

Lightwave Logic, Inc.  
Form S-1/A  
March 25, 2016

As Filed with the Securities and Exchange Commission on March 25, 2016

Registration No. 333-209531

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549**

**AMENDMENT NO. 1**

**TO**

**FORM S-1**

**REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933**

**LIGHTWAVE LOGIC, INC.**

*(Name of Registrant As Specified in its Charter)*

**Nevada**

*(State or Other Jurisdiction of  
Incorporation or Organization)*

**3080**

*(Primary Standard Industrial  
Classification Code Number)*

**82-049-7368**

*(I.R.S. Employer Identification No.)*

**1831 Lefthand Circle, Suite C  
Longmont, Colorado 80501  
(720) 340-4949**

*(Address and Telephone Number of Principal Executive Offices)*

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*Copies to:*

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**Approximate Date of Proposed Sale to the Public:**

As soon as practicable after this Registration Statement becomes effective.

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, 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 the same

offering: "

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

Large accelerated filer "

Accelerated filer "

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

Smaller reporting company b

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## CALCULATION OF REGISTRATION FEE

TITLE OF EACH CLASS OF SECURITIES TO BE REGISTERED	AMOUNT TO BE REGISTERED(1)	PROPOSED	PROPOSED	AMOUNT OF REGISTRATION FEE
		MAXIMUM OFFERING PRICE PER SHARE(2)	MAXIMUM AGGREGATE OFFERING PRICE(2)	
Common Stock, par value \$0.001 per share	3,977,568 \$	0.62 \$	2,466,092 \$	248.34
Common Stock underlying Warrants	3,977,568 \$	0.62 \$	2,466,092 \$	248.34
Common Stock, par value \$0.001 per share	5,000,000 \$	0.62 \$	3,100,000 \$	312.17
<b>TOTAL</b>	12,955,136	\$	8,032,184 \$	808.85*

- (1) This Registration Statement covers the resale by selling securityholders of the Registrant named herein of up to 12,955,136 shares of our common stock, par value \$0.001 per share, including (i) up to 3,977,568 shares of our common stock previously issued to such selling securityholders in a private placement, (ii) up to 3,977,568 shares of our common stock issuable upon exercise of outstanding warrants that were issued to the selling securityholders in connection with a private placement, which may be adjusted from time to time in accordance with the terms of the warrants, and (iii) up to 5,000,000 shares of our common stock that we may sell and issue to Lincoln Park Capital Fund, LLC pursuant to a Purchase Agreement, dated as of January 29, 2016, by and between Lincoln Park and the Registrant. Pursuant to Rule 416 under the Securities Act of 1933, the shares being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder as a result of stock splits, stock dividends or similar transactions.
- (2) The offering price has been estimated solely for the purpose of computing the amount of the registration fee in accordance with Rule 457(c) under the Securities Act. The price per share and aggregate offering price are based on the average of the high and low sales prices of the registrant's common stock on February 8, 2016, as reported on the OTC Markets (OTCQB).

\* Previously paid.

**The Registrant 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 hereafter 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 Section 8(a), may determine.**



**The information in this 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 becomes effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any state where the offer or sale is not permitted.**

**PRELIMINARY  
PROSPECTUS**

**SUBJECT TO COMPLETION**

**MARCH 25, 2016**

**12,955,136 Shares**

### **Common Stock**

This prospectus relates to the sale of up to 12,955,136 shares of the common stock, par value \$0.001 per share of Lightwave Logic, Inc. (Company, us or we ) which may be offered by the selling securityholders identified in this prospectus, from time to time. Of the shares of common stock being offered by the selling securityholders, 3,977,568 shares were previously issued pursuant to a private placement which closed on December 30, 2015, and 3,977,568 shares are issuable upon the exercise of warrants which were issued to selling securityholders pursuant to the private placement, and 5,000,000 shares have been or may be issued pursuant to a purchase agreement between Lincoln Park Capital Fund, LLC (Lincoln Park ) and the Company, dated as of January 29, 2016. See The Private Placement for a description of the private placement, The Lincoln Park Transaction for a description of the Lincoln Park purchase agreement, and Selling Securityholders for additional information regarding the purchasers of common stock and warrants in the private placement and Lincoln Park in the Lincoln Park purchase agreement.

The registration of the shares hereunder does not mean that any of the selling securityholders will actually offer or sell the full number of the shares being registered pursuant to this prospectus. We will not receive any proceeds from the sales of shares of our common stock by the selling securityholders; however we may receive proceeds upon the exercise of warrants held by the selling securityholders and the sale of 4,650,000 shares to Lincoln Park under the Lincoln Park purchase agreement.

The selling securityholders, including Lincoln Park, may sell the shares of common stock described in this prospectus in a number of different ways and at varying prices. Our common stock is currently quoted on the OTC Markets (OTCQB) under the symbol "LWLG". On March 17, 2016 the last reported sale price of our common stock was \$0.60 per share. See "Plan of Distribution" for more information about how the selling securityholders may sell the shares of common stock being registered pursuant to this prospectus.

Lincoln Park is an underwriter within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended.

We will pay the expenses incurred in registering the shares, including legal and accounting fees. See Plan of Distribution .

**Investing in our securities involves a high degree of risk. See Risk Factors beginning on page 6 of this prospectus for a discussion of information that should be considered in connection with an investment in our securities.**

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

The date of this prospectus is \_\_\_\_\_, 2016.

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You should rely only on the information contained in this prospectus. We have not, and the selling securityholders have not, authorized any person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell, nor are the selling securityholders seeking an offer to buy, securities in any state where the offer or solicitation is not permitted. The information contained in this prospectus is complete and accurate as of the date on the front cover of this prospectus, but information may have changed since that date. We are responsible for updating this prospectus to ensure that all material information is included and will update this prospectus to the extent required by law.

This prospectus includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that these industry publications



and third-party research, surveys and studies are reliable, we have not independently verified such data and we do not make any representation as to the accuracy of the information.

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## PROSPECTUS SUMMARY

*The items in the following summary are described in more detail later in this prospectus. This summary does not contain all of the information you should consider. Before investing in our securities, you should read the entire prospectus carefully, including the Risk Factors beginning on page 6 and the financial statements and related notes beginning on page F-1.*

*Unless the context otherwise requires, all references to the Company, we, our or us and other similar terms means Lightwave Logic, Inc., a Nevada corporation.*

### Overview

### Business

We are a development stage, electro-optical device and organic nonlinear materials company. Our primary area of expertise is the chemical synthesis of chromophore dyes used in the development of organic Application Specific Electro-Optic Polymers (ASEOP) and Organic Non-Linear All-Optical Polymers (NLAOP) that have high electro-optic and optical activity. Our family of materials is thermally and photo-chemically stable, which we believe could have utility across a broad range of applications in devices that address markets like, telecommunication, data communications, high-speed computing and photovoltaic cells. Secondly, the company is developing proprietary electro-optical and all-optical devices utilizing the advanced capabilities of our materials for the application in the fields mentioned above.

Electro-optic devices convert data from electric signals into optical signals for use in communications systems and in optical interconnects for high-speed data transfer. We expect our patented and patent-pending optical materials, when completed and tested, to be the core of the future generations of optical devices, modules, sub-systems and systems that we will develop or be licensed by electro-optic device manufacturers, such as telecommunications component and systems manufacturers, networking and switching suppliers, semiconductor companies, aerospace companies and government agencies.

Our optical polymers (polymers) are property-engineered at the molecular level (nanotechnology level) to meet the exacting thermal, environmental and performance specifications demanded by electro-optic devices. We believe that our patented and patent pending technologies will enable us to design optical polymers that are free from the

numerous diverse and inherent flaws that plague competitive polymer technologies employed by other companies and research groups. We engineer our polymers with the intent to have temporal, thermal, chemical and photochemical stability within our patented and patent pending molecular architectures.

Our non-linear all optical polymers have demonstrated resonantly enhanced third-order properties approximately 2,630 times larger than fused silica, which means that they are highly photo-optically active in the absence of an RF layer. In this way they differ from other optical polymers and are considered more advanced next-generation materials.

Our patented and patent pending molecular architectures are based on a well-understood chemical and quantum mechanical occurrence known as aromaticity. Aromaticity provides a high degree of molecular stability. Aromaticity is what will enable our core molecular structures to maintain stability under a broad range of polymerization conditions that otherwise appear to affect other current polymer molecular designs. Polymers, polymer-based devices, hybrid devices and the processes used to create them are often patentable, which can provide the developers of such technology with a significant competitive advantage. We consider our proprietary intellectual property to be unique.

## **Our Business Development**

PSI-TEC Corporation ( PSI-TEC ) was founded in 1991 and incorporated under the laws of the State of Delaware on September 12, 1995. Dr. Frederick J. Goetz founded PSI-TEC in Upland, Pennsylvania where he established a laboratory with a small amount of private funding. PSI-TEC subsequently moved its operations to laboratory space provided by the U.S. Army on the Aberdeen Proving Grounds in cooperation with a division of the Department of Defense for the advancement of ultra wide-bandwidth satellite telecommunications. Thereafter, PSI-TEC commenced operations of its own organic synthesis and thin-films laboratory in Wilmington, Delaware.

In order to become a non-reporting publicly-traded corporation, in July 2004 PSI-TEC reorganized with Eastern Idaho Internet Services, Inc. ( Eastern Idaho ) whereby (i) Eastern Idaho changed its name to PSI-TEC Holdings, Inc. ( PSI-TEC Holdings ); (ii) PSI-TEC Holdings acquired all of the issued and outstanding shares of PSI-TEC stock; (iii) PSI-TEC became PSI-TEC Holdings wholly-owned operating subsidiary; and (iv) PSI-TEC Holdings then sole officer and director resigned, PSI-TEC's nominees were elected to PSI-TEC Holdings board of directors and new management was appointed. For accounting purposes, this acquisition transaction was accounted for as a reverse-acquisition, whereby PSI-TEC was deemed to have purchased PSI-TEC Holdings. As a result, the historical financial statements of PSI-TEC became the historical financial statements of PSI-TEC Holdings.



Immediately prior to the time of the reorganization transaction, Eastern Idaho was a non-reporting development stage company whose stock was traded on the OTC: Pink Sheets. It had no substantive business operations and it was seeking other business opportunities. Eastern Idaho was originally incorporated under the laws of the State of Nevada on June 24, 1997 to operate as an Internet services marketing firm. It was unsuccessful in this venture, and in June 1998 it ceased its operations and sold all of its operating assets.

On October 20, 2006, in order to consolidate the operations of PSI-TEC Holdings, Inc. and PSI-TEC Corp. (PSI-TEC Holdings, Inc.'s wholly owned subsidiary), PSI-TEC Holdings, Inc. and PSI-TEC Corp. merged; and PSI-TEC Holdings, Inc., a Nevada corporation, became the surviving entity and subsequently changed its name to Third-Order Nanotechnologies, Inc. No change of control or domicile occurred as a result of the merger.

On March 10, 2008, Third-order Nanotechnologies, Inc. changed its name to Lightwave Logic, Inc. to better suit its strategic business plan and to facilitate stockholder recognition of the Company and its business.

## **Corporate Information**

Our principal executive office is located at 1831 Lefthand Circle, Suite C, Longmont, CO 80501, and our telephone number is (720) 340-4949. Our website address is [www.lightwavelogic.com](http://www.lightwavelogic.com). No information found on our website is part of this prospectus. Also, this prospectus includes the names of various government agencies and the trade names of other companies. Unless specifically stated otherwise, the use or display by us of such other parties' names and trade names in this prospectus is not intended to and does not imply a relationship with, or endorsement or sponsorship of us by, any of these other parties.

## **The Offering**

Common stock outstanding prior to this offering (1)	65,591,629, including 3,977,568 shares previously issued to selling securityholders pursuant to the private placement (all of which are included in this offering), and the 350,000 commitment shares previously issued to Lincoln Park pursuant to the Lincoln Park purchase agreement.
Common stock offered by the selling securityholders	Up to 12,955,136 shares, consisting of (a) 3,977,568 shares previously issued to selling securityholders in the private placement, and up to 3,977,568 additional shares underlying warrants issued to selling securityholders in the private placement, and (b) 4,650,000 shares that

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may be issued to Lincoln Park, and 350,000 commitment shares previously issued to Lincoln Park pursuant to the Lincoln Park purchase agreement.

Common stock to be outstanding after giving 74,219,197 shares effect to the sale of 12,955,136 shares by the selling securityholders under this offering

Use of proceeds

We will not receive any proceeds from the sale of the 3,977,568 shares of common stock previously sold to selling securityholders in the private placement or the sale of 3,977,568 shares underlying the warrants held by such selling securityholders, or from the sale of 4,650,000 shares by Lincoln Park pursuant to the Lincoln Park purchase agreement. However, we may receive up to \$3,182,054 from the exercise by selling securityholders of 3,977,568 warrants (i.e., 3,977,568 warrants exercisable at \$0.80 per share) and proceeds from the sale to Lincoln Park of 4,650,000 shares under the Lincoln Park purchase agreement. Any proceeds that we receive from selling securityholders upon the exercise of warrants will be used for research and development and working capital purposes. See "Use of Proceeds".

OTC Markets (OTCQB) symbol

LWLG

Risk factors

This investment involves a high degree of risk. See Risk Factors for a discussion of factors you should consider carefully before making an investment decision.

(1)

The number of shares of our common stock set forth above is based on 65,591,629 shares of common stock outstanding as of March 17, 2016, and excludes:

options to purchase 6,754,500 shares of our common stock pursuant to our 2007 Employee Stock Plan, of which 6,113,875 have vested as of March 17, 2016 at a weighted average exercise price of \$0.84 per share; and

warrants to purchase an aggregate of 12,263,867 shares of our common stock (including the 3,977,568 shares underlying warrants in the December 30, 2015 private placement), of which 12,157,611 have vested as of March 17, 2016, at a weighted average exercise price of \$0.96 per share.



## **The Private Placement**

On December 30, 2015 (the Closing Date ), we completed a private placement offering solely to accredited investors of units, with each unit consisting of 82,866 shares of the Company's common stock, par value \$0.001 per share and a warrant (each, a Warrant ) to purchase 82,866 shares of common stock at \$0.80 per share (together, a Unit ), for \$50,000 per Unit, or approximately \$0.60 per share of common stock. In total, the Company sold 48 Units for total proceeds to the Company of equal to \$2,400,000 (the Offering ).

Immediately prior to the commencement of the Offering, the Company had 61,253,780 shares issued and outstanding, and after the issuance of 3,977,568, or 6.76% of the total issued and outstanding immediately prior to the commencement of the Offering, the Company has 65,591,629 shares issued and outstanding as of the date of this Prospectus. The Company sold 3,977,568 Warrants in the Offering, which, for the avoidance of any doubt, were a part of the Units sold.

In connection with the Offering, each investor executed a subscription agreement which contains, among other things, registration rights whereby we shall, within sixty (60) calendar days from the Closing Date, register the common stock and the shares of common stock underlying the Warrants by filing a registration statement (of which this prospectus is a part) with the Securities and Exchange Commission ( SEC ).

The Warrants shall expire on the fifth (5th) anniversary of the Closing Date. The Offering was made directly by us and no underwriter or placement agent was engaged by us in connection with the Offering. The Company expects to use 60% of the proceeds from the Offering for research and development and 40% for working capital purposes.

Shares of our common stock in this offering will not affect the rights or privileges of our existing stockholders, except that the economic and voting interests of each of our existing stockholders will be diluted as a result of any issuances of shares underlying the Warrants. Although the number of shares of common stock that our existing stockholders own will not decrease, the shares owned by our existing stockholders will represent a smaller percentage of our total outstanding shares after any such issuances upon the exercise of the Warrants by the selling securityholders.

## **The Lincoln Park Transaction**

On January 29, 2016, the Company entered into a purchase agreement (the Purchase Agreement ) with Lincoln Park (such transaction, the Financing ), pursuant to which Lincoln Park agreed to purchase from us up to \$20,000,000 of our



common stock (subject to certain limitations) from time to time over a 36-month period. In connection with the Financing, the Company also entered into a registration rights agreement with Lincoln Park (the RRA ) whereby the Company agreed to file a registration statement (of which this prospectus is a part), with the SEC covering the shares of the Company's common stock that may be issued to Lincoln Park under the Purchase Agreement. In June 2013, the Company and Lincoln Park executed a purchase agreement for up to \$20,000,000 in the Company's common stock (the 2013 Purchase Agreement ). In connection with the Financing, the 2013 Purchase Agreement was terminated on February 1, 2016.

After the registration statement (of which this prospectus is a part), is declared effective, the Company may, from time to time and at its sole discretion, direct Lincoln Park to purchase up to 100,000 shares of our common stock on any such business day, provided that in no event shall Lincoln Park purchase more than \$500,000 worth of our common stock on any single business day, plus an additional accelerated amount under certain circumstances. We may also, in our sole discretion, direct Lincoln Park on each purchase date to make accelerated purchases on the following business day up to the lesser of (i) two (2) times the number of shares purchased pursuant to a regular purchase or (ii) 30% of the trading volume on the accelerated purchase date at a purchase price equal to the lesser of (i) the closing sale price on the accelerated purchase date and (ii) 95% of the accelerated purchase date's volume weighted average price. Except as described in this prospectus, there are no trading volume requirements or restrictions under the Purchase Agreement, and we control the timing and amount of any sales of our common stock to Lincoln Park. The purchase price of the up to 100,000 shares that may be sold to Lincoln Park under the Purchase Agreement on any business day will be based on the market price of our common stock immediately preceding the time of sale as computed under the Purchase Agreement without any fixed discount. The purchase price per share will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, forward or reverse stock split, or other similar transaction occurring during the business days used to compute such price. We may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business day's prior notice.

The Purchase Agreement contains customary representations, warranties, covenants, closing conditions and indemnification and termination provisions by, among and for the benefit of the parties. Lincoln Park has covenanted not to cause or engage in any manner whatsoever, any direct or indirect short selling or hedging of the Company's common stock.

In consideration for entering into the Purchase Agreement, the Company issued to Lincoln Park 350,000 shares of common stock as a commitment fee and shall issue up to 650,000 commitment shares pro rata for no consideration, which commitment fee shares are also being registered hereunder, when and if, Lincoln Park purchases at the Company's discretion the \$20,000,000 aggregate commitment. For example, if we elect, at our sole discretion, to require Lincoln Park to purchase \$50,000 of our stock then we would issue 1,625 additional commitment shares, which is the product of \$50,000 (the amount we have elected to sell) divided by \$20,000,000 (remaining total amount we can sell Lincoln Park pursuant to the Purchase Agreement multiplied by 650,000 (the total number of additional commitment shares). The additional commitment shares will only be issued pursuant to this formula as and when we elect at our discretion to sell stock to Lincoln Park.

This prospectus provides you with a general description of the securities Lincoln Park may offer. Each time securities are offered under this prospectus, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities.

The prospectus supplement also may add, update or change information contained in this prospectus or in documents we have incorporated by reference into this prospectus. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness.

## **Glossary of Select Technology Terms Used Herein**

### All-optical devices

All-optical devices convert data in the form of input light signals to a secondary light data stream. The future market of all-optical devices and switches is expected to include all-optical transistors.

### All-optical transistors

All-optical transistors are devices currently under development that use an input light signal to switch a secondary light signal. All-optical transistors are expected to enable the fabrication of an entirely new generation of high-speed computers that operate on light instead of electricity. We believe that this will significantly improve computation speeds.

### Aromaticity

Aromaticity causes an extremely high degree of molecular stability. It is a molecular arrangement wherein atoms combine into a ring or rings and share their electrons among each other. Aromatic compounds are extremely stable because the electronic charge distributes evenly over a great area preventing hostile moieties, such as oxygen and free radicals, from finding an opening to attack.

#### CLD-1

An electro-optic material based upon unstable polyene molecular architectures. Unlike our own molecular designs, CLD-1 is not a CSC model molecule and exhibits thermal degradation at low temperatures (~250 C) making it less suitable for commercial and military applications.

#### CSC (Cyclical Surface Conduction) theory

Most charge-transfer dyes (e.g. Disperse Red 1, CLD, FTC) are based upon a polyene architecture wherein the ground state and first excited state differ by the alteration of single and double bonds. CSC model molecules use nitrogenous heterocyclical structures.

#### Electro-optic devices

Electro-optic devices convert data from electric signals into optical signals for use in communications systems and in optical interconnects for high-speed data transfer.

#### Electro-optic material

Electro-optic material is the core active ingredient in high-speed fiber-optic telecommunication systems. Electro-optic materials are materials that are engineered at the molecular level. Molecular level engineering is commonly referred to as nanotechnology.

#### Electro-optic modulators

Electro-optic modulators are electro-optic devices that perform electric-to-optic conversions within the infrastructure of the Internet. Data centers may also benefit from this technology through devices that could significantly increase bandwidth and speed while decreasing costs.



### Nanotechnology

Nanotechnology refers to the development of products and production processes at the molecular level, which is a scale smaller than 100 nanometers (a nanometer is one-billionth of a meter).

### Nitrogenous heterocyclical structure

A multi-atom molecular ring or combination of rings that contain nitrogen.

### Plastics/Polymers

Polymers, also known as plastics, are large carbon-based molecules that bond many small molecules together to form a long chain. Polymer materials can be engineered and optimized using nanotechnology to create a system in which unique surface, electrical, chemical and electro-optic characteristics can be controlled. Materials based on polymers are used in a multitude of industrial and consumer products, from automotive parts to home appliances and furniture, as well as scientific and medical equipment.

### Polymerization

Polymerization is a molecular engineering process that provides the environmental and thermal stability necessary for functional electro-optical devices. Polymer materials can be engineered and optimized using nanotechnology to create a system in which unique surface, electrical, chemical and electro-optic characteristics can be controlled.

### Thermal Gravimetric Analysis (TGA)

The basic principle in TGA is to measure the mass of a sample as a function of temperature. This, in principle, simple measurement is an important and powerful tool in solid-state chemistry and materials science. The method, for example, can be used to determine water of crystallization, follow degradation of materials, determine reaction kinetics, study oxidation and reduction, or to teach the principles of stoichiometry, formulae and analysis.

### Zwitterionic-aromatic push-pull

Most charge-transfer dyes (e.g. Disperse Red 1, CLD, FTC) have an excited state (such as during photonic absorption) wherein a full charge is separated across the molecule. Such a molecule is said to be excited-state zwitterionic. Within such a molecular system the zwitterionic state is unstable and the molecule typically collapses rapidly into its lower dipole ground state. In our patented molecular designs, the excited state is further stabilized by the aromatization of the molecular core. In that aromaticity stabilizes this excited state, it is said to "pull" the molecule into this higher

energy state; on the other hand, the unstable zwitterionic state is said to "push" the molecule out of the excited state.

## RISK FACTORS

*Before you make a decision to invest in our securities, you should consider carefully the risks described below, together with other information in this prospectus. If any of the following events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment. The risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also significantly impair our business operations and could result in a complete loss of your investment.*

**We have incurred substantial operating losses since our inception and will continue to incur substantial operating losses for the foreseeable future.**

Since our inception, we have been engaged primarily in the research and development of our electro-optic polymer materials technologies and potential products. As a result of these activities, we incurred significant losses and experienced negative cash flow since our inception. We incurred a net loss of \$4,845,432 for the year ended December 31, 2015 and \$4,409,797 for the year ended December 31, 2014. We anticipate that we will continue to incur operating losses through at least the end of 2016.

We may not be able to generate significant revenue either through development contracts from the U.S. government or government subcontractors or through customer contracts for our potential products or technologies. We expect to continue to make significant operating and capital expenditures for research and development and to improve and expand production, sales, marketing and administrative systems and processes. As a result, we will need to generate significant additional revenue to achieve profitability. We cannot assure you that we will ever achieve profitability.

**We are subject to the risks frequently experienced by early stage companies.**

The likelihood of our success must be considered in light of the risks frequently encountered by early stage companies, especially those formed to develop and market new technologies. These risks include our potential inability to:

Establish product sales and marketing capabilities;

.

Establish and maintain markets for our potential products;

.

Identify, attract, retain and motivate qualified personnel;

.

Continue to develop and upgrade our technologies to keep pace with changes in technology and the growth of markets using polymer based materials;

.

Develop expanded product production facilities and outside contractor relationships;

.

Maintain our reputation and build trust with customers;

.

Scale up from small pilot or prototype quantities to large quantities of product on a consistent basis;

.

Contract for or develop the internal skills needed to master large volume production of our products; and

.

Fund the capital expenditures required to develop volume production due to the limits of our available financial resources.

**If we fail to effectively manage our growth, and effectively transition from our focus on research and development activities to commercially successful products, our business could suffer.**

Failure to manage growth of operations could harm our business. To date, a large number of our activities and resources have been directed at the research and development of our technologies and development of potential related products. The transition from a focus on research and development to being a vendor of products requires effective planning and management. Additionally, growth arising from the expected synergies from future acquisitions will require effective planning and management. Future expansion will be expensive and will likely strain management and other resources.



In order to effectively manage growth, we must:

.

Continue to develop an effective planning and management process to implement our business strategy;

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Hire, train and integrate new personnel in all areas of our business; and

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Expand our facilities and increase capital investments.

We cannot assure you that we will be able to accomplish these tasks effectively or otherwise effectively manage our growth.

**We will require additional capital to continue to fund our operations and if we do not obtain additional capital, we may be required to substantially limit our operations.**

Our business does not presently generate the cash needed to finance our current and anticipated operations. Based on our current operating plan and budgeted cash requirements, we believe that we have sufficient funds to finance our operations through January 2017; however, we will need to obtain additional future financing after that time to finance our operations until such time that we can conduct profitable revenue-generating activities. We expect that we will need to seek additional funding through public or private financings, including equity financings, and through other arrangements, including collaborative arrangements. Poor financial results, unanticipated expenses or unanticipated opportunities could require additional financing sooner than we expect. We have no plans or arrangements with respect to the possible acquisition of additional financing, and such financing may be unavailable when we need it or may not be available on acceptable terms.

Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors, including the factors discussed elsewhere in this annual report. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect.

Additional financing may not be available to us, due to, among other things, our Company not having a sufficient credit history, income stream, profit level, asset base eligible to be collateralized, or market for its securities. If we raise additional funds by issuing equity or convertible debt securities, the percentage ownership of our existing shareholders may be reduced, and these securities may have rights superior to those of our common stock. If adequate funds are not available to satisfy our long-term capital requirements, or if planned revenues are not generated, we may be required to substantially limit our operations.

**We are entering new markets, and if we fail to accurately predict growth in these new markets, we may suffer substantial losses.**

We are devoting significant resources to engineer next-generation organic nonlinear optical materials for future applications to be utilized by electro-optic device manufacturers, such as telecommunications component and systems manufacturers, networking and switching suppliers, semiconductor companies, aerospace companies and government agencies as well as the our proprietary photonic devices. We expect to continue to develop products for these markets and to seek to identify new markets. These markets change rapidly and we cannot assure you that they will grow or that we will be able to accurately forecast market demand, or lack thereof, in time to respond appropriately. Our investment of resources to develop products for these markets may either be insufficient to meet actual demand or result in expenses that are excessive in light of actual sales volumes. Failure to predict growth and demand accurately in new markets may cause us to suffer substantial losses. In addition, as we enter new markets, there is a significant

risk that:

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The market may not accept the price and/or performance of our products;

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There may be issued patents we are not aware of that could block our entry into the market or could result in excessive litigation; and

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The time required for us to achieve market acceptance of our products may exceed our capital resources that would require additional investment.

**Our plan to develop relationships with strategic partners may not be successful.**

Part of our business strategy is to maintain and develop strategic relationships with government agencies, private firms, and academic institutions to conduct research and development of technologies and products. For these efforts to be successful, we must identify partners whose competencies complement ours. We must also successfully enter into agreements with them on terms attractive to us, and integrate and coordinate their resources and capabilities with our own. We may be unsuccessful in entering into agreements with acceptable partners or negotiating favorable terms in these agreements. Also, we may be unsuccessful in integrating the resources or capabilities of these partners. In addition, our strategic partners may prove difficult to work with or less skilled than we originally expected. If we are unsuccessful in our collaborative efforts, our ability to develop and market products could be severely limited.

**The failure to establish and maintain collaborative relationships may have a materially adverse affect on our business.**

We plan to sell many of our products directly to commercial customers or through potential industry partners. For example, we expect to sell our electro-optic polymer products to electro-optic device manufacturers, such as telecommunications component and systems manufacturers, networking and switching suppliers, semiconductor companies, aerospace companies and government agencies. Our ability to generate revenues depends significantly on the extent to which potential customers and other potential industry partners develop, promote and sell systems that incorporate our products, which, of course, we cannot control. Any failure by potential customers and other potential industry partners to successfully develop and market systems that incorporate our products could adversely affect our sales. The extent to which potential customers and other industry partners develop, promote and sell systems incorporating our products is based on a number of factors that are largely beyond our ability to control.

**We may participate in joint ventures that expose us to operational and financial risk.**

We may participate in one or more joint ventures for the purpose of assisting us in carrying out our business expansion, especially with respect to new product and/or market development. We may experience with our joint venture partner(s) issues relating to disparate communication, culture, strategy, and resources. Further, our joint venture partner(s) may have economic or business interests or goals that are inconsistent with ours, exercise their rights in a way that prohibits us from acting in a manner which we would like or they may be unable or unwilling to fulfill their obligations under the joint venture or other agreements. We cannot assure you that the actions or decisions of our joint venture partners will not affect our operations in a way that hinders our corporate objectives or reduces any anticipated cost savings or revenue enhancement resulting from these ventures.

**If we fail to develop and introduce new or enhanced products on a timely basis, our ability to attract and retain customers could be impaired and our competitive position could be harmed.**

We plan to operate in a dynamic environment characterized by rapidly changing technologies and industry standards and technological obsolescence. To compete successfully, we must design, develop, market and sell products that provide increasingly higher levels of performance and reliability and meet the cost expectations of our customers. The introduction of new products by our competitors, the market acceptance of products based on new or alternative technologies, or the emergence of new industry standards could render our anticipated products obsolete. Our failure to anticipate or timely develop products or technologies in response to technological shifts could adversely affect our operations. In particular, we may experience difficulties with product design, manufacturing, marketing or certification that could delay or prevent our development, introduction or marketing of products. If we fail to introduce products that meet the needs of our customers or penetrate new markets in a timely fashion our Company will be adversely affected.

**Our future growth will suffer if we do not achieve sufficient market acceptance of our organic nonlinear optical material products or our proprietary photonic devices.**

We are developing our organic nonlinear optical material products to be utilized by electro-optic device manufacturers, such as telecommunications component and systems manufacturers, networking and switching suppliers, semiconductor companies, aerospace companies and government agencies as well as our proprietary photonic devices. All of our potential products are still in the development stage, and we do not know when a market for these products will develop, if at all. Our success depends, in part, upon our ability to gain market acceptance of our products. To be accepted, our products must meet the technical and performance requirements of our potential customers. OEMs, suppliers or government agencies may not accept polymer-based products. In addition, even if we achieve some degree of market acceptance for our potential products in one industry, we may not achieve market acceptance in other industries for which we are developing products.

Achieving market acceptance for our products will require marketing efforts and the expenditure of financial and other resources to create product awareness and demand by customers. We may be unable to offer products that compete effectively due to our limited resources and operating history. Also, certain large corporations may be predisposed against doing business with a company of our limited size and operating history. Failure to achieve broad acceptance of our products by customers and to compete effectively would harm our operating results.

**Our potential customers require our products to undergo a lengthy and expensive qualification process, which does not assure product sales.**

Prior to purchasing our products, our potential customers require that both our products undergo extensive qualification processes. These qualification processes may continue for several months or more. However, qualification of a product by a customer does not assure any sales of the product to that customer. Even after successful qualification and sales of a product to a customer, a subsequent revision to the product, changes in our customer's manufacturing process or our selection of a new supplier may require a new qualification process, which may result in additional delays. Also, once one of our products is qualified, it could take several additional months or more before a customer commences volume production of components or devices that incorporate our products. Despite these uncertainties, we are devoting substantial resources, including design, engineering, sales, marketing and management efforts, to qualifying our products with customers in anticipation of sales. If we are unsuccessful or delayed in qualifying any of our products with a customer, sales of our products to a customer may be precluded or delayed, which may impede our growth and cause our business to suffer.

**Obtaining a sales contract with a potential customer does not guarantee that a potential customer will not decide to cancel or change its product plans, which could cause us to generate no revenue from a product and adversely affect our results of operations.**

Even after we secure a sales contract with a potential customer, we may experience delays in generating revenue from our products as a result of a lengthy development cycle that may be required. Potential customers will likely take a considerable amount of time to evaluate our products; it could take 12 to 24 months from early engagement by our sales team to actual product sales. The delays inherent in these lengthy sales cycles increase the risk that a customer will decide to cancel, curtail, reduce or delay its product plans, causing us to lose anticipated sales. In addition, any delay or cancellation of a customer's plans could materially and adversely affect our financial results, as we may have incurred significant expense and generated no revenue. Finally, our customers' failure to successfully market and sell their products could reduce demand for our products and materially and adversely affect our business, financial condition and results of operations. If we were unable to generate revenue after incurring substantial expenses to develop any of our products, our business would suffer.

**Many of our products will have long sales cycles, which may cause us to expend resources without an acceptable financial return and which makes it difficult to plan our expenses and forecast our revenue.**

Many of our products will have long sales cycles that involve numerous steps, including initial customer contacts, specification writing, engineering design, prototype fabrication, pilot testing, regulatory approvals (if needed), sales and marketing and commercial manufacture. During this time, we may expend substantial financial resources and management time and effort without any assurance that product sales will result. The anticipated long sales cycle for

some of our products makes it difficult to predict the quarter in which sales may occur. Delays in sales may cause us to expend resources without an acceptable financial return and make it difficult to plan expenses and forecast revenues.

**Successful commercialization of our current and future products will require us to maintain a high level of technical expertise.**

Technology in our target markets is undergoing rapid change. To succeed in our target markets, we will have to establish and maintain a leadership position in the technology supporting those markets. Accordingly, our success will depend on our ability to:

- .  
Accurately predict the needs of our target customers and develop, in a timely manner, the technology required to support those needs;
- .  
Provide products that are not only technologically sophisticated but are also available at a price acceptable to customers and competitive with comparable products;
- .  
Establish and effectively defend our intellectual property; and
- .  
Enter into relationships with other companies that have developed complementary technology into which our products may be integrated.

We cannot assure you that we will be able to achieve any of these objectives.

**Two of our significant target markets are the telecommunications and networking markets, which are subject to slow growth and overcapacity.**

Two of our significant target markets are the telecommunications and networking markets, and developments that adversely affect the telecommunications or networking markets, including delays in traffic growth and changes in U.S. government regulation, could slow down, or even halt our efforts to enter into these markets. Reduced spending and technology investment by telecommunications companies may make it more difficult for our products to gain market acceptance. Such companies may be less willing to purchase new technology such as ours or invest in new technology development when they have reduced capital expenditure budgets.

**Our inability to successfully acquire and integrate other businesses, assets, products or technologies could harm our business and cause us to fail at achieving our anticipated growth.**

It is our intent to continue to grow our business through strategic acquisitions and investments and we are actively evaluating acquisitions and strategic investments in businesses, products or technologies that we believe could complement or expand our product offering, create and/or expand a client base, enhance our technical capabilities or otherwise offer growth or cost-saving opportunities. From time to time, we may enter into letters of intent with companies with which we are negotiating potential acquisitions or investments or as to which we are conducting due diligence. Although we are currently not a party to any binding definitive agreement with respect to potential investments in, or acquisitions of, complementary businesses, products or technologies, we may enter into these types of arrangements in the future, which could materially decrease the amount of our available cash or require us to seek additional equity or debt financing. We have limited experience in successfully acquiring and integrating businesses, products and technologies. We may not be successful in negotiating the terms of any potential acquisition, conducting thorough due diligence, financing the acquisition or effectively integrating the acquired business, product or technology into our existing business and operations. Our due diligence may fail to identify all of the problems, liabilities or other shortcomings or challenges of an acquired business, product or technology, including issues related to intellectual property, product quality or product architecture, regulatory compliance practices, revenue recognition or other accounting practices, or employee or customer issues.

Additionally, in connection with any acquisitions we complete, we may not achieve the synergies or other benefits we expected to achieve, and we may incur write-downs, impairment charges or unforeseen liabilities that could negatively affect our operating results or financial position or could otherwise harm our business. If we finance acquisitions using existing cash, the reduction of our available cash could cause us to face liquidity issues or cause other unanticipated problems in the future. If we finance acquisitions by issuing convertible debt or equity securities, the ownership interest of our existing stockholders may be diluted, which could adversely affect the market price of our stock. Further, contemplating or completing an acquisition and integrating an acquired business, product or technology could divert management and employee time and resources from other matters, which could harm our business, financial condition and operating results.



**We may not be able to access the full amounts available under the Purchase Agreement, which could prevent us from accessing the capital we need to continue our operations that could have an adverse affect on our business.**

Under the Purchase Agreement, we may direct Lincoln Park to purchase up to \$20,000,000 worth of shares of our common stock over a 36-month period. On any trading day selected by us, we may sell shares of common stock to Lincoln Park in amounts up to 100,000 shares per regular sale (Regular Purchases), which may be increased to up to 200,000 shares depending on certain conditions as set forth in the Purchase Agreement, up to the aggregate commitment of \$20,000,000. If the market price of our common stock is not below \$1.00 per share on the purchase date, then the Regular Purchase amount may be increased to 150,000 shares. If the market price is not below \$1.50 per share on the purchase date, then the Regular Purchase amount may be increased to 200,000 shares. Although there are no upper limits on the per share price Lincoln Park may pay to purchase our common stock, the Company may not sell more than \$500,000 in shares of common stock to Lincoln Park per Regular Purchase.

In addition to Regular Purchases, we may in our sole discretion direct Lincoln Park on each purchase date to make accelerated purchases on the following business day up to the lesser of (i) two (2) times the number of shares purchased pursuant to such Regular Purchase or (ii) 30% of the trading volume on the accelerated purchase date at a purchase price equal to the lesser of (i) the closing sale price on the accelerated purchase date and (ii) 95% of the accelerated purchase date's volume weighted average price.

The purchase price of the shares related to the Purchase Agreement will be based on the prevailing market prices of the Company's shares of common stock, which shall be equal to the lesser of the lowest sale price of the common shares during the purchase date and the average of the three (3) lowest closing sale prices of the common shares during the twelve (12) business days prior to the purchase date without any fixed discount.

Depending on the prevailing market price of our common stock, we may not be able to sell shares to Lincoln Park for the maximum \$20,000,000 over the term of the Purchase Agreement.

As of the date of this prospectus, the Company has issued 350,000 shares to Lincoln Park under the Purchase Agreement as initial commitment shares, none of such shares have been sold by Lincoln Park.

Assuming a purchase price of \$1.00 per share and the issuance to Lincoln Park of 4,650,000 additional shares under the Purchase Agreement, which would be comprised of 4,000,000 shares purchased at \$1.00 per share and 130,000 shares issued as additional pro rata commitment shares for no additional consideration, the proceeds to us would only be \$4,000,000. In the event we elect to issue more than 4,650,000 additional shares, we would be required to file a new registration statement and have it declared effective by the SEC.

**The sale of shares of our common stock to Lincoln Park under the Purchase Agreement may cause substantial dilution to our existing stockholders and could cause the price of our common stock to decline.**

Under the Purchase Agreement, we may sell to Lincoln Park, from time to time and under certain circumstances, up to \$20,000,000 of our common stock over approximately 36 months subsequent to January 2016. Generally, with respect to the Purchase Agreement, we have the right, but no obligation, to direct Lincoln Park to periodically purchase up to \$20,000,000 of our common stock in specific amounts under certain conditions, which periodic purchase amounts can be increased under specified circumstances.

We also agreed to issue to Lincoln Park up to an aggregate of 1,000,000 shares of common stock as a fee for Lincoln Park's commitment to purchase our shares under the Purchase Agreement. Of these commitment shares, we issued 350,000 shares upon entering into the Purchase Agreement. The remaining 650,000 commitment shares are issuable to Lincoln Park on a pro rata basis as additional purchases are made under the Purchase Agreement.

Depending upon market liquidity at the time, sales of shares of our common stock to Lincoln Park may cause the trading price of our common stock to decline. Lincoln Park may ultimately purchase all, some or none of the

\$20,000,000 of common stock under the Purchase Agreement, and after it has acquired shares, Lincoln Park may sell all, some or none of those shares. Therefore, sales to Lincoln Park by us could result in substantial dilution to the interests of other holders of our common stock. The sale of a substantial number of shares of our common stock to Lincoln Park, or the anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales. However, we have the right to control the timing and amount of any sales of our shares to Lincoln Park, and the Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

**The exercise of options and warrants (including the Warrants) and other issuances of shares of common stock or securities convertible into common stock will dilute your interest.**

As of December 31, 2015, we have outstanding options and warrants to purchase an aggregate of 18,006,488 shares of our common stock at exercise prices ranging from \$0.63 - \$1.69 per share with a weighted average exercise price of \$0.92 per share. The exercise of options and warrants at prices below the market price of our common stock could adversely affect the price of shares of our common stock. Additional dilution may result from the issuance of shares of our capital stock in connection with any collaboration (although none are contemplated at this time) or in connection with other financing efforts, including pursuant to the Purchase Agreement with Lincoln Park.

Any issuance of our common stock that is not made solely to then-existing stockholders proportionate to their interests, such as in the case of a stock dividend or stock split, will result in dilution to each stockholder by reducing his, her or its percentage ownership of the total outstanding shares. Moreover, if we issue options or warrants to purchase our common stock in the future and those options or warrants are exercised or we issue restricted stock, stockholders may experience further dilution. Holders of shares of our common stock have no preemptive rights that entitle them to purchase their pro rata share of any offering of shares of any class or series.

**We may incur debt in the future that might be secured with our intellectual property as collateral, which could subject our Company to the risk of loss of all of our intellectual property.**

If we incur debt in the future, we may be required to secure the debt with our intellectual property, including all of our patents and patents pending. In the event we default on the debt, we could incur the loss of all of our intellectual property, which would materially and adversely affect our Company and cause you to lose your entire investment in our Company.

**Our quarter-to-quarter performance may vary substantially, and this variance, as well as general market conditions, may cause our stock price to fluctuate greatly and even potentially expose us to litigation.**

We have generated no significant sales to date and we cannot accurately estimate future quarterly revenue and operating expenses based on historical performance. Our quarterly operating results may vary significantly based on many factors, including:

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Fluctuating demand for our potential products and technologies;

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Announcements or implementation by our competitors of technological innovations or new products;

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Amount and timing of our costs related to our marketing efforts or other initiatives;

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The status of particular development programs and the timing of performance under specific development agreements;

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Timing and amounts relating to the expansion of our operations;

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Product shortages requiring suppliers to allocate minimum quantities;

.  
Announcements or implementation by our competitors of technological innovations or new products;

.  
The status of particular development programs and the timing of performance under specific development agreements;

.  
Our ability to enter into, renegotiate or renew key agreements;

.  
Timing and amounts relating to the expansion of our operations;

.  
Costs related to possible future acquisitions of technologies or businesses; or

.  
Economic conditions specific to our industry, as well as general economic conditions.

Our current and future expense estimates are based, in large part, on estimates of future revenue, which is difficult to predict. We expect to continue to make significant operating and capital expenditures in the area of research and development and to invest in and expand production, sales, marketing and administrative systems and processes. We may be unable to, or may elect not to, adjust spending quickly enough to offset any unexpected revenue shortfall. If our increased expenses were not accompanied by increased revenue in the same quarter, our quarterly operating results would be harmed.

**Our failure to compete successfully could harm our business.**

The markets that we are targeting for our organic nonlinear optical material technology are intensely competitive. Most of our present and potential competitors have or may have substantially greater research and product development capabilities, financial, scientific, marketing, manufacturing and human resources, name recognition and experience than we have. As a result, these competitors may:

.  
Succeed in developing products that are equal to or superior to our potential products or that will achieve greater market acceptance than our potential products;

.

Devote greater resources to developing, marketing or selling their products;

.

Respond more quickly to new or emerging technologies or scientific advances and changes in customer requirements, which could render our technologies or potential products obsolete;

.

Introduce products that make the continued development of our potential products uneconomical;

.

Obtain patents that block or otherwise inhibit our ability to develop and commercialize our potential products;

.

Withstand price competition more successfully than we can;

.

Establish cooperative relationships among themselves or with third parties that enhance their ability to address the needs of our prospective customers.

The failure to compete successfully against these existing or future competitors could harm our business.

**We may be unable to obtain effective intellectual property protection for our potential products and technology.**

Our intellectual property, or any intellectual property that we have or may acquire, license or develop in the future, may not provide meaningful competitive advantages. Our patents and patent applications, including those we license, may be challenged by competitors, and the rights granted under such patents or patent applications may not provide meaningful proprietary protection. For example, numerous patents held by third parties relate to polymer materials and electro-optic devices. These patents