610	9,802	7,211	4,474	6,993
Total debt(1)	0	24	286	303	5,431
Stockholders equity	(1,221)	(3,088)	(1,932)	2,167	10,854

(1) Includes capital lease obligations and excludes amounts outstanding under our senior secured revolving credit facility, which is reflected in total current liabilities.

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Management s discussion and analysis of financial condition and results of operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and the related notes to those statements included elsewhere in this prospectus. In addition to historical financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results and timing of selected events may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those discussed under Risk factors and elsewhere in this prospectus.

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify technologies that can fulfill large and unmet market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.

- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution, and defense applications.

We have a successful track record in executing our market-driven business model. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our aggregate revenues from January 1, 2003 through December 31, 2005 were $56.6 million, and our aggregate cost of revenues during that same period were $37.3 million. However, we had a net loss of $2.0 million for the year ended December 31, 2005, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Our annual revenues were $17.6 million in 2003, $22.6 million in 2004, and $16.5 million in 2005. We generate revenues through contract research, product sales and license fees. Historically, our contract research revenues have accounted for a large and growing proportion of our total revenues, and we expect that they will continue to represent a significant portion of our total revenues for the foreseeable future. Our contract research revenues grew from $10.4 million in 2003 to $13.8 million in 2004, and to $15.4 million in 2005. As of December 31, 2005, our Contract Research Group was working on 68 contracts. In addition to these contracts, we regularly have a backlog of contracts for which work has been scheduled, but for which a

specified portion of work has not yet been completed. We define backlog as the dollar amount of obligations payable to us under negotiated contracts upon completion of a specified portion of work that has not yet been completed, exclusive of revenues previously recognized for work already performed under these contracts, if any. The approximate value of our backlog was $16.5 million as of December 31, 2005.

Revenues from product sales currently represent a small proportion of our total revenues, and, historically, we have derived most of these revenues from the sales of our sensing systems and products that make use of light-transmitting optical fibers, or fiber optics. License revenues have been significant in the last three fiscal years due to the Luna Analytics, Luna Energy and Luna i-Monitoring transactions described below. Although we have been successful in licensing certain technology we do not expect license revenues to represent a significant portion of future revenues, however, over time we do intend to gradually increase such revenues. In the near term, we expect revenues from product sales to increase because of our acquisition of Luna Technologies on September 30, 2005. We also expect to increase our investments in product development and commercialization, which we anticipate will lead to increased product sales growth. In the future, we expect that revenues from product sales will represent a larger proportion of our total revenues and that as we develop and commercialize new products, these revenues will reflect a broader and more diversified mix of products.

In July 1998, we established Luna Technologies, and funded its growth by raising venture capital, which ultimately diluted our equity ownership to as little as approximately 7% during our holding period and to approximately 10% as of September 2005. In line with our strategy of building a growing portfolio of businesses and products, we acquired all of the outstanding shares in Luna Technologies we did not already own in exchange for issuing shares of our common stock in September 2005. Luna Technologies continues to operate as our Luna Technologies Division.

In February 2002, we established a joint venture limited liability company, Luna Energy, LLC together with Baker Hughes Oilfield Operations, Inc. Baker Hughes agreed to pay up to $32.0 million in connection with this joint venture as follows: $12.0 million in working capital contributed to Luna Energy over an estimated three-year collaboration period beginning in February 2002; $10.0 million to us, which we recognized as license revenues ratably over the expected collaboration period; and up to $10.0 million, which we earned including $1.5 million, $3.0 million and $3.5 million during the years ended December 31, 2002, 2003 and 2004, respectively, upon achievement of such milestones. In December 2004, Baker Hughes acquired our remaining equity interest in Luna Energy and the license arrangement was terminated.

In October 2003, IHS Energy Group, Inc. acquired rights to certain intellectual property related to our sensor technology and our equity interest in Luna i-Monitoring, Inc. Prior to and in connection with this transaction, we transferred certain non-intellectual property assets to Luna i-Monitoring. In connection with these transactions, IHS Energy Group agreed to pay the following amounts: $2.0 million in total working capital contributed to Luna i-Monitoring during the five years subsequent to the agreement; $300 thousand to Luna i-Monitoring s creditors; $400 thousand to us in consideration for our transfer and license of intellectual property rights to IHS Energy Innovations; $100 thousand to us in consideration for our equity interest in Luna i-Monitoring; and $200 thousand to the other equityholders for their interests in Luna iMonitoring. In addition, IHS Energy Group agreed to pay up to an aggregate of $6.5 million to the other equityholders and, following payment of the first $0.9 million of this amount, up to an aggregate of $2.5 million to us, based on a percentage of Luna i-Monitoring s sales from December 1, 2003 through November 30, 2008. As of December 31, 2005, the other equityholders of Luna i-Monitoring have received $70 thousand in aggregate additional consideration. We have not received any additional consideration to date other than the $664 thousand that was paid at the date of the sale. As a result, we do not anticipate that the amounts, if any, we may receive in the future from Luna i-Monitoring will be material to our business.

In December 2003, we entered into a product development agreement between our Luna Analytics, Inc. subsidiary and a biotechnology company. In connection with this arrangement, the biotechnology company agreed to pay the following amounts: $2.0 million contributed in working capital to Luna Analytics in 2004; $1.0 million to us, which we recognized as

license revenues over the collaboration period from December 2003 to December 2004; and up to an aggregate of $6.0 million to us upon the achievement of certain milestones. We are entitled to receive certain payments in connection with sales of Luna Analytics products through December 2013. The aforementioned biotechnology company terminated its product development work as provided by the terms of the product development agreement on December 31, 2004. We have not received any payments pursuant to the terms of this agreement, and, as a result of the termination of the product development work, we do not currently expect to receive any payments in the future.

In June 2005, Luna Technologies entered into a Joint Cooperation Agreement with Luna Energy. Under this agreement, both parties have agreed to cooperate to develop a fiber optic sensing system product and have agreed to contribute materials, intellectual property, personnel and other resources to the development effort. Upon successful completion of product development, Luna Energy will receive a license to certain of Luna Technologies intellectual property and will be required beginning in 2007 and continuing through December 31, 2017 to make payments to Luna Technologies with respect to revenues derived from products sold that utilize this intellectual property. As of December 31, 2005, Luna Energy had not yet sold products that would entitle Luna Technologies to royalty payments under this joint cooperation agreement, Luna Technologies had received aggregate development milestone payments of $305 thousand as of that date under this agreement and is entitled to receive additional development milestone payments of up to $120 thousand in the aggregate, subject to the satisfaction of certain conditions. Luna Technologies also has the right to receive royalty payments from sales of products in the future. The license of certain of the intellectual property from Luna Technologies to Luna Energy shall be an exclusive license if Luna Energy makes certain minimum royalty payments of $420 thousand in the aggregate between 2007 and 2017, and shall be a non-exclusive license if Luna Energy fails to make these minimum royalty payments. Since December 2004, we have not held an ownership interest in Luna Energy. Luna Technologies continues to operate as our Luna Technologies Division after we acquired that entity in September 2005.

In connection with becoming a public company, we have and will incur significant additional expenses such as audit fees, professional fees, increased directors and officers insurance, advisory board and board of directors compensation, and expenses related to hiring additional personnel and expanding our administrative functions. Many of these expenses were not incurred by us in prior periods. We began to incur some of these expenses during the six-month period ended December 31, 2005, and we expect that these expenses will continue to increase. In addition, upon receiving the net proceeds from our initial public offering, we intend to implement a strategy for expansion that will significantly increase our operating expenses and will likely create substantial losses. We incurred consolidated net losses of approximately $2.0 million for the year ended December 31, 2005. We expect to continue to incur significant additional expenses as we expand our business, including increased expenses for research and development, sales and marketing, manufacturing, finance and accounting personnel and expenses associated with being a public company. We may also grow our business in part through acquisitions of additional companies and complementary technologies which could cause us to incur greater than anticipated transaction expenses, amortization or write-offs of intangible assets and other acquisition-related expenses. As a result, we expect that we may likely continue to incur losses for the foreseeable future, and these losses could be substantial.

Description of Our Revenues, Costs and Expenses

Revenues

We generate revenues from contract research, product sales and license payments. We derive contract research revenues from providing research and development services to third parties, including government entities, academic institutions and corporations, and from achieving milestones established by some of these contracts and in collaboration agreements. In general, we complete contracted research over periods ranging from six months to three years, and recognize these revenues over the life of the contract as costs are incurred or upon the achievement of certain milestones built into the contracts. Our product revenues reflect amounts that we receive from sales of our products and currently represent a small portion of our total revenues. Our license revenues comprise up-front license fees paid to us in connection with licenses or sublicenses of certain patents and other intellectual property as well as royalties, which currently represent an insignificant portion of our license revenues.

Cost of Revenues

Cost of revenues associated with contract research revenues consists of research contract costs, including direct labor, amounts paid to subcontractors and overhead allocated to contract research activities.

Cost of revenues associated with product sales and license revenues consists of license fees for use of certain technologies; product manufacturing costs including all direct material and direct labor costs; amounts paid to our contract manufacturers; manufacturing, shipping and handling; provisions for product warranty; and inventory obsolescence, as well as overhead allocated to these activities. Product manufacturing activity is not yet a significant cost element due to our relatively low product sales activity in comparison with our other activities.

Operating Expense

Operating expense consists of selling, general and administrative expenses, as well as expenses related to research and development, depreciation of fixed assets and amortization of intangible assets. These expenses also include: compensation for employees in executive and operational functions; facilities costs; professional fees; salaries, commissions, travel expense and related benefits of personnel engaged in sales, product management and marketing activities; costs of marketing programs and promotional materials; salaries, bonuses and related benefits of personnel engaged in our own research and development beyond the scope and activities of our Contract Research Group; product development activities not covered by contracted research; and overhead costs related to these activities.

After completion of this offering, we anticipate our operating expenses will increase due to increased administrative costs for insurance, professional fees, external reporting requirements, Sarbanes-Oxley compliance and investor relations activities associated with operating as a publicly-traded company. These increases will also include the hiring of additional personnel.

Interest Expense

Interest expense relates primarily to interest we paid under our senior secured revolving credit facility. As of December 31, 2005, there was no amount outstanding on our credit facility, and we do not expect to draw on that facility in the near term.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates, assumptions and judgments that affect the amounts reported in our financial statements and the accompanying notes. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or judgments. While our significant accounting policies are described in more detail in the notes to our consolidated financial statements included in this prospectus, we believe the following accounting policies to be critical to the judgments and estimates used in the preparation of our consolidated financial statements.

In the selection of our critical accounting policies, the objective is to properly reflect our financial position and results of operations for each reporting period in a consistent manner that can be understood by the reader of our financial statements. Our accounting policies and procedures are explained in note 1 of the notes to the consolidated financial statements contained elsewhere in this prospectus. We have identified the following as the most critical accounting policies which may have a significant effect on our reported financial results.

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Management s discussion and analysis of financial condition and results of operations

Contract Research Revenues

We recognize revenue when a contract has been executed, the contract price is fixed and determinable, delivery of services or products has occurred, and collectibility of the contract price is considered probable and can be reasonably estimated. Revenue is earned under cost reimbursable, time and materials and fixed price contracts. Direct contract costs are expensed as incurred.

Under cost reimbursable contracts, we are reimbursed for allowable costs, and paid a fixed fee. Revenues on cost reimbursable contracts are recognized as costs are incurred plus an estimate of applicable fees earned. We consider fixed fees under cost reimbursable contracts to be earned in proportion of the allowable costs incurred in performance of the contract.

Revenue on time and materials contracts are recognized based on direct labor hours expended at contract billing rates and adding other billable direct costs.

Fixed price contracts may include either a product delivery or specific service performance throughout a period. For fixed price contracts that are based on the proportionate performance method and involve a specified number of deliverables, we recognize revenue based on the proportion of the cost of the deliverables compared to the cost of the deliverables required by the contract. For fixed price contracts that provide for the development and delivery of a specific prototype or product, revenues are recognized on under the percentage of completion method in accordance with Statement of Position (SOP) 81-1 *Accounting for Performance of Construction Type and Certain Production Type Contract*.

Our contracts with agencies of the government are subject to periodic funding by the respective contracting agency. Funding for a contract for a contract may be provided in full at inception of the contract or ratably throughout the contract as the services are provided. In evaluating the probability of funding for purposes of assessing collectibility of the contract price, we consider our previous experiences with our customers, communications with our customers regarding funding status, and our knowledge of available funding for the contract or program. If funding is not assessed as probable, revenue recognition is deferred until realization is deemed probable.

Contract revenue recognition inherently involves estimation, including the contemplated level of effort to accomplish the tasks under the contract, the cost of the effort, and an ongoing assessment of progress toward completing the contract. From time to time, as part of the normal management processes, facts develop that require revisions to estimated total costs or revenues expected. The cumulative impact of any revisions to estimates and the full impact of anticipated losses on any type of contract are recognized in the period in which they become known.

The allowability of certain costs under government contracts is subject to audit by the government. Certain indirect costs are charged to contracts using provisional or estimated indirect rates, which are subject to later revision based on government audits of those costs. Management is of the opinion that costs subsequently disallowed, if any, would not be significant.

Intellectual Property License Revenues

Amounts received from third parties for licenses to our intellectual property are recognized when earned under the terms of the agreements. Revenues are recognized upon transfer of the license unless we have continuing obligations for which fair value cannot be established, in which case the revenues are recognized over the period of the obligation. If there are extended payment terms, license fee revenues are recognized as these payments become due and collectibility is probable. We consider all arrangements with payment terms extending beyond 12 months not to be fixed and determinable.

Certain of our license arrangements have required us to enter into research and development agreements. We apply the guidance from the Emerging Issues Taskforce Consensus on Issue 00-21, *Revenue Arrangements with Multiple Deliverables* (EITF 00-21). Accordingly, we will allocate our arrangement fees to the various elements based upon objective and reliable

evidence of fair value, if available. We have a limited history of licensing our technology to others. As such, we have not been able to establish objective reliable evidence of fair value under these arrangements for purposes of allocating the arrangement fee to the various elements. Accordingly, we will defer revenues from any up-front payments received under these arrangements and will recognize them over the service period in the arrangement. Certain of these arrangements also include the payment of performance bonuses based upon the achievement of specific milestones. Generally, there are no assurances at the onset of these arrangements that the milestones will be achieved. As such, fees related to such milestones are excluded from the initial allocation of the arrangement fee in accordance with EITF 00-21 and are recognized upon achievement of the milestone provided that such fees are non-refundable and collection is probable.

Product Sales Revenues

Revenues from product sales are generated by the sale of commercial products and services under various sales programs to the end user and through distribution channels. We sell fiber optic sensing systems to end users for use in numerous fiber-optic based measurement applications.

Revenues from product sales that require no ongoing obligations are recognized as revenues when shipped to the customer, title has passed and collection is reasonably assured. In transactions where a right of return exists, revenues are deferred until acceptance has occurred and the period for the right of return has lapsed.

Deferred Taxation

We estimate our tax liability through calculations we perform for the determination of our current tax liability, together with assessing temporary differences resulting from the different treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are recorded on our balance sheet. Management then assesses the likelihood that deferred tax assets will be recovered in future periods. In assessing the need for a valuation allowance against the net deferred tax asset, we consider factors such as future reversals of existing taxable temporary difference, taxable income in prior carryback years, if carryback is permitted under the tax law, tax planning strategies and future taxable income exclusive of reversing temporary differences and carryforwards. To the extent that we cannot conclude that it is more likely than not that the benefit of such assets will be realized, we establish a valuation allowance to adjust the net carrying value of such assets.

Stock-Based Compensation

In connection with the grant of stock options to employees, we have recorded compensation expense under the intrinsic value method, pursuant to APB 25 and related interpretations, whenever the exercise price of an option grant is less than the fair market value of our common stock on the grant date. We have also recorded compensation expense whenever we have modified the terms of an option grant or directly or indirectly repriced outstanding options. Our Board of Directors is responsible for determining the fair value of our common stock for the purpose of establishing exercise prices for our option grants. Our Board has relied upon Market Place Transaction History as well as the assistance from independent valuation specialists for purposes of estimating the

fair value of our common stock.

In August 2003, our board of directors authorized an option exchange program whereby holders of options for Class A Common Stock were given the opportunity to exchange their options for options to purchase Class B Common Stock on a one-for-one basis. The new options grants were immediately vested on September 29, 2003, the date of exchange, had an exercise price of $0.20 and a life of 10 years from the date of grant. All of the outstanding options issued under this exchange program had exercise prices in excess of the fair value of our Class A Common Stock as of the date of the exchange. As such, the option exchange was accounted for as a repricing in accordance with FIN 44. We are required to apply variable plan accounting to the replacement grant and measure compensation based on the change in fair value of the common stock at each reporting period. A total of shares subject to such options exchanged under this program remain outstanding as of

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Management s discussion and analysis of financial condition and results of operations

March 31, 2006. We will continue to incur a non-cash charge or benefit each quarter based upon the increase or decrease in fair value of our common stock, until such options are exercised, forfeited or expire. Assuming a fair value of $ per share for our common stock, the mid-point of the range of the estimated offering price in this offering, this non-cash charge would be $ for the quarter ending March 31, 2006, provided that this amount could increase or decrease subject to the actual trading price of our common stock.

The fair value of common stock for options granted was estimated by the Compensation Committee of our Board of Directors, applying a number of commonly accepted valuation methodologies. The Board of Directors also considered valuations performed by an independent third-party valuation specialist.

We currently anticipate granting stock options to our officers, directors and employees subsequent to the consummation of this offering. The exercise price of the options will be equal to the price per share to the public at the time of the grant.

Effective January 1, 2006, we adopted Financial Accounting Standards No. 123R, *Share Based Payment* (SFAS No. 123R) using the modified prospective transition method. Under this transition method, our financial statements for periods prior to January 1, 2006 will not be restated. However, new awards and awards modified, repurchased or cancelled after January 1, 2006 will trigger compensation expense based on the fair value of the stock option as determined by an option pricing model. We will amortize stock-based compensation for such awards on a straight-line method over the related service period of the awards taking into account the effects of the employees expected exercise and post-vesting employment termination behavior.

Results of Operations

Year Ended December 31, 2005 Compared to Year Ended December 31, 2004

Revenues

Total revenues decreased 27.2% to $16.5 million for the year ended December 31, 2005 from $22.6 million for the year ended December 31, 2004. The decrease was a result of the absence of license revenues relating to our arrangement with Baker Hughes. The satisfaction of our right to receive certain milestone payouts in connection with that arrangement and the sale of our interest in Luna Energy to Baker Hughes in December 2004 represents the completion of our licensing arrangement with Baker Hughes. The decrease in license revenues was offset in part by an increase in contract revenues during the year ended December 31, 2005 as compared with the same period in 2004. During 2005, consistent with our business plan, we did not receive significant license payments for our technologies, and we do not expect license revenues comparable to those in 2002, 2003 and 2004 in the near term. We do, however, expect that product revenues will increase in the near term as a result of our acquisition of Luna Technologies on September 30, 2005. The acquisition of Luna Technologies was consistent with our strategy to transition our revenues mix from contract research revenues to product sales and license revenues. We generated approximately $1.1 million in product sales in 2005, virtually all of which were derived from operations of Luna Technologies subsequent to our acquisition.

Although total revenues decreased due to the cessation of revenues from the Luna Energy joint venture in December 2004, contract research revenues increased 11.2% to $15.4 million for the year ended December 31, 2005 from $13.8 million for the same period in 2004. This increase reflects our continued short-term commitment to steady and consistent growth of our contract research business while, at the same time, we seek to increase our product sales both in absolute terms and as a proportion of total revenues.

Cost of Revenues

Cost of revenues decreased 6.5% to $13.0 million for the year ended December 31, 2005 from $13.9 million for the year ended December 31, 2004. Consistent with our decrease in revenues, the decline was primarily driven by the lack of licensing revenues as our licensing arrangement with Baker Hughes was completed at the end of 2004.

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Contract research cost of revenues increased 14.3% to $12.6 million for the year ended December 31, 2005 from $11.0 million in the same period in 2004. This increase was consistent with a corresponding increase in contract research revenues.

Cost of product sales and license cost decreased 85.8% to $410 thousand for the year ended December 31, 2005 from $2.9 million in the same period in 2004. This decrease was due to the cessation of license cost activity in 2005 with the completion of the Luna Energy joint venture in December 2004. Nearly all of the costs in this area incurred in 2005 were cost of product sales, which were driven by our increased product sales through our Luna Technologies Division beginning in the fourth quarter of 2005.

Operating Expense

Operating expense increased 43.3% to $6.0 million for the year ended December 31, 2005 from $4.2 million for the year ended December 31, 2004. The increase in operating expense was primarily attributable to our acquisition of Luna Technologies and the related indirect transaction and integration costs. Additionally, we incurred significant expenses in connection with our planned initial public offering that are not direct costs and are not otherwise capitalizable. These include hiring increased staff, professional fees and various other internal changes designed to supplement and enhance our existing infrastructure and human resources. The activity in 2005 is in line with our strategy of building a growing portfolio of businesses and products. We expect that our operating expenses will continue to increase in the coming months due to the indirect costs of our initial public offering and continued compliance with the various reporting requirements of being a publicly-traded company.

Other Income (Expense)

The decrease in other expense was a result of our acquiring the remaining outstanding equity of Luna Technologies as of September 30, 2005. As such, the operating activity of Luna Technologies was consolidated with our consolidated operating activity subsequent to September 30, 2005. Prior to the acquisition, our pro rata portion of the losses of Luna Technologies was reflected in operating income.

Interest expense remained consistent with our outstanding borrowings between 2004 and 2005. Our line of credit permits us to borrow up to $2.5 million. As of the end of 2005, we had repaid the outstanding balance on our line of credit, and we do not anticipate a need to draw on that line of credit in the near term given the funds raised from our August and December 2005 financing rounds with Carilion Health System, as well as the generation of proceeds from this offering. We did not recognize substantial interest expense related to the senior convertible promissory notes issued to Carilion Health System on December 30, 2005 as such notes were only outstanding for one day during the period.

Year Ended December 31, 2004 Compared to Year Ended December 31, 2003

Revenues

Total revenues increased 28.4% to $22.6 million in 2004 from $17.6 million in 2003. This increase was largely driven by growth in our volume of research contracts. Contract research revenues increased 33.6% to $13.8 million in 2004 as compared with $10.4 million in 2003. During 2003, we undertook an initiative to improve our ability to obtain additional contracts by devoting increased resources to support our Contract Research Group. Much of the result from these efforts in 2003 is reflected in our 2004 revenues because of a lengthy bidding process and because our contract research may take several months and sometimes years to complete. The length of our contract research efforts under a typical contract ranges from six months to three years. In addition to the growth of our existing contract research, we also experienced an increase in research contract volume in connection with the creation of our Luna nanoWorks Division. Contracts under our Luna nanoWorks Division accounted for approximately $337 thousand of the overall increase in our contract research revenues, while growth of our existing contract research business accounted for the remaining $3.1 million of such increase.

Product sales and license revenues also contributed significantly to our total revenues growth during this period. Product sales and license revenues increased 21.0% to $8.8 million in 2004 from $7.2 million in 2003. Much of this increase is the result of achieving milestones under the Luna Energy license agreement. As a result of the sale of our remaining interest in Luna Energy to Baker Hughes in December 2004, we do not expect license revenues to be significant in the near term. Revenues related to product sales represent a small proportion of our total revenues in 2004 and 2003. During that period, we continued to remain focused on our contract research business.

Cost of Revenues

Cost of revenues increased 32.1% to $13.9 million in 2004 from $10.5 million in 2003, with most of the increase directly attributable to increased volume of research contracts. Cost of contract research revenues, however, increased at a slightly lower rate of 22.7%, from costs of $8.9 million in 2003 to costs of $11.0 million in 2004. As our contract research volume increased, the costs related to these contracts also increased. However, as the volume of contracts increase, we also benefit from economies of scale. Accordingly, our costs of contract research for this period increased at a lower rate than the corresponding revenue growth.

In addition to our increased contract research activity, we also incurred increased license costs due to certain bonuses accrued and paid in 2004 to contributors and providers of intellectual property related to the Luna Energy joint venture. In December 2004, we sold our remaining interest in Luna Energy to Baker Hughes. In connection with that sale and the receipt of payments for achievement of certain milestones in connection with that venture, we paid bonuses to the technology partners from whom we licensed part of the intellectual property for the venture. Accordingly, the cost of our product sales and license revenues increased 86.7% to $2.9 million in 2004 as compared with $1.5 million in 2003. Although this increase outpaced the percentage increase in license and royalty revenues between 2003 and 2004, it is consistent with the overall growth in license and royalty revenues between 2002 and 2004, during which period the Luna Energy joint venture took place.

Operating Expense

Operating expenses decreased 13.7% to $4.2 million in 2004 from $4.9 million in 2003 as we were able to increase revenues year-over-year with no significant changes in our operating infrastructure as well as incurring fewer costs related to outside transactions. In 2003, we sold our interest in Luna i-Monitoring. No similar transactions occurred in 2004. Additionally, as our operations have become more mature, we have been able to substantially reduce operating expenses due to the increased use of long-term contracts and leases as well as to our improved ability to predict the needs of our operations.

Other Income (expense)

Our share of losses from equity method investees increased approximately $107 thousand as a result of advances made to such investees during the year which provided us basis to record such cases.

Interest expense remained consistent for the years ended December 31, 2004 and 2003.

Liquidity and Capital Resources

Prior to August 2005, our primary source of liquidity had been cash provided by operations and divestitures of certain assets and businesses. In August 2005, we completed our first outside equity financing and raised $7.0 million through an equity investment by Carilion Health System. Carilion Health System invested an additional $8.0 million in December 2005 in the form of $5.0 million aggregate principal amount of senior convertible promissory notes and $3.0 million in additional equity. Our principal uses of cash have been to fund our expansion, including facilities, personnel, working capital and other capital expenditures.

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We have a $2.5 million senior secured revolving credit facility with First National Bank that is collateralized by a security interest in substantially all of our assets. The interest rate on borrowings under our secured revolving credit facility is equal to the prime rate, limited to no less than 6.0% and no greater than 10.0% per annum, and the interest accrued is payable monthly. Under the terms of the senior secured revolving credit facility, the outstanding principal is payable in full on demand or at maturity on May 30, 2006. The senior secured revolving credit facility contains covenants which require us to maintain $1.0 to $2.0 million in liquidity depending on our outstanding balance. Additionally, without First National Bank s prior approval, we may not make a direct loan to an affiliate or subsidiary of ours exceeding $500 thousand annually, guaranty the debt of our affiliate or subsidiary or incur debt in excess of $200 thousand non-First National Bank debt annually. Finally, we are obligated to continue to provide First National Bank an assignment of life insurance in a minimum amount of $1.0 million on the life of Kent A. Murphy, covering all of our indebtedness to First National Bank. As of December 31, 2005, we had repaid the outstanding balance on our secured revolving credit facility, and we do not anticipate a need to draw on that line of credit in the near term given the funds raised from our August and December 2005 financing rounds with Carilion Health System as well as the proceeds from this offering. With the exception of our obligations under our senior secured revolving credit facility and our capital lease, we have no other debt outstanding.

Discussion of Cash Flows

For the year ended December 31, 2005, we used approximately $88 thousand of cash in operations.

In March 2004, we received a grant of $900 thousand from the city of Danville, Virginia under a Grant Agreement to support the expansion of economic and commercial growth within the city. Under the Grant Agreement, we agreed to locate a nanomaterials manufacturing and research facility and maintain its operations in Danville until March 25, 2009. We agreed under the Grant Agreement to invest by September 25, 2006 at least $5.2 million in capital equipment expenditures and $1.2 million in certain facilities and to maintain such investments in our Danville facility until March 25, 2009. We also agreed to create by September 25, 2006 at least 54 new full-time jobs at the Danville facility at an average annual wage of at least $39 thousand plus benefits, and to maintain these jobs at such facility until March 25, 2009. If we fail to make these capital expenditures and create these jobs by September 25, 2006, we will be obligated to repay the city all or a portion of the funds based on a formula of the pro rata shortfall of such expenditures and jobs falling below such required levels. These contractual requirements will restrict the use of significant assets and could obligate us to an annual payroll obligation exceeding $2.0 million until March 25, 2009. To the extent such hiring results in salaries in excess of the required minimum wages, our annual payroll obligation could be substantially greater than $2.0 million.

In August 2005, we entered into a Class C Common Stock financing agreement with Carilion Health System, or Carilion, whereby Carilion committed to providing approximately $15.0 million in equity financing in three tranches subject to certain conditions outlined in the agreement. In connection with this transaction, Carilion purchased shares of our Class C Common Stock for an aggregate purchase price of $7.0 million. On December 30, 2005, we reached an agreement with Carilion to terminate the August 2005 financing agreement and enter into a new Class C Common Stock financing agreement. Under the new agreement, Carilion provided $5.0 million in exchange for five $1.0 million senior convertible promissory notes, and $3.0 million in exchange for shares of Class C Common Stock. The notes are convertible into Class C Common Stock at a rate of $2.65183 per share and bear interest at 6% per annum and mature on December 30, 2009. We received $5.0 million in proceeds from the issuance of such notes at closing.

Cash used in investing activities for the year ended December 31, 2005 related primarily to the purchase of property and equipment and legal fees associated with securing patent rights to certain technology.

Cash flows from financing activities for the year ended December 31, 2005 were primarily from investments by Carilion. During the year ended December 31, 2005, we received proceeds of approximately $10.0 million from two equity financing arrangements with Carilion as well as an additional $5.0 million from the issuance of senior convertible promissory notes to Carilion.

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Management s discussion and analysis of financial condition and results of operations

Total cash and cash equivalents were approximately $12.5 million at December 31, 2005. We believe that cash on hand, availability under our line of credit agreement and proceeds from our initial public offering will be sufficient to fund operations for the next 12 months.

Summary of Contractual Obligations

We lease our facilities in Blacksburg, Charlottesville, Danville, Hampton, McLean and Roanoke, Virginia under operating leases that expire between February 2006 and August 2011 or under a month-to-month arrangement. Upon expiration of the leases, we may exercise certain renewal options as specified in the leases.

We also lease certain computer equipment and software under a capital lease agreement that expires in February 2008. The assets subject to these obligations are included in property and equipment on our consolidated balance sheet.

In March 2006, our Luna Technologies Division executed a non-cancellable, non-reschedulable $1.2 million purchase order for multiple shipments of tunable lasers to be delivered over an 18-month period beginning in July 2006.

Set forth below is information concerning our known contractual obligations as of December 31, 2005 that are fixed and determinable. Except for facility leases, as of December 31, 2005, we did not have contractual obligations that extended beyond May 2009.

	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Capital equipment and software lease	$ 226,286	$ 105,947	$ 120,339	$	$
Operating facility leases	3,475,060	650,469	1,982,283	502,721	339,587
Purchase order obligation	1,230,000	1,230,000			
Deferred Credits:					
City of Danville grant*	900,000	900,000			
Total	$ 5,831,346	$ 2,886,416	$ 2,102,622	$ 502,721	$ 339,587

* In March 2004, we received a $900 thousand grant from the City of Danville, Virginia to be used for the expansion of economic and commercial growth within the City. Specifically, $450 thousand of the grant will be used to offset certain capital expenditures for leasehold improvements being made at our Danville facility, and the remaining $450 thousand is to be used for our creation of new jobs.

The grant stipulates that we must make estimated capital expenditures of at least $6,409,000 and create 54 new full time jobs at our Danville facility, at an average wage of at least $39 thousand plus benefits within 30 months of the award, and then maintain such employment levels for an additional 30 months. We could be required to repay the grant funds on a pro-rata basis should we fail to satisfy the conditions stipulated in this agreement by September 25, 2006 at the earliest. As such, since we have not yet met the stipulations of the grant, we have included the $900,000 in deferred credits in the accompanying consolidated balance sheets as of December 31, 2004 and 2005.

Quantitative and Qualitative Disclosures about Market Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. We do not hold or issue financial instruments for trading purposes or have any derivative financial instruments. To date, all payments made under our research contracts are denominated in United States dollars. Our exposure to market risk is limited to interest rate fluctuations due to changes in the general level of United States interest rates, particularly because the interest rate on our line of credit is variable between 6.0% and 10.0% based on the current prime rate of interest. As of March 31, 2006, our cash reserves were maintained in money market investment accounts and were not exposed to material market risks.

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Business

Overview

We research, develop and commercialize innovative technologies in two primary areas: molecular technology solutions and sensing solutions. We have a disciplined and integrated business model that is designed to accelerate the process of bringing new and innovative products to market. We identify technologies that can fulfill large and unmet market needs and then take these technologies from the applied research stage through commercialization in our two areas of focus:

- **Molecular Technology Solutions.** We develop molecular technology solutions, which are substances and materials with enhanced performance characteristics obtained by harnessing chemical, physical and biological properties of novel combinations of matter. We focus on substances and materials at the molecular level, including nanomaterials, which are materials whose size can be measured in nanometers, or one billionth of a meter. Examples of our solutions in this area include flame retardants, protective coatings, and materials that can help physicians identify diseased tissues using magnetic resonance imaging, or MRI.

- **Sensing Solutions.** We develop integrated sensing solutions, which are products that combine sensors, software and hardware to measure, monitor and control chemical, physical and biological properties. We have particular expertise in optical, acoustic and wireless technologies. Examples of our solutions in this area include medical monitoring products and industrial instrumentation for aerospace, energy generation and distribution, and defense applications.

We have a successful track record in executing our market-driven business model. Since our inception, we have developed more than a dozen products serving various industries including energy, telecommunications, life sciences and defense. We have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies, formed one joint venture and entered into four licensing agreements.

Our aggregate revenues from January 1, 2003 through December 31, 2005 were $56.6 million, and our aggregate cost of revenues during that same period were $37.3 million. However, we had a net loss of $2.0 million for the year ended December 31, 2005, and we expect to incur significant additional expenses as we expand our business. We also expect significantly greater losses for the foreseeable future primarily due to increased expenditures related to our nanomaterial and medical device product development efforts.

Our company is organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work closely together to turn ideas into products.

Contract Research Group. Our Contract Research Group provides applied research to customers in our areas of focus. Our engineers and scientists collaborate with our network of government, academic and industry experts to identify technologies and ideas with promising market potential. After these promising technologies are identified, our Contract Research Group competes to

win fee-for-service contracts from government agencies and industrial clients who seek innovative solutions to practical problems that require new technology. We focus primarily on contract research opportunities where we can retain partial or full rights to the intellectual property developed, and generally obtain full funding of the costs of contracts we undertake from our customers. This approach allows us to cover the costs of early-stage technology development with contract research revenues. Our contract research revenues grew from $10.4 million in 2003 to $15.4 million in 2005, representing 48.1% total growth over that period, while our contract research costs increased from $8.9 million in 2003 to $12.6 million in 2005, representing a total increase of 40.3% over that period. These revenues have in general been a growing part of our business from inception, and our Contract Research Group seeks to continually supply our product pipeline with new opportunities.

Commercialization Strategy Group. Our Commercialization Strategy Group works closely with our network of federal and industrial customers to identify new market opportunities for our technologies. After ideas are driven to proof of concept in the

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Contract Research Group, our Commercialization Strategy Group develops detailed business plans for commercially viable products. It is at this stage that we first consider investing our own funds to finance the continued development of a product, which is then managed in our Products Group.

Products Group. Our Products Group currently consists of the following three divisions:

- **Luna Advanced Systems Division.** Most new product opportunities that are approved for further development by our management team are initially allocated to our Luna Advanced Systems Division. Products currently managed in this division include medical diagnostic instruments using our innovative ultrasound technologies, non-destructive industrial testing and homeland security devices, remote and secure wireless asset monitoring systems, flame retardants, multi-functional protective coating systems and blast and ballistic resistant materials. We transfer products to existing or new divisions within our Products Group with the resources needed for the successful commercialization of the technology if we determine that a product line is broad enough or that the market opportunity is sufficiently large.

- **Luna nanoWorks Division.** Our Luna nanoWorks Division develops and commercializes innovative products based on nanomaterials made from carbon, or carbon nanomaterials, that have broad potential applications. This division is developing MRI contrast agents, which are materials that can help physicians identify diseased tissues using MRI and that are designed to be potentially safer than, and technically superior to, contrast agents currently on the market. We currently supply nanomaterials to research laboratories and plan to supply proprietary high value-added carbon nanomaterials to customers who manufacture products such as solar cells, strong and light-weight composites and coatings to shield devices from electromagnetic interference.

- **Luna Technologies Division.** Our Luna Technologies Division manufactures and markets test and measurement equipment and integrated sensing solutions. This division s products are used for process and control monitoring in telecommunications, manufacturing, power generation and distribution, down-hole oil and gas production, aerospace, and defense applications. These products have won numerous awards and are sold and distributed throughout North America, Europe, the Middle East and Asia.

We expect that the capital raised in this offering will provide us greater flexibility in funding the commercialization of new technologies and will provide us the opportunity to increase the speed, quality and volume of products that we can develop.

We have knowledge and experience in molecular technology solutions and sensing solutions and, as of December 31, 2005, we owned or had exclusive rights to use 32 issued U.S. patents and 63 additional pending U.S., international and foreign patent applications. As of December 31, 2005, approximately 76 of our 143 employees are directly engaged in research, of whom 21 hold Ph.D.s and 27 hold advanced degrees.

Industry Background and Market Opportunity

Molecular Technology Solutions

Our molecular technology solutions generally utilize advanced materials with enhanced performance characteristics. These materials are produced by harnessing unique chemical, physical and biological properties through novel combinations of matter and include metals, ceramics, nanomaterials, composites and polymers, which are materials made up of smaller, linked building blocks. Nanotechnology, which focuses on manipulating materials at the atomic scale to create advanced materials with novel properties, is itself a broad field and many national governments have made a priority of supporting nanotechnology research and development. According to the National Nanotechnology Initiative, since the inception of the U.S. National Nanotechnology Initiative in 2001, the U.S. government has invested $4 billion to support nanotechnology research and development activities.

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In general, advanced materials enable significant improvements in the performance, cost and functionality of existing products and allow the development of products not previously possible. Such materials have potential applications in many industries, including semiconductors, electronics, biotechnology, textiles, alternative energy and defense. Some advanced material products that are currently being developed include: very high density and cost efficient digital memories; smart sensors; pharmaceuticals; drug delivery systems; cost efficient fuel cells, solar cells and light sources; stain resistant textiles; lightweight, high strength composites for civil and military applications; and wear resistant and anti-corrosion coatings for industrial applications.

In 2004, the market sizes of the following advanced material subsectors coatings and flame retardants were estimated to be approximately $9.5 billion and $1.6 billion, respectively, according to *Chemical Week*. In 2005, the market sizes of the following advanced material subsectors ceramics and composites were estimated to be approximately $2.0 billion and $4.8 billion, respectively, according to Electronics.ca Publications and the *Market Leaders- Cook Composites and Polymers* report .

Sensing Solutions

Our sensing solutions involve the integration of multiple technologies to design, manufacture and commercialize new products. Such products require a broad range of expertise and technical competencies, including research and development, engineering design, software programming and product testing. Our optical, ultrasound and wireless sensing solutions address a wide variety of end markets including defense and military, healthcare, telecommunications, industrial measurement, security applications and consumer electronics. We believe that Homeland Security-related applications are one of the most attractive sensing solutions markets given recent increases in government investment in this area. For example, the research and development budget of the U.S. Department of Defense was expected to reach $70.0 billion in 2005 according to the American Association for the Advancement of Science.

Examples of sensing solutions products include industrial and military sensors to increase equipment operating efficiency, perimeter and impact detection systems, diagnostic systems for telecommunications networks, devices to measure physical properties of materials for medical and industrial applications and secure wireless communication systems.

Many of these end markets represent very large opportunities. For example, in 2004, the market sizes of the following sensing solutions sub-sectors industrial sensors and electromechanical actuator systems were estimated to be approximately $4.2 billion and $7.1 billion, respectively, according to *Electronic Business*.

Opportunity to Accelerate the Commercialization of Technology

Technology innovation is a key engine for growth in an increasingly global and competitive marketplace. According to the National Science Foundation, over $312.0 billion was spent in research and development in the United States in 2004 as follows: $93.4 billion by federal agencies, $199.0 billion by the private sector, $11.1 billion by academic institutions and $8.6 billion by not-for-profit organizations.

However, the transition from technology discovery to commercialization is challenging, and government agencies, academic institutions and corporations frequently lack formal processes to enable timely commercialization of technologies in response to marketplace demands. One problem is that research and development is often done in isolation, without input or feedback from the marketplace. In addition, due to the inherent complexity of new technologies, cross-disciplinary and integration issues are often not addressed because researchers, engineers and product developers have very specialized areas of expertise. Moreover, research organizations may be unable to commercialize technologies because their networks may not be broad or deep enough to connect them expeditiously with partners, investors and customers. Development efforts can also fail for a host of other reasons, such as inability to manufacture at commercial scale, unanticipated competition or poorly understood customer needs.

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Technology innovation in areas such as molecular technology solutions and sensing solutions is particularly susceptible to these challenges because it requires expertise across a number of technical disciplines, which are often isolated from each other. We have developed a model for technology innovation that addresses these issues and that we believe has the potential to significantly accelerate the creation and commercialization of new technologies.

Our Business Model

We have developed a disciplined and integrated process to accelerate the development and commercialization of innovative technologies. Our business model employs a market-driven approach and provides the infrastructure, resources and know-how throughout the process of developing and commercializing new products. To manage a diverse set of products effectively across a range of development stages, we are organized into three main groups: our Contract Research Group, our Commercialization Strategy Group and our Products Group. These groups work together through all product development stages, including:

- Searching for emerging technologies based on market needs;
- Conducting applied research;
- Developing and commercializing innovative products; and
- Applying proven technologies and products to new market opportunities.

The graphic below illustrates our business model:

The strength of our business model is exemplified by our track record in taking innovative technologies from the applied research stage through product development and ultimately to the creation of independent businesses. For example, we have created five companies in our areas of focus, sold two of them to industry leaders in their fields, raised private capital for two of our companies and formed one joint venture. In addition, we have developed more than a dozen products serving several

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industries including energy, telecommunications, life sciences and defense. We describe below three examples of independent businesses that we have created:

- **Luna Analytics, Inc.** In June 1999, we created Luna Analytics to commercialize analytical instruments that improve the assessment of protein interactions. Luna Analytics devices are being developed to provide advanced disease diagnostics, treatment and drug discovery. We currently own approximately 39% of Luna Analytics.

- **Luna Energy, LLC.** In February 2002, we created Luna Energy to commercialize real-time, state-of-health pipeline monitoring sensors for the oil and gas industry. Luna Energy was acquired in December 2004 by Baker Hughes Oilfield Operations Inc., a leader in oil field services. We no longer have an ownership interest in Luna Energy, but our Luna Technologies Division is entitled to receive payments from Luna Energy in connection with future product sales beginning in 2007.

- **Luna i-Monitoring, Inc. (now IHS i-Monitoring).** In May 2002, we created Luna i-Monitoring to commercialize a suite of highly integrated wireless sensors called iNodes for cost-effective remote monitoring and Internet accessibility for the oil and gas marketplace. Luna i-Monitoring was acquired by IHS Energy, Inc. in October 2003, and therefore we no longer have any ownership interest in Luna i-Monitoring. However, we are entitled to receive payments in connection with future product sales through November 2008. We have not received any payments to date and do not anticipate that the amounts, if any, we may receive in the future from Luna i-Monitoring will be material to our business.

Our Growth Strategy

We have the following key strategies to achieve our goal of accelerating the development and commercialization of innovative technologies and to create successful products in our areas of focus:

- **Focus on developing and commercializing a growing portfolio of innovative products.** We intend to build and commercialize a growing portfolio of high value-added products using innovative technologies and utilize our existing relationships to identify, prioritize and allocate resources to respond rapidly to market needs and shorten the time to market for new products.

- **Transition our mix of revenues to a higher percentage of product and license revenues.** We plan to commercialize a growing number of products in order to increase the amount of revenues that we generate from product sales and license payments. To this end, we will seek to expand our distribution network and our ability to service our customers. We will also seek to allocate resources to improve our ability to manufacture and shorten the cycle time from idea to market and to monetize our intellectual property portfolio by licensing our technologies. As a result, we believe that product sales and license revenues will comprise a greater portion of our total revenues in the future.

- **Continue to strengthen our Contract Research Group.** We will seek to strengthen our Contract Research Group through increased resource allocation and hiring and by expanding our network of relationships with federal

laboratories, major research universities and industry leaders. These steps will provide us the opportunity to grow our applied research business, remain informed of the latest technological advances and increase the quality and volume of high potential technologies that will support our product pipeline.

- **Expand our intellectual property portfolio in our areas of focus.** We will seek to expand our intellectual property portfolio by applying our disciplined processes to generate know-how and intellectual property through our network of relationships and our own research and development efforts. By continuing to expand our intellectual property, we will seek to enhance our competitive position and develop additional products in these areas.

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Business

Contract Research Group

Our Contract Research Group provides applied research to customers in our areas of focus molecular technology solutions and sensing solutions. Our Contract Research Group competes to win contracts in these areas on a fee-for-service basis. This group has a successful track record of evaluating innovative technologies to address the needs of our customers. We identify these needs by utilizing our knowledge of the markets in our areas of focus and by consulting with major government entities, leading research universities and large corporations. We also use this network to obtain favorable technology transfer agreements, contract research revenues and strategic partnerships for the products that we develop based on our applied research.

We are working or have worked with over 60 corporate, academic and government collaborators, including:

- **Universities.** The College of William and Mary, Duke University, Georgia Institute of Technology, North Dakota State University, The Ohio State University, The Pennsylvania State University, University of California, San Diego, University of Pittsburgh, University of Virginia, Washington University in St. Louis, University of Wyoming, and Virginia Polytechnic Institute and State University, or Virginia Tech;

- **Government entities.** Defense Advanced Research Projects Agency, Defense Threat Reduction Agency, Environmental Protection Agency, National Aeronautics and Space Administration, National Institutes of Health, National Institute of Standards and Technology, National Science Foundation, United States Air Force, United States Army, United States Department of Agriculture, United States Department of Commerce, United States Department of Defense, United States Department of Energy, United States Department of Transportation and United States Navy; and

- **Corporations.** Anteon International Corporation, Applied Research Associates, Inc., Dana Corporation and Northrop Grumman Corporation.

We seek to continue to maximize the benefits we derive from our contract research business, including revenues generation and identification of promising technologies for further development. For example, we proactively target selected projects with the highest commercialization potential. Also, we take a disciplined approach to contract research to ensure that in general the costs of any contract we undertake are fully covered. This approach enables us to cover the costs of riskier stage technology development with outside funding. We believe that this model is cost efficient and reduces our risk significantly.

As of December 31, 2005, our Contract Research Group was engaged in 68 separate active contracts that typically last from six months to three years. These projects span a wide range of applications across our areas of focus. The table below illustrates the type of research that these contracts encompass:

Competency/Platform Technology	Number of Contracts	Examples of Potential Products

Molecular Technology Solutions	26	Disease-targeting MRI contrast agents; flame retardants; coatings to shield devices from electromagnetic interference; multi-functional protective coating systems; and blast and ballistic resistant materials
Sensing Solutions	42	Medical diagnostic and monitoring instruments for heart and lung bypass operations, compartment syndrome and bone strength measurement; non-destructive industrial testing systems; and wireless remote and secure asset monitoring
Total	68	

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Although we conduct our applied research on a fee-for-service basis for third parties, we seek to retain full or partial rights to the technologies and patents developed under those contracts and to continuously enlarge and strengthen our intellectual property portfolio. Often, a new technology that we develop complements existing technologies and enables us to develop applications and products that were not previously possible. In addition, the technologies we develop are often applicable to commercial markets beyond what was originally contemplated in the contract research of such technologies and we endeavor to capture the value of those opportunities.

As of December 31, 2005, our Contract Research Group team consisted of 76 people, 21 with Ph.D.s and 27 with advanced degrees. Our Contract Research Group also utilizes the knowledge and experience of researchers employed through the academic institutions, corporations and government agencies with which we subcontract. The Contract Research Group is organized into subgroups according to the area of technology, with each subgroup managed by its own director responsible for its financial performance. In addition, our Contract Research Group has in place disciplined processes designed to ensure quality control of proposal preparation, program reviews, pipeline reviews, revenues tracking and financial reporting.

Our Contract Research Group has a high historical success rate in winning bids for SBIR contracts, and we have won two National Tibbett s Awards from the Small Business Administration for outstanding SBIR performance. SBIR contracts include Phase I feasibility contracts of up to $100 thousand and Phase II proof-of-concept contracts, which can be as high as $750 thousand. We also have been successful at winning contracts outside the SBIR program from corporations and government entities. Such contracts have no financial limit and typically have a longer duration, ranging from 12 to 24 months. As we continue to grow, one of our goals is to derive a larger portion of our contract research revenues from contracts outside the SBIR program.

Commercialization Strategy Group

Our Commercialization Strategy Group works with our Contract Research Group to identify technologies that have demonstrated proof of concept and that are ready for further development. After a detailed review, it is at this stage that we first consider investing our own funds to finance continued development. To this end, we have rigorous processes to evaluate the merits of further developing any given technology.

Initially, the Commercialization Strategy Group prepares proposals for selected high-potential proof-of-concept technologies for consideration by our internal investment committee. These proposals have the basic elements of a business plan, including detailed market, competitive, sales, marketing, distribution, financing and intellectual property analyses. Our internal investment committee, which is composed of key members of our management team and experts in the fields relevant to each opportunity, evaluates the merits of each proposal and makes recommendations to our management. Once qualified opportunities are approved by management, resources are allocated and the prototyping and development of a commercial product begins. During the product development process, the Commercialization Strategy Group and our internal investment committee regularly review progress and evaluate whether or not to allocate additional resources to, and to continue funding, development.

Our Commercialization Strategy Group includes personnel with a mix of intellectual property, technical and business backgrounds, including individuals who have experience with venture capital-backed companies and others who have successfully run major divisions of large corporations. In addition, we plan to consult with members of our advisory board with respect to product

development matters from time to time. We believe that this combination of skills and experience is critical to the success of the product development process.

We have a successful track record, having developed more than a dozen products serving industries including energy, telecommunications, life sciences and defense. We believe our Commercialization Strategy Group is positioned to continue that success.

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Business

Products Group

Overview

Our Products Group currently consists of the Luna Advanced Systems Division, the Luna nanoWorks Division and the Luna Technologies Division. We provide a description of these divisions below.

Luna Advanced Systems Division

The Luna Advanced Systems Division provides product development resources to a number of technologies and product candidates in transition from the Contract Research Group to a division within our Products Group. Although this division is currently offering some of our legacy products for commercial sale, we intend to build our capability to commercialize our existing innovative technologies. For example, to support our commercialization efforts, we have recently assembled a team of dedicated sales and marketing personnel with experience in industries related to our product candidates. Below we describe some of the products in our development pipeline.

Ultrasonic Technologies

We are developing a number of new devices that use high frequency sound, or ultrasonic, waves to evaluate the physical properties of materials. Application of ultrasonic technology in the medical field is commonly known as ultrasound. Our devices can determine the physical condition of an object by analyzing numerical measurements taken from ultrasonic waves that interact with the object. Our quantitative ultrasonic signal processing technology is designed to be extremely sensitive, detecting changes in the physical properties of the object studied. Our instruments report a numerical signature, not an image that is subject to interpretation and sometimes requires an expert consultant. Our technology thus provides information that cannot be obtained by traditional non-quantitative ultrasonic methodologies. Our quantitative ultrasonic technology has applications in medical diagnosis, non-destructive industrial testing and homeland security. All of our ultrasonic devices discussed below are currently in development stage and are not yet available for commercial sale.

Medical Monitoring and Diagnostic Devices

Ultrasound is an important, non-invasive tool for diagnosing disease inside the body. Roughly 700 thousand procedures utilizing ultrasound devices are performed each day worldwide. Our quantitative ultrasound supplements other diagnostic tools, providing a numerical readout of certain physical properties of the body part being analyzed, such as pressure or strain, which helps physicians diagnose certain disease conditions. We are developing medical device products with our ultrasound platform technology for the diagnosis of the following:

- **Compartment syndrome.** Compartment syndrome is a buildup of pressure within muscles or other body parts following a severe traumatic blow. Such pressure buildup is often undetectable without surgery or other invasive procedures and the reduced blood flow from the disease can lead to debilitating injuries. QUS-1000CS is our compartment syndrome diagnostic device that is currently under development and is being designed to enable the doctors office or emergency room nursing staff to easily and consistently monitor this condition using a non-invasive method.

- **Bone strength.** Bone loss due to osteoporosis is presently determined using x-ray techniques that measure the density of calcium in the bone. Our ultrasound technology measures the stiffness of the bone and can detect the difference between a bone bearing weight and one that is not. This measurement reflects the load bearing capacity, which is data that current devices in the market do not provide. QUS 1000BQ is our bone strength measurement device that is currently under development and is being designed to allow the monitoring of bone integrity and provide diagnostic information to improve the care of patients with osteoporosis.

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- **Intracranial pressure buildup.** A heavy blow to the head can cause internal pressure that builds up rapidly and can cause morbidity and death if not treated. This condition is typically diagnosed by evaluating a patient s response to external stimuli, which is not possible if the patient is unconscious. Our ultrasound technology can detect such pressure buildup rapidly in non-responsive patients by using a non-invasive device that reports a numerical readout and that does not require expert interpretation. QUS-1000ICP is our intracranial pressure measurement device that is currently under development and is being designed to enable trauma personnel to diagnose and monitor such a condition.

All three products, the QUS-1000CS, the QUS-1000BQ and the QUS-1000ICP, share common components, but also have customized interfaces specific to each application. The pathway to market for medical diagnostic devices requires approval by government agencies. For example, we are required to obtain certification for safety through international standards as well as approval from the FDA through a 510(k) registration which we do not anticipate before the end of 2007. We are currently developing our marketing and distribution strategy for these products.

Non-Destructive Industrial Testing and Homeland Security Applications

We are developing a multi-purpose diagnostic instrument for the United States Army s initiative to improve field service for deployed vehicles. Our multi-purpose diagnostic device measures the physical integrity of parts in the field based on their responses to an ultrasonic probe. Each part has its own distinct acoustic response to an ultrasonic probe which our device can read. A response falling outside a specified range indicates the part will not perform as required. Our device can test the integrity of a large number of replaceable vehicle parts having various uses and made of various materials. Other potential markets for this product include materials laboratories and manufacturing quality assurance departments.

We are also developing homeland security products based on our ultrasonic platform technology, such as an ultrasonic wand to detect weapons concealed beneath clothing and a product that identifies vehicles on the highway system that might be transporting weapons of mass destruction. We plan to continue to develop these homeland security products through our Contract Research Division until we have completed prototype testing, which we anticipate will take at least one year. We intend to market these products, should they prove viable, to government entities and corporations.

Remote and Secure Asset Monitoring

We are developing innovative applications integrating sensors, software and hardware components to provide remote and secure asset monitoring solutions and products. These products, which are currently in development and are not yet available for commercial sale, integrate several technologies such as:

- Sensors utilizing light-transmitting optical fibers, or fiber optic sensors, that collect vital information, such as temperature, pressure, strain, movement, moisture, sound or other changes where they are deployed. We have particular experience developing sensors that operate in harsh environments.

- Encryption technology that scrambles wireless communications to provide security for military or industrial uses. We are designing a card that plugs into the network slot of a laptop or other portable wireless device and serves as a receptacle for any standard network card, converting the wireless communication into a secure, encrypted transmission that can only be unscrambled by a receiver with a similar card.

- Wireless transmission technology to send the data from remote sensors to a central monitoring station, enabling a customer to maintain real time, sensitive contact information about the health of machinery, or other equipment without the expense and inconvenience of installing cable-connected sensors.

- Secure wireless technology that encrypts the data from wireless sensors prior to transmission for settings where the customer needs security.

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We are developing cost-effective remote and secure asset monitoring products that are simple to install and that offer industrial customers the ability to gather data critical to the performance of their equipment and to increase the reliability and performance of their machinery. These sensors are designed to work in harsh environments or in difficult to reach sites to monitor critical data, such as temperature, pressure and a number of other variables.

We also are developing products for military secure wireless communication applications. For example, we are working with the U.S. Navy to enable handheld wireless devices to communicate securely with a ship or submarine network. In addition, we are developing a sophisticated system that is designed to detect security breaches.

Flame Retardants

We are developing a proprietary flame retardants that can be mixed with other components into fire resistant composites or spray-on coatings for textiles. Originally developed to provide the U.S. Navy with fire resistant ammunition packages, our flame retardant produces a non-combustible surface under fire condition and slows heat transfer through the material. Unlike many flame retardants used today, we believe that our product is environmentally sound in both its manufacture and disposal and that it does not produce toxic fumes if it eventually burns. We plan to collaborate with a leading manufacturer and marketer of textile products to continue development of our flame retardant coating technology.

Multi-Functional Protective Coating Systems

We are developing a family of multi-functional protective coating products to meet numerous market opportunities. Our approach involves the combination of innovative resin systems with commercially available and proprietary additives to create high performance primers and topcoats. Our engineered coating systems are designed to have a variety of key performance attributes, including anti-corrosion, self-healing, rapid cure, non-skid, and tailored dielectric properties. In addition to coatings, we are also developing other complementary products, such as surface cleaners and pretreatments that will improve the performance of the entire coating system. We plan to engage with large coatings manufacturers for the eventual production and distribution of our coating systems through established channels.

Blast and Ballistic Resistant Materials

We are developing a variety of blast and ballistic resistant coatings, materials and composites for critical defense and homeland security applications. We combine resins, polymers, fibers, fabrics and composites that we have developed with commercially-available components to create high strength, lightweight and flexible materials that range in application from soldiers to ships. Specific examples of potential applications include a new ammunition packaging system to protect both ordnance and soldiers; a flexible blast resistant polymer to improve the integrity of ship deck coating systems and to prevent interior shrapnel in the event of an explosive blast; and lightweight, transparent, ballistic resistant polymers for use in next generation military visors.

Luna nanoWorks Division

Overview

Our Luna nanoWorks Division is developing advanced carbon nanomaterials, which are molecular structures consisting of carbon atoms in distinctive geometric shapes. Advanced carbon nanomaterials include: Trimetasphere nanomaterials, a new class of materials that we describe in more detail below; fullerenes, which are carbon spheres that resemble a soccer ball; and carbon nanotubes, which are carbon rings shaped like a cylinder.

A Trimetasphere nanomaterial is a carbon sphere with three metal atoms enclosed inside. Using different combinations of a group of 17 rare earth metals, we can develop thousands of different types of Trimetasphere nanomaterials, each with distinctive properties and performance characteristics and each potentially marketable as a separate product. Through our

collaborative relationship with Virginia Tech, we have obtained an exclusive license to commercialize Trimetasphere nanomaterials under an issued U.S. patent and pending U.S. and foreign applications. We recently were awarded the Nano 50 Products Award by NASA s Tech Briefs publication for our Trimetasphere nanomaterials.

Each type of Trimetasphere nanomaterial has distinctive chemical, physical or biological properties due to the properties of the metals enclosed in its carbon cage. We can further customize Trimetasphere nanomaterials for specific applications by attaching different atoms or molecules to the surface of their carbon spheres. In some cases, this modification process may also provide us with new intellectual property covering carbon nanomaterials other than Trimetasphere nanomaterials, further expanding our inventory of potential new products.

We have won a number of government contracts funding new applications of nanotechnology totaling approximately $11.0 million. These contracts are partially funding our development of manufacturing processes to produce nanomaterials in large

quantities. Furthermore, we are researching and developing new applications exploring the physical properties of nanomaterials. As of December 31, 2005, we had invested nearly $3.0 million of our own funds in these activities and we plan to continue to compete for additional research contracts to support our Luna nanoWorks Division.

Our Luna nanoWorks Division will focus on business opportunities in which we are well-positioned to have a strong intellectual property position in the United States and for which our products are likely to command premium pricing. We believe these opportunities exist in materials supply and medical applications. Our Luna nanoWorks Division plans to supply advanced carbon nanomaterials to customers in different industries where our nanomaterials will enable and become components of our customers products. Our Luna nanoWorks Division is also identifying medical application products utilizing Trimetasphere nanomaterials.

Medical Imaging

Magnetic resonance imaging, or MRI, has been established as the imaging technology of choice for a broad range of applications, including the identification and diagnosis of a variety of medical disorders. MRI provides three-dimensional images that enable physicians to diagnose and manage disease in a minimally invasive manner. MRI contrast agents, used in about 30% of MRI procedures, improve the resolution of MRI images by enhancing the contrast in the organ or tissue in the body where the contrast agent circulates. Most of the contrast agents approved by the FDA use gadolinium, a toxic metal. To neutralize gadolinium s toxicity, contrast agents use organic compounds called chelates that wrap around the gadolinium, shielding the patient from its toxicity. However, chelates cannot neutralize the gadolinium if it escapes into the bloodstream. Hence, the longer the agent circulates, the greater the risk of toxicity. As a result, the contrast agents currently in use need to be eliminated from the body quickly, making it difficult to produce high quality images.

Our Luna nanoWorks Division is developing a Trimetasphere nanomaterial-based MRI contrast agent. We believe our Trimetasphere nanomaterial-based contrast agent offers two potential advantages: lower risk of toxicity and higher image contrast. Due to the strength of the Trimetasphere nanomaterial s carbon cage enclosing the gadolinium, our Trimetasphere nanomaterial-based contrast agent can neutralize gadolinium for a longer period of time, and therefore allow the contrast agent to remain safely in the body longer. Experiments have also shown that Trimetasphere nanomaterials provide a stronger contrast

effect than the other contrast agents currently on the market. The first compound in this program is in preclinical development, with an investigational new drug application, or IND, planned for the end of 2006.

In addition, we are developing various modifications to the Trimetasphere nanomaterials to target them for specific tissues or physiological conditions. We believe that, using the Trimetasphere nanomaterials, a complete family of disease-targeting diagnostic agents can be created to enhance the capabilities of MRI imaging and significantly expand its applications.

Medical contrast agents for human use must be approved by the FDA or similar foreign regulatory agencies before they can be marketed, which we do not expect before 2009. We are in the early stages of developing a marketing strategy for our MRI contrast agent.

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Business

Materials Supply Business

Our Luna nanoWorks Division has two goals for its materials supply business: to identify new product opportunities by supplying carbon nanomaterials to research laboratories in academia, government and industry; and to develop customized products with specialized performance characteristics for use in industrial applications.

Luna nanoWorks sells carbon nanomaterial kits to academic, federal and private laboratories. These kits are sold to dedicated researchers with the objective of encouraging the discovery of new applications such as nano-scale circuit components, memory storage devices and biological tracers. Should these researchers discover an important new use, we expect that our proprietary position surrounding the relevant material will position us to negotiate favorable terms with the inventors of such new use.

We also have active research programs investigating the enhancement of various industrial materials, including:

- **High performance solar panels.** Solar panels are designed to capture light and convert its energy into electrical power. Solar panels currently on the market face limitations in efficiently converting solar energy into electrical power. We are in the early stages of developing a product that uses the electrical properties of Trimetasphere nanomaterials to increase the overall efficiency of solar panels.

- **Stronger and lighter composites.** Composite structures utilizing polymers, which are materials made up of smaller, linked building blocks, have replaced many metal structures for use in military body and vehicle armor due to their greater strength and lighter weight. We are investigating the use of enhanced carbon nanotubes to further reduce the weight and enhance the strength of these composites.

- **Coatings to shield devices from electromagnetic interference.** Carbon nanomaterials provide the strength of carbon fibers and are lightweight and highly conductive, making them suitable for use in coatings designed to shield electronics and electrical equipment from radio waves.

Luna Technologies Division

We reacquired Luna Technologies, Inc. in September 2005, and currently operate it as our Luna Technologies Division. We established Luna Technologies, Inc. in July 1998 and funded its growth by raising venture capital. Such financing activities diluted our equity ownership to as little as approximately 7% during our holding period and to approximately 10% prior to September 2005. In line with our strategy of building a growing portfolio of products, we purchased all of the stock of Luna Technologies, Inc. that we did not own in exchange for shares of our common stock in September 2005. Our acquisition of Luna Technologies is expected to enhance our development and production of fiber-optic technology.

Test and Measurement Equipment

Our test and measurement products monitor the integrity of fiber optic network components and subassemblies. Luna Technologies Division s products are targeted at manufacturers and suppliers of optical components and sub-assemblies and allow them to reduce costs and improve the quality of their products. Most manufacturers and suppliers of optical components and modules currently use a combination of different types of optical test equipment to identify and measure failures in optical networks, such as bad splices, bends, crimps and other reflective and non-reflective events. Our optical test equipment products replace the need for these multiple test products and address all stages of the end user s product development life cycle including: design verification, component qualification, assembly process verification and failure analysis.

Our Luna Technologies Division has two flagship product lines our Optical Vector Analyzer, or OVA, and our Optical Backscattering Reflectometer, or OBR. Our award winning OVA platform allows manufacturers and suppliers of optical components and sub-assemblies to reduce costs and time-to-market by replacing multiple, time consuming and expensive measurement platforms with a single, integrated and easy-to-use instrument. Our most recent version of OVA operating

software provides customers with faster testing times, advanced data analysis options and an extended dynamic range relative to previous versions.

Our OBR is a highly sensitive diagnostic device that allows data and telecommunications companies and the service providers who maintain their own fiber optic networks to reduce test time and improve product quality. Our OBR introduces the ability to inspect metropolitan fiber networks with higher resolution and better sensitivity than previously possible. Its user-friendly graphical user interface also makes the OBR product suitable for both research and manufacturing applications.

We expect to increase sales of our optical test equipment products by expanding our customer base beyond the telecommunications industry into avionics, defense and academic research laboratories.

In 2005, Luna Technologies Division received the Frost & Sullivan Award for Product Line Strategy for its OVA product and the Frost & Sullivan Optical Product of the Year Award for its OBR product.

In June 2005, Luna Technologies entered into a Joint Cooperation Agreement with Luna Energy. Under this agreement, both parties have agreed to cooperate to develop a fiber optic sensing system product and have agreed to contribute materials, intellectual property, personnel and other resources to the development effort. Upon successful completion of product development, Luna Energy will receive a license to certain of Luna Technologies intellectual property and will be required beginning in 2007 and continuing through December 31, 2017 to make payments to Luna Technologies with respect to revenues derived from products sold that utilize this intellectual property. Although as of December 31, 2005, Luna Energy had not yet sold products that would entitle Luna Technologies to royalty payments under this joint cooperation agreement, Luna Technologies had received aggregate development milestone payments of $305 thousand as of that date under this agreement and is entitled to receive additional development milestone payments of $120 thousand in the aggregate, subject to the satisfaction of certain conditions. Luna Technologies also has the right to receive royalty payments from sales of products in the future. The license of certain of the intellectual property from Luna Technologies to Luna Energy shall be an exclusive license if Luna Energy makes certain minimum royalty payments of $420 thousand in the aggregate between 2007 and 2017, and shall be a non-exclusive license if Luna Energy fails to make these minimum royalty payments. Since December 2004, we have not held an ownership interest in Luna Energy. Luna Technologies continues to operate as our Luna Technologies Division after we acquired that entity in September 2005.

Integrated Sensing Solutions

We have significant knowledge and experience in Distributed Sensing Systems, or DSS, which are products comprised of multiple sensors whose input is integrated through a fiber optic network and software. Our DSS products use fiber optic sensing technology with an innovative monitoring system that allows several thousand sensors to be networked along a single optical fiber. Some key applications, markets and technical advantages of our DSS are described below.

- **Distributed Strain.** Potential markets for our DSS products include the airframe industry, integrated structural monitoring on civil structures and space applications. For example, a major air frame manufacturer deployed our DSS products during fatigue tests to measure strain through a network of sensors distributed throughout an aircraft. Our distributed strain measurement technology can also provide three-dimensional shape measurement. We are developing this technology for use in robotic tethers and for wing structures. We have sold our shape-sensing probes to a major aircraft manufacturer for measuring shape on an aerodynamic surface.

- **Distributed Temperature.** We sell a network of distributed temperature sensors to a major manufacturer of electrical generators. This DSS product enables the direct monitoring of temperature, which helps to prolong generator life and to increase operational efficiency. We have also sold our DSS temperature sensors to NASA for both ultra-cold and extremely high-temperature measurements. Potential markets include industrial process control and electrical system monitoring.

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Competition

We compete for government, university and corporate research contracts relating to a broad range of technologies. We also compete in the materials supply sensing and fiber optic network testing markets. In addition, we plan to develop and commercialize multiple molecular technology and sensing solutions products across many industries, technologies and markets. As a result, we compete, or will compete, with a variety of companies in several different markets.

Competition for contract research is intense and the industry has few barriers to entry. We compete against a number of in-house research and development departments of major corporations, as well as a number of small, limited-service contract research providers. The contract research industry continues to experience consolidation, which has resulted in greater competition for clients. Increased competition might lead to price and other forms of competition that could harm our operating results.

We compete for contract research on the basis of a number of factors, including reliability, past performance, expertise and experience in specific areas, scope of service offerings, technological capabilities and price. Although there can be no assurance that we will continue to do so, we believe that we compete favorably in these areas. If in the future we are unable to effectively compete in these areas, we could lose business to our competitors, which could harm our operating results. Our competitors in contract research include, but are not limited to, companies such as General Dynamics Corporation, Lockheed Martin Corporation, SAIC, Inc. and SRA International, Inc.

In the molecular technology solutions products market, our competitors include, but are not limited to, large public manufacturers such as The Dow Chemical Company, E.I. du Pont de Nemours and Company, Rohm and Haas Company and 3M Company, as well as emerging advanced materials companies.

In addition, in the MRI contrast agent market, our competitors include Amersham plc, Berlex Laboratories, Inc., Bracco Diagnostics, Inc. and Mallinckrodt Inc.

In the sensor solutions products market, our competitors include, but are not limited to, large companies such as Agilent Technologies, Inc., Analog Devices, Inc., Freescale Semiconductor, Inc., JDS Uniphase Corp., Robert Bosch GmbH and Silicon Sensing, as well as emerging companies developing innovative sensing technologies.

The products that we have developed or are currently developing will compete with other technologically innovative products, as well as products incorporating conventional materials and technologies. We expect that our products will compete with companies in a wide range of industries, including semiconductors, electronics, biotechnology, textiles, alternative energy, military, defense, healthcare, telecommunications, industrial measurement, security applications and consumer electronics.

Intellectual Property

We seek patent protection on inventions that we consider important to the development of our business. We rely on a combination of patent, trademark, copyright and trade secret laws in the United States and other jurisdictions, as well as confidentiality procedures and contractual provisions to protect our proprietary technology and our brand. We control access to our proprietary technology and enter into confidentiality and invention assignment agreements with our employees and consultants and confidentiality agreements with other third parties.

Our success depends in part on our ability to develop patentable products and obtain, maintain and enforce patent and trade secret protection for our products, as well as successfully defend these patents against third party challenges both in the United States and in other countries. We will only be able to protect our technologies from unauthorized use by third parties to the extent that we own or have licensed valid and enforceable patents or trade secrets that cover them. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage.

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Currently, we own or license numerous U.S. patents and patent applications, and we intend to file, or request that our licensors file, additional patent applications for patents covering our products. However, patents may not be issued for any pending or future pending patent applications owned by or licensed to us. Claims allowed under any issued patent or future issued patent owned or licensed by us may not be valid or sufficiently broad to protect our technologies. Any issued patents owned by or licensed to us now or in the future may be challenged, invalidated or circumvented, and, in addition, the rights under such patents may not provide us with competitive advantages. In addition, competitors may design around our technology or develop competing technologies. Intellectual property rights may also be unavailable or limited in some foreign countries, which could make it easier for competitors to capture or increase their market share with respect to related technologies. Although we are not currently involved in any legal proceedings related to intellectual property, we could incur substantial costs to defend ourselves in suits brought against us or in suits in which we may assert our patent rights against others. An unfavorable outcome of any such litigation could have a material adverse effect on our business and results of operations.

As of December 31, 2005, we owned or had exclusive rights to use at least 32 issued U.S. patents and at least 62 additional pending U.S., international and foreign patent applications. As of December 31, 2005, we did not have any issued or granted foreign patents. In particular, as of December 31, 2005, we owned or had exclusive license to the following issued patents and applications as they relate to specific products:

- Ø two issued U.S. patents with expiration dates ranging from December 2021 to April 2024, three pending U.S. patent applications, and one pending foreign patent applications relating to our OVA and OBR products;
- Ø three issued U.S. patents with expiration dates ranging from December 2019 to August 2021, six pending U.S. patent applications, and 11 pending foreign patent applications relating to our carbon nanomaterials, including Trimetasphere nanomaterials;
- Ø three pending U.S. patent applications and one pending foreign patent application relating to our DSS technology;
- Ø 10 issued U.S. patents with expiration dates ranging from June 2011 to September 2022, three pending U.S. patent applications and one pending foreign patent application relating to our ultrasound technologies for medical applications;
- Ø three pending U.S. patent applications and two pending foreign applications relating to our ultrasonic technologies for weapons detection and non-destructive industrial testing technologies;
- Ø five issued U.S. patents with expiration dates ranging from February 2012 to April 2020, and two pending U.S. patent application relating to our remote and secure asset monitoring technologies;
- Ø six pending U.S. patent applications and seven pending foreign patent applications relating to our flame retardant, impact indicator coatings and multifunctional protective coatings; and
- Ø 12 issued U.S. patents with expiration dates ranging from February 2016 to March 2024, and 13 pending U.S. and foreign patent applications relating to our various other technologies.

We own 20 of the issued U.S. patents, 25 of the U.S. patent applications and 23 of the foreign patent applications identified above. The remaining 12 issued U.S. patents, seven U.S. patent applications and seven foreign patent applications are owned by and licensed exclusively from third parties, which include educational institutions, government agencies and for-profit companies. We consider the following exclusive license agreements to be material to our business:

- **Virginia Tech nanomaterials license.** Our Amended and Restated License Agreement with Virginia Tech Intellectual Properties, Inc., or VTIP, dated March 19, 2004, relating to Trimetasphere nanomaterials, which provides us with rights to one issued U.S. patent, one U.S. patent application and one foreign patent application. Under this license agreement, VTIP granted us an exclusive worldwide license, in all fields of use,

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under the foregoing patent rights, to make, have made, use and sell licensed products, with a reservation of rights by VTIP for educational and research purposes. We are required to diligently pursue development, manufacture and sale of licensed products, and are also required to, among other things, raise financing before March 19, 2009, make annual expenditures toward development of the licensed products, use reasonable efforts to market the licensed products and meet market demand, and distribute research samples of the licensed products. If we fail to do so, VTIP has the right to terminate the license or to change the exclusive license to a non-exclusive license. We paid up-front fees for this license agreement and are required to pay to VTIP royalties on product sales, including royalties on product sales by companies to which we have granted a sublicense. We have the right to terminate the license agreement for convenience, and VTIP has the right to terminate the agreement upon a material breach by us or our failure to make a payment. We agreed to indemnify VTIP against any claims arising out of our exercise of the license granted or any sublicense, including for products liability claims. VTIP is responsible for diligently pursuing the prosecution and maintenance of the patents at issue, and must consult with us and provide us with a reasonable opportunity to review and comment on all proposed submissions to any patent office. VTIP has the first right to institute an action for infringement of the licensed intellectual property; we can bring an infringement claim against third parties only if VTIP elects not to. Recoveries from any such action belong to the party bringing suit. If legal actions are brought jointly by VTIP and us where we each fully participate in such action, the recoveries are shared in jointly in proportion to the share of expense paid by each party.

- **NASA ultrasound technologies license.** Our License Agreement No. DE-384 with NASA dated October 28, 2004, relating to ultrasound technologies, which provides us with rights to 10 issued U.S. patents, two U.S. patent applications and one foreign patent application. Under this license agreement, NASA granted us a terminable, exclusive license to make, have made, use and sell licensed inventions, in the United States (including its territories and possessions) and other jurisdictions that are covered by a patent or patent application, in the field of medical applications for assessing and measuring intracranial pressure and compartment syndrome. We are required to achieve practical application, which is generally defined as a commercial application or use for which a market exists, of the licensed application before September 7, 2006, and achieve certain milestones along the way. We paid up-front fees for this license agreement and are required to pay to NASA and to the University of California, a joint owner with NASA of one of the patent applications covered by the license agreement, royalties on product sales, including minimum annual royalties from 2004 through the term of the license agreement as well as royalties on product sales by companies to which we have granted a sublicense. We may terminate the license agreement with advance notice or immediately upon a material breach by NASA. NASA may terminate the license upon a material breach by us or if NASA determines, among other things, that (i) we have failed to achieve or maintain practical application of the licensed invention before September 7, 2006, (ii) we have not substantially manufactured the licensed invention in the United States, or (iii) we have failed to meet market demand, to pay royalties or to submit required reports. In addition, until September 7, 2009, NASA is permitted to unilaterally modify or revoke the license as to any licensed invention for which we have not achieved a practical application. We agreed to indemnify NASA and the University of California against claims arising out of our use of the licensed invention or our sale, use or disposition of products or processes made by use of such inventions. We have the right to enforce the licensed patents, subject to the U.S. government s right to bring suit or intervene, and any recoveries must be shared with NASA and the University of California on terms to be negotiated with them.

In addition to the exclusive license agreements described above, we consider the following non-exclusive license agreements to be material to our business because they relate to certain of our key products:

- **NASA OVA and OBR products and DSS technology licenses.** Our License Agreement with NASA No. DN-982 dated June 10, 2002, as modified on dated January 23, 2006, and our License Agreement with NASA No. DN-951 dated December 20, 2000, relating to our OVA and OBR products and DSS technology, which provide us with rights to four issued U.S. patents and two foreign patent applications. Under these license

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agreements, NASA granted us a terminable, non-exclusive license to make, have made, use and sell licensed inventions, in the United States (including its territories and possessions), in all fields of use. We paid up-front fees for this license agreement and are required to pay royalties on product sales, including minimum annual royalties from 2003 through the term of the license agreement as well as royalties on product sales by, and other payments we receive from, companies to which we have granted a sublicense. We may terminate the license agreement with advance notice or immediately upon a material breach by NASA. NASA may terminate the license upon a material breach by us or if NASA determines, among other things, that (i) we failed to achieve or maintain practical application of the licensed invention before June 10, 2004, (ii) we have not substantially manufactured the licensed invention in the United States, or (iii) we have failed to meet market demand, to pay royalties or to submit required reports. In addition, NASA is permitted to unilaterally modify or terminate the agreement in event of a breach by us by providing notice to us and allowing us to challenge or protest its decision. We agreed to indemnify NASA against claims arising out of our use of the licensed invention or information provided by NASA, or our sale, use or disposition of products or processes made by use of such inventions or such information. We have the right to enforce the licensed patents, subject to the U.S. government s right to bring suit or intervene, and any recoveries must be shared with NASA on terms to be negotiated with them.

- **United Technologies Corporation DSS technology license.** Our Fiber Optic Patent License with United Technologies Corporation, or UTC, dated September 22, 2003, relating to DSS technology, which provides us with rights to two issued U.S. patents. Under this license agreement, UTC granted us a non-exclusive, non-transferable, worldwide license, under the foregoing patent rights, to make, have made, use and sell licensed products, without the right to grant sublicenses. We paid non-refundable up-front fees for this license agreement and are required to pay royalties on product sales. We do not have the right to terminate the license agreement without the agreement of UTC, but UTC has the right to terminate upon, among other things, a material breach by us or our failure to make a payment. We agreed to indemnify UTC against any claims relating to (i) use of the licensed patents by us, our customers, subcontractors, agents or employees, and (ii) our manufacture, use and sale of the licensed products. UTC may decide in its sole discretion whether to enforce its rights under the licensed patents or to defend any action with respect to such patents. Any such action would be under UTC s sole control and at its expense, and UTC would retain all damages and recoveries from any such action.

We may not be able to prevent third parties from obtaining rights from our licensor that are identical to ours. For example, because our licenses from NASA and UTC described above that relate to fiber Bragg grating and fiber optic strain sensing are non-exclusive, others, including our competitors, may obtain rights from our licensor that are identical to ours.

The development of some of our intellectual property, including software, may have been funded by the U.S. government including under, or in connection with, U.S. government contracts and other federal agreements. Similarly, some of our patents may cover inventions that were conceived or first reduced to actual practice under, or in connection with, U.S. government contracts or other federal funding agreements. The U.S. government may constrain the use of intellectual property, including patents and software that was developed through or under U.S. government contracts, federal funding agreements or other federal agreements. In addition, in instances where the U.S. government has provided funding of, or for, the development of intellectual property, the U.S. government typically retains a non-exclusive, royalty-free, world-wide license to use the intellectual property in any manner it deems appropriate including, in some specific circumstances, providing it to our competitors. When we work on U.S. government contracts, federal funding agreements and other federal instruments, we seek to protect our proprietary technologies and intellectual property developed at private expense by taking steps to maintain ownership of such intellectual property, as well as steps intended to limit the U.S. government s rights in such intellectual property to the extent permitted by applicable statutes, rules and regulations. We may not have succeeded in our efforts to maintain title in patents or ownership or in limiting the U.S. government s rights in our proprietary technologies and the intellectual property whether developed in the performance of a federal funding agreement or developed at private expense.

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In addition to patent and trade secret protection, we also rely on several registered and unregistered trademarks to protect our brand. LUNA INNOVATIONS is a registered trademark in the United States. Our unregistered trademarks include: our logo (a black and white image of a moth design); TRIMETASPHERES; EDAC; and ACCELERATING THE INNOVATION PROCESS.

Our intellectual property policy is to protect our products, technology and processes by asserting our intellectual property rights where appropriate and prudent. However, we currently have no foreign issued patents and only three pending foreign applications in the field of endohedral metallofullerenes, and any pending or future pending patent applications owned by or licensed to us (in the United States or abroad) may not be allowed or may in the future be challenged, invalidated or circumvented, and the rights under such patents may not provide us with competitive advantages. Any significant impairment of our intellectual property rights could harm our business or our ability to compete. Protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results.

There is always the risk that third parties may claim that we are infringing upon their intellectual property rights and, if successful in proving such claims, we could be prevented from selling our products or services. For example, we are aware of competitors with patents in technology areas applicable to our optical test equipment products. Such competitors may allege that we infringe these patents. In addition, we acquired a business that had received a letter in 2002 from a competitor alleging infringement of certain patents. The competitor sent an additional letter on January 14, 2004 to the business that we acquired, again alleging infringement of the competitor s patents. Neither we nor the business that we acquired have received any further communications from this third party. We cannot currently predict whether this third party, or any other third party, will assert a claim against us, or whether any third parties that have asserted such claims against businesses that we have acquired will assert claims or pursue infringement litigation against us; nor can we predict the ultimate outcome of any such potential claims or litigation.

Even if such claims are unfounded, we could suffer significant litigation or licensing expenses as a result of such claims. Companies in the molecular technology solutions, advanced materials, nanotechnology, systems integration, sensing and fiber optics industries own numerous patents, copyrights and trademarks and frequently enter into litigation based on allegations of infringement or other violations of intellectual property rights. As we face increasing competition, the possibility of intellectual property claims against us grows. Our technologies may not be able to withstand any third-party claims or rights against their use.

In recent years, numerous patent applications have been filed by others with the United States Patent and Trademark Office that refer to molecular technology solutions, advanced materials, nanotechnology, systems integration, sensing, fiber optics and our other core technologies. Information contained in patent applications is generally not publicly available. Consequently, we are unable to evaluate the underlying intellectual property until these patent applications become issued or published. The process to issue patents is long and certain innovations that have not yet resulted in issued patents could have been developed prior to our intellectual property. These patents, if and when issued, may predate our patents and may have superior claims or superior rights or otherwise be in conflict with our technology or business processes.

For additional, important information related to our intellectual property, please review the information set forth in Risk factors Risks Related to Our Business and Technologies.

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Business

Government Regulation

Small Business Innovation Research Qualifications

We presently benefit from our status as qualifying for the U.S. Government s Small Business Innovation Research, or SBIR, program administered by the U.S. Small Business Administration, or SBA. SBIR is a highly competitive program that encourages small businesses to explore their technological potential and provides them incentive to profit from the commercialization of technologies. Each year, ten federal agencies and departments, including NASA, the Department of Defense and the National Institutes of Health, are required to set aside a portion of their grant awards for SBIR-qualified organizations. SBIR contracts include Phase I feasibility contracts of up to $100 thousand and Phase II proof-of-concept contracts, which can be as high as $750 thousand. Several of our research contracts have used this program as a key source of project funding to develop new technologies.

We must continue to qualify for the SBIR program in order to be eligible to receive future SBIR awards. The eligibility requirements are:

- **Ownership.** The company must be at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens, or owned by an entity that is itself at least 51 percent owned and controlled by U.S. citizens or permanent resident aliens; and

- **Size.** The company, including its affiliates, cannot have more than 500 employees.

These requirements are set forth in the SBA s regulations and are interpreted by the SBA s Office of Hearings and Appeals. In determining whether we satisfy the 51% equity ownership requirement, agreements to merge, stock options, convertible debt and other similar instruments are given present effect by the SBA as though the underlying security were actually issued unless the exercisability or conversion of such securities is speculative, remote or beyond the control of the security holder. We therefore believe our outstanding options and warrants held by eligible individuals may be counted as outstanding equity for purposes of meeting the 51% equity ownership requirement. As of December 31, 2005, giving present effect to our outstanding options, at least approximately 73% of our equity was owned by U.S. citizens or permanent residents. Upon the completion of this offering, approximately % of our equity will be owned by U.S. citizens or permanent residents (and approximately % assuming exercise of the underwriters over-allotment option). In addition, to be eligible for SBIR contracts, the number of our employees, including those of any entities that are considered to be affiliated with us, cannot exceed 500. As of December 31, 2005, we, including all of our divisions, had 131 full-time and 12 part-time employees. In determining whether we have 500 or fewer employees, the SBA may count the number of employees of entities that are large stockholders who are affiliated , or have the power to control us. In determining whether two or more firms are affiliated, the SBA will look at indicia such as stock ownership or common management, but ultimately will make its determination based on the totality of the circumstances. The SBA presumes that a large stockholder of ours has the power to control us absent evidence rebutting that presumption. With respect to Carilion Health System, our only large institutional stockholder, we believe we would not be required to count the employees of Carilion Health System. We believe the relative beneficial ownership of our individual stockholders rebuts the presumption of control by Carilion Health System because the shares held by our executive officers and directors constitute the controlling voting interest in us. Eligibility protests can be raised to the SBA by a competitor or by the awarding contracting agency. Accordingly, a company can be declared ineligible for a contract award as a result of a competitor s protest to the SBA or as a result of questioning by the awarding contracting agency.

We believe that we are currently in compliance with the SBIR eligibility criteria, but we cannot provide assurance that the SBA will interpret its regulations in our favor. As we grow larger, and as our ownership becomes more diversified, we may no longer qualify for the SBIR program, and we may be required to seek alternative sources and partnerships to fund some of our research and development costs. See Risk factors Risks Related to Our Business and Technologies.

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Environmental

Our facilities and current and proposed activities involve the use of a broad range of materials that are considered hazardous under applicable laws and regulations. Accordingly, we are subject to a number of foreign and domestic laws and regulations relating to health and safety, protection of the environment, product labeling and product take back, and the storage, use, disposal of, and exposure to, hazardous materials and wastes. We could incur costs, fines and civil and criminal penalties, personal injury and third party property damage claims, or we could be required to incur substantial investigation or remediation costs if we were to violate or become liable under environmental, health and safety laws. Moreover, a failure to comply with environmental laws could result in fines and the revocation of environmental permits, which could prevent us from conducting our business. Liability under environmental laws can be joint and several and without regard to fault. There can be no assurance that violations of environmental health and safety laws will not occur in the future as a result of the inability to obtain permits, human error, equipment failure or other causes. Environmental laws could become more stringent over time, imposing greater compliance costs and increasing risks and penalties associated with violations, which could harm our business. Further, violations of present and future environmental laws could restrict our ability to expand facilities, pursue certain technologies, and could require us to acquire costly equipment, or to incur potentially significant costs to comply with environmental regulations.

The European Union Directive 2002/96/EC on Waste Electrical and Electronic Equipment, known as the WEEE Directive, requires producers of certain electrical and electronic equipment, including monitoring instruments, to be financially responsible for specified collection, recycling, treatment and disposal of past and present covered products placed on the market in the European Union. As a manufacturer of covered products, we may be required to register as a producer in some European Union countries, and we may incur some financial responsibility for the collection, recycling, treatment and disposal of both new products sold, and products already sold prior to the WEEE Directive s enforcement date, including the products of other manufacturers where these are replaced by our own products. European Union Directive 2002/95/EC on the Restriction of the Use of Hazardous Substances in electrical and electronic equipment, known as the RoHS Directive, restricts the use of certain hazardous substances, including mercury, lead and cadmium in specified covered products; however, the RoHS Directive currently exempts monitoring instruments from its requirements. If the European Commission were to remove this exemption in the future, we would be required to change our manufacturing processes, and redesign products regulated under the RoHS Directive in order to be able to continue to offer them for sale within the European Union. For some products, substituting certain components containing regulated hazardous substances may be difficult or costly, or result in production delays. We will continue to review the applicability and impact of both directives on the sale of our products within the European Union. Although we cannot currently estimate the extent of such impact, they are likely to result in additional costs, and could require us to redesign or change how we manufacture our products, any of which could adversely affect our operating results. Failure to comply with the directives could result in the imposition of fines and penalties, inability to sell covered products in the European Union and loss of revenues.

We have made, and will continue to make, expenditures to comply with current and future environmental laws. We anticipate that we could incur additional capital and operating costs in the future to comply with existing environmental laws and new requirements arising from new or amended statutes and regulations. In addition, because the applicable regulatory agencies have not yet promulgated final standards for some existing environmental programs, we cannot at this time reasonably estimate the cost for compliance with these additional requirements. The amount of any such compliance costs could be material. We cannot predict the impact that future regulations will impose upon our business.

FDA Regulation of Products

Some of the products that we are developing are subject to regulation under the FDC Act. In particular, our Trimetasphere nanomaterial-based MRI contrast agent and our ultrasound diagnostic devices for measuring certain medical conditions will be considered a drug and medical devices, respectively, under the FDC Act. Both the statutes and regulations promulgated under the FDA Act govern, among other things, the testing, manufacturing, safety efficacy, labeling, storage, recordkeeping, advertising and other promotional practices involving the regulation of drug and devices.

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New Drugs

Obtaining FDA approval for a new drug has historically been a costly and time consuming process. Generally, in order to gain FDA premarket approval, a developer first must conduct preclinical studies in the laboratory and in animal model systems to gain preliminary information on an agent s efficacy and to identify any safety problems. The results of these studies are submitted as a part of an investigational new drug, or IND, application which the FDA must review before human clinical trials of an investigational drug can start. The IND application includes a detailed description of the clinical investigations to be undertaken. In order to commercialize any drug, we must sponsor and file an IND application and be responsible for initiating and overseeing the clinical studies to demonstrate the safety, efficacy and potency that are necessary to obtain FDA approval of any of the products. We will be required to select qualified investigators to supervise the administration of the products and ensure that the investigations are conducted and monitored in accordance with FDA regulations. Clinical trials are normally done in three phases, although the phases may overlap. Phase I trials are concerned primarily with the safety and preliminary effectiveness of the drug, involve fewer than 100 subjects and may take from six months to over one year. Phase II trials typically involve a few hundred patients and are designed primarily to demonstrate effectiveness in treating or diagnosing the disease or condition for which the drug is intended, although short-term side effects and risks in people whose health is impaired may also be examined. Phase III trials are expanded clinical trials with larger numbers of patients which are intended to evaluate the overall benefit-risk relationship of the drug and to gather additional information for proper dosage and labeling of the drug. The process of clinical trials generally takes two to five years to complete, but may take longer. The FDA receives reports on the progress of each phase of clinical testing, and it may require the modification, suspension or termination of clinical trials if it concludes that an unwarranted risk is presented to patients.

If clinical trials of a new product are completed successfully, the sponsor of the product may seek FDA marketing approval. If the product is regulated as a drug, the FDA will require the submission and approval of a new drug application, or NDA, before commercial marketing of the drug. The NDA must include detailed information about the drug and its manufacture and the results of product development, preclinical studies and clinical trials. The testing and approval processes require substantial time and effort, and we cannot guarantee that any approval will be granted on a timely basis, if at all. If questions arise during the FDA review process, approval can take more than five years. Even with the submissions of relevant data, the FDA may ultimately decide that the NDA does not satisfy its regulatory criteria for approval and deny approval or require additional clinical studies. In addition, the FDA may condition marketing approval on the conduct of specific post-marketing studies to further evaluate safety and effectiveness. Even if FDA regulatory clearances are obtained, a marketed product is subject to continual review. Later discovery of previously unknown problems or failure to comply with the applicable regulatory requirements may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions.

Medical Devices

Any device products that we may develop are likely to be regulated by the FDA as medical devices rather than drugs. The nature of the FDA requirements applicable to devices depends on their classification by the FDA. A device developed by us would be automatically classified as a Class III device, requiring pre-market approval, unless the device was substantially equivalent to an existing device that has been classified in Class I or Class II or to a pre-1976 device that has not yet been classified or we convince the FDA to reclassify the device as Class I or Class II. Class I or Class II devices require registration through the 510(k) exemption. If we were unable to demonstrate such substantial equivalence and unable to obtain reclassification, we would be required to undertake the costly and time-consuming process, comparable to that for new drugs, of conducting preclinical studies, obtaining an investigational device exemption to conduct clinical tests, filing a pre-market approval application, and obtaining FDA approval.

If the device were a Class I product, the general controls of the Federal Food, Drug, and Cosmetic Act, chiefly adulteration, misbranding and good manufacturing practice requirements, would nevertheless apply. If substantial equivalence to a Class II device could be shown, the general controls plus special controls, such as performance standards, guidelines for safety and effectiveness, and post-market surveillance, would apply. While demonstrating substantial equivalence to a Class I or Class II

product is not as costly or time-consuming as the pre-market approval process for Class III devices, it can in some cases also involve conducting clinical tests to demonstrate that any differences between the new device and devices already on the market do no affect safety or effectiveness. If substantial equivalence to a pre-1976 device that has not yet been classified has been shown, it is possible that the FDA would subsequently classify the device as a Class III device and call for the filing of pre-market approval applications at that time. If the FDA took that step, then filing an application acceptable to the FDA would be a prerequisite to remaining on the market.

Employees

As of December 31, 2005, we employed 143 people, including 131 people on a full-time basis, 129 in the United States and two internationally. Of these, 28 employees hold Ph.D.s and 38 hold advanced degrees. We have experienced no work stoppages and believe that our employee relations are good.

Facilities

Our corporate headquarters are located in Roanoke, Virginia, and, in late 2006, we will move into 20,000 square feet of leased office space currently under construction at the Riverside Center in Roanoke, Virginia. Additional administrative functions currently located in 14,700 square feet of space in Blacksburg, Virginia, under a lease expiring June 30, 2006 will be moved to the corporate headquarters when construction is complete.

We lease an additional 15,000 square feet of space in Blacksburg, Virginia for research, development, manufacturing and administrative functions. Our Luna Technologies Division occupies an additional 6,310 square foot facility space in Blacksburg, Virginia, also for research, development, manufacturing and administrative functions. In the third quarter of 2006, all of our Blacksburg, Virginia, research, development and manufacturing functions will be consolidated into 32,000 square feet of newly leased space in Blacksburg.

Our Luna nanoWorks Division occupies a 24,000 square foot facility in Danville, Virginia for nanomaterials manufacturing and research and development.

Our facility in Charlottesville, Virginia currently occupies approximately 8,000 square feet for research and development of molecular technology solutions. Our facility in Hampton, Virginia, which is located near the NASA Langley Research Center, occupies approximately 10,000 square feet for research and development of non-destructive evaluation and certain ultrasonic technologies. We also maintain additional office space in McLean, Virginia.

We believe that our existing facilities are adequate for our current needs and suitable additional or substitute space will be available as needed to accommodate expansion of our operations.

Legal Proceedings

We are not party to any material legal proceedings, nor are we currently aware of any threatened material proceedings. From time to time, we may become involved in litigation in relation to claims arising out of our operations in the normal course of business. While management currently believes the amount of ultimate liability, if any, with respect to these actions will not materially affect our financial position, results of operations, or liquidity, the ultimate outcome of any litigation is uncertain. Were an unfavorable outcome to occur, or if protracted litigation were to ensue, the impact could be material to us.

In March 2003, the Office of Inspector General of the Department of Commerce advised us that the government was investigating anonymous allegations of contract improprieties. We have cooperated fully and extensively with that investigation through interviews and document production. In April 2003, the government advised our regulatory counsel that to date no wrongdoing had been identified, although the government indicated that we may not have fully complied with

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contractual reporting requirements in one or two instances, which the government did not specify. We believe that the investigation has been resolved favorably, based on statements by the government investigator to company employees in June 2003, and that this matter effectively is at an end absent any advice or communication from the government to the contrary. However, if the government pursues this investigation further, there can be no assurance as to how or whether our relationships, business, financial condition or results of operations will ultimately be affected.

On November 9, 2004, we received a subpoena from the Department of Defense s Office of the Inspector General covering certain government research contracts awarded to us between January 1, 1998 and November 9, 2004 to determine if we had duplicated work in our submission of project reports to the government. In connection with the investigation, the government alleged that duplication occurred in three research reports that we prepared under the contracts. We submitted a response to the Inspector General in September 2005 challenging the government s findings. On November 15, 2005, we entered into a settlement agreement with the government and received a general release with respect to the civil and administrative claims in this matter in return for a payment of $165,333.

In July 2005, we received a letter from legal counsel retained by a former employee that such law firm is investigating whether such former employee has any claims against us, including breaches of contract, fiduciary duty, implied covenants of good faith and fair dealing as well as potential violations of minority stockholder rights that such former employee may have as a stockholder in one of our subsidiaries. In 2006, we responded to additional inquiries from counsel for such former employee seeking information about the relationship between us and the subsidiary in which the employee holds stock. Although we believe none of these potential claims has merit, we cannot currently predict whether such former employee will file litigation against us or the ultimate outcome of any such potential litigation.

Advisory Board

We have assembled a twelve member advisory board of leaders with backgrounds in government, academia and industry with which we consult on a formal basis regarding strategic and technical matters. In general, they serve on an exclusive basis within a defined field of collaboration. In connection with their appointment to and as consideration for their service on the advisory board, each advisor receives a stock option grant to purchase 5,000 shares of our common stock.

Our advisory board members include:

Frank Bonsal, Jr. is co-founder of the venture capital firm New Enterprise Associates, or NEA, where he has focused on the development of its early stage companies. He is also a co-founder of Red Abbey Venture Partners in Lutherville, Maryland and he is a special limited partner of Amadeus Capital Partners, Boulder Ventures, Novak Biddle Venture Partners, Trellis Ventures and Windward Ventures. Mr. Bonsal s current board memberships include Advertising.com, Inc., CeraTech and Cibernet Corporation. Mr. Bonsal is also a member on the Johns Hopkins Hospital Endowment Board. Prior to founding NEA, Mr. Bonsal was a general partner of Alex. Brown & Sons Inc.

Terry Brady was most recently employed by Oridion Systems Ltd. to launch a new division in the United States. Prior to joining Oridion Systems Ltd., Mr. Brady founded Array Medical, Inc., where he served as President and Chief Executive Officer. Before founding Array Medical, Inc., Mr. Brady was President of International Technidyne Corporation Commercial Group.

Ronald E. Carrier, Ph.D. is currently president emeritus of James Madison University, where he served previously as President for 27 years. During his presidency, James Madison University changed from a teachers college to a major comprehensive university. Dr. Carrier has been active on a number of national and state commissions and has been a board member of several companies that have been acquired by Fortune 200 companies.

John F. Hay is currently a principal with P3 Consulting, LLC in Washington, D.C. Mr. Hay has over 40 years of experience in the national security arena having served twelve years as an industry executive and thirty one years in uniform with the

Department of the Navy. In 2000, Mr. Hay was appointed to the Bush-Cheney Transition Advisory Committee and subsequently served as an advisor to the Secretary of Defense and the NASA Administrator. He currently serves as an advisor to the Secretary of the Army and is a member of the Army Science Board. During his time in industry, Mr. Hay was Senior Vice President, Corporate and International Affairs for Westinghouse Electric and CBS Corporation. Before joining Westinghouse, Mr. Hay spent five years as a Congressional Affairs Officer in the Office of the Secretary of the Army. During the previous twenty-six years, his military service included serving in the Chief of Staff of the Army s Office and a series of command and staff assignments in Infantry, Special Operations, Intelligence and Military Police units. Mr. Hay received his bachelors degree from the University of Nebraska, his masters degree from Wichita State University and is a graduate of the U.S. Army Command and Staff College and the FBI National Academy.

Charles Edward Hamner, Jr. DVM, Ph.D. is currently the President and CEO of Hamner Advisory Service; he specializes in management in the pharmaceutical and health care industries and academic administration. From 1988-2002 Dr. Hamner served as President and CEO of the North Carolina Biotechnology Center, and was a Research Professor in the OB/GYN Department at the University of North Carolina at Chapel Hill. He has also worked as Associate Vice President for Health Affairs at the University of Virginia Medical Center (1978-1988), and served as Interim Executive Director for the Center in 1981. Dr. Hamner received his bachelors degree in Animal Science from Virginia Tech and his masters degree in Chemistry, DVM in Veterinary Medicine and Ph.D. in Bio-Chemistry from the University of Georgia.

Sir Harold W. Kroto is one of the co-recipients of the 1996 Nobel Prize in Chemistry. Dr. Kroto s Nobel Prize was based on his co-discovery of buckminsterfullerene, a form of pure carbon better known as buckyballs. Dr. Kroto earned his Doctorate in chemistry from the University of Sheffield. He started his academic career at the University of Sussex at Brighton in 1967, where he became a professor in 1985 and, in 1991 was made a Royal Society Research Professor.

The Honorable John O. Marsh Jr. is currently a Senior Fellow at the National Center for Technology and Law and a Distinguished Adjunct Professor at the George Mason University School of Law. Prior to that, Mr. Marsh served in the U.S. House of Representatives for Virginia, as Secretary of the Army for eight years, and as National Security Advisor to Vice President and, later, President Gerald R. Ford. Mr. Marsh is also the former Chairman and interim Chief Executive Officer of Novavax, Inc., a specialty biopharmaceutical company. Mr. Marsh received his law degree from Washington and Lee University.

John B. Noftsinger, Jr., Ph.D. is currently the Associate Vice President of Academic Affairs for Research and Program Innovation, the Executive Director of the Institute for Infrastructure and Information Assurance, and an Associate Professor of Integrated Science and Technology and Education at James Madison University, where he specializes in interdisciplinary program and grant development. Dr. Noftsinger is also the Co-Chair of the Virginia Research and Technology Advisory Committee and the Chair of the Virginia Technology Alliance.

Jay Sculley, Ph.D. is the Chairman Emeritus and former Chairman, President and Chief Executive Officer of The Allied Defense Group, Inc. Dr. Sculley was previously the Director of Advanced Studies and Technologies at Grumman Corporation. Dr. Sculley served as the Assistant Secretary for Research and Development for the U.S. Army during President Ronald Reagan s administration. In addition, Dr. Sculley was a professor and Dean of the Department of Civil Engineering at the Virginia Military Institute, where he also served as a member of the Board of Visitors.

Jerre Stead is currently Chairman of IHS, Inc. and is the former Chairman and Chief Executive Officer of Ingram Micro Inc. He previously served as Chief Executive Officer of Legent Corporation, Chairman and Chief Executive Officer of AT&T Global Information Solutions, and Chairman, President, and Chief Executive Officer of Square D Company. Mr. Stead also serves on the board of directors of TBG, Armstrong World Industries, Inc., Brightpoint, Inc., Conexant Systems, Inc., Mindspeed Technologies, Inc., and Mobility Electronics, Inc.

G. Kim Wincup is senior vice president of Science Applications International Corporation. Mr. Wincup previously served as counsel to the U.S. House of Representatives Armed Services Committee and U.S. House of Representatives Veterans

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Affairs Committee, as staff director of the U.S. House of Representatives Armed Services Committee and the Joint Committee on the Organization of Congress, and as Assistant Secretary of both the Air Force and the Army. Mr. Wincup has a bachelors degree in Political Science from DePauw University, and received a law degree from the University of Illinois School of Law.

General Larry D. Welch was formally the U.S. Air Force Chief of Staff. As Chief, he served as the senior uniformed Air Force Officer responsible for the organization, training and equipage of a combined active duty, Guard, Reserve and civilian force serving at locations in the United States and overseas. As a member of the Joint Chiefs of Staff, he and the other service chiefs functioned as the principal military advisers to the secretary of defense, National Security Council and the President. General Welch received a bachelor s degree in Business Administration from the University of Maryland and a Masters Degree in International Relations from the George Washington University. General Welch completed Armed Forces Staff College at Norfolk, Va., in 1967, and National War College at Fort Lesley J. McNair, Washington, D.C., in 1972.

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Management

Executive Officers and Directors

The following table sets forth certain information concerning our current executive officers and directors:

Name	Age	Position	Director or Executive Officer Since
Kent A. Murphy, Ph.D.	47	President, Chief Executive Officer, Secretary, Treasurer and Chairman of the Board of Directors	1990
Scott A. Graeff	39	Chief Financial Officer and Executive Vice President, Corporate Development	2005
John T. Goehrke	48	Chief Operating Officer	2005
Scott A. Meller	39	President, Contract Research Group	2000
Kenneth D. Ferris	58	President, Luna Advanced Systems Division	2005
Robert P. Lenk, Ph.D.	58	President, Luna nanoWorks Division	2005
N. Leigh Anderson, Ph.D.	56	Director	2006
John C. Backus, Jr.(1)(2)	47	Director	2005
Bobbie Kilberg	61	Director	2006
Edward G. Murphy, M.D.(1)(3)	50	Director	2005
Richard W. Roedel(1)(2)(3)	56	Director	2005
Paul E. Torgersen, Ph.D.(2)(3)	74	Director	2000

(1) Member of our nominating and corporate governance committee.
(2) Member of our audit committee.
(3) Member of our compensation committee.

Kent A. Murphy, Ph.D., our founder, has served as our President, Chief Executive Officer, Secretary, Treasurer and Chairman of the Board since 1992. Dr. Murphy received his Ph.D. in Electrical Engineering from Virginia Polytechnic Institute and State University and is formerly a tenured professor in Virginia Tech s Bradley Department of Engineering, where he filed for over 35 patents. In 2001, he was named SBIR Entrepreneur of the Year and in 2004 was named Outstanding Industrialist of the Year by Virginia s Governor Warner. Dr. Murphy is the founding member of The Accelerating Innovation Foundation, a non-profit organization whose goal is to promote and facilitate development of a technology innovation cluster in the Mid-Atlantic region. Dr. Murphy is not related to Edward G. Murphy, M.D., a member of our board of directors.

Scott A. Graeff has served as our Chief Financial Officer since July 2005 and was a member of our Board of Directors from August 2005 until March 2006. In addition, he currently serves as our Executive Vice President, Corporate Development. From December 1999 to June 2001, Mr. Graeff served as Chief Financial Officer of Liquidity Link, a software development company. From June 2001 to August 2002, Mr. Graeff served as President and Chief Financial Officer of Autumn Investments. From August 2002 until July 2005, Mr. Graeff served as a Managing Director for Gryphon Capital Partners, a venture capital investment group. From August 2003 until July 2005, Mr. Graeff also served as the Acting Chief Financial Officer of Luna Technologies, Inc. Mr. Graeff is presently a member of the Board of Directors of Provox Technologies Corporation, a provider of speech

recognition-based medical documentation and workflow management systems, a position he has held since June 2004. Mr. Graeff holds a B.S. in Commerce from the University of Virginia.

John T. Goehrke has served as our Chief Operating Officer since September 2005. From August 2003 to September 2005, Mr. Goehrke served as President and Chief Executive Officer of Luna Technologies, Inc. From April 2000 to April 2003, Mr. Goehrke served as General Manager of the Access Division of Acterna, LLC, a provider of communications test solutions

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for telecommunications and cable network operators. Mr. Goehrke holds a B.S. in Electrical Engineering from the University of Connecticut and a M.B.A. from the University of Pittsburgh.

Scott A. Meller has served as our President, Contract Research Group, since September 2005. From May 2004 to September 2005, Mr. Meller served as our Chief Operating Officer. From October 2002 to May 2004, Mr. Meller served as our Vice President of Research and Development and previously served as Director of Engineering from September 2000 to October 2002. Mr. Meller joined Luna Innovations in 1996 and was a major contributor to early research that led to spin-offs and new products, including Luna Technologies, Inc. Mr. Meller holds a B.S. in Electrical Engineering from Clemson University, a M.S. in Electrical Engineering from Virginia Tech, and is a licensed Professional Engineer. He also holds three patents in optical fiber sensors and devices.

Kenneth D. Ferris has served as President of our Luna Advanced Systems Division since December 2005. Prior to joining Luna iMonitoring as Director in 2002, Ken was with Carrier Access, where as VP and General Manger of Broadband Terminal Products, he was responsible for Product Development and Product Management activities. Ken joined Carrier Access in August of 2000 when Carrier acquired Millennia Systems, a company he co-founded with Dr. Phil Couch. Prior to starting Millennia in 1998, Ken was a Vice President for FiberCom, as part of the team who developed the company from infancy to maturity. Prior to joining FiberCom he was with ITT -EOPD in Roanoke for three years. Ken spent the first 10 years of his career in the U.S. Department of Defense performing systems engineering and program management for a variety of projects. Ken led the partnership of Luna iMonitoring with IHS in 2003. Mr. Ferris holds a B.S. in Electrical Engineering from Virginia Tech.

Robert P. Lenk, Ph.D. has served as President of our Luna nanoWorks Division since August 2005. Since December 2003, Dr. Lenk has served as President of Oncovector Inc., a biopharmaceutical company. Dr. Lenk has also served as a member of Oncovector s Board of Directors since May 2003. From July 1999 to September 2003, Dr. Lenk was President and Chief Executive Officer of Therapeutics 2000, an inhalation pharmaceutical research company. Dr. Lenk holds a Ph.D. in Cell Biology from the Massachusetts Institute of Technology.

N. Leigh Anderson, Ph.D. has served as a member of our board of directors since March 2006. Since 2002, Dr. Anderson has served as the Chief Executive Officer of the Plasma Proteome Institute, a scientific research institute in Washington, D.C., of which he is also a founder. Dr. Anderson is currently a member of the Board of Directors and a member of the Audit Committee of Dade Behring Holdings, Inc. (DADE), a Nasdaq-traded company. Dr. Anderson also consults through Anderson Forschung Group, of which he has been a Principal since 2002. From 2001 to 2002, Dr. Anderson served as the Chief Scientific Officer and a member of the board of directors of Large Scale Biology Corporation, a biotechnology corporation that previously traded on Nasdaq under the symbol LSBC and ceased operations in December 2005. Dr. Anderson earned a B.A. in Physics from Yale University and a Ph.D. in Molecular Biology from Cambridge University.

John C. Backus, Jr. has served as a member of our board of directors since September 2005. Mr. Backus is a member of our audit committee and chairman of our nominating and corporate governance committee. Since 1999, Mr. Backus has served as a Managing Director and Partner at Draper Atlantic, an early stage information technology venture capital firm based in Northern Virginia which he co-founded. Prior to founding Draper Atlantic, Mr. Backus was a founder and the President and Chief Executive Officer of InteliData Technologies Corporation, a developer of software products and services for the financial services industry. Mr. Backus earned a B.A. in Economics and an M.B.A. from Stanford University.

Bobbie Kilberg has served as a member of our board of directors since March 2006. She is the President and CEO of the Northern Virginia Technology Council, or NVTC, the largest technology council in the United States. In addition, she was appointed by President George W. Bush to serve on the President s Council of Advisors on Science and Technology, or PCAST, and also serves on the Board of Trustees/Board of Directors of George Washington University, Washington D.C. public television station WETA, the Wolf Trap Foundation for the Performing Arts, United Bank - Virginia, and the Advisory Board of George Mason University s School of IT & Engineering. Ms. Kilberg has served on the Attorney General of Virginia s Task Forces on Identity Theft and on Regulatory Reform and Economic Development. Among her prior professional positions, Ms. Kilberg served as Deputy Assistant to the President for Public Liaison and Deputy Assistant to the President for Intergovernmental Affairs for President George H.W. Bush, as Associate Counsel to President Gerald R. Ford, as Vice President and General Counsel of the Roosevelt Center for American Policy Studies, as an attorney at Arnold & Porter, and

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as a White House Fellow in the Nixon Administration. Ms. Kilberg received her law degree from Yale University, a Masters Degree in Political Science from Columbia University and a Bachelors Degree from Vassar College.

Edward G. Murphy, M.D. has served as a member of our board of directors since September 2005. Dr. Murphy is chairman of our compensation committee and a member of our nominating and corporate governance committee. Since January 2001, Dr. Murphy has served as Pres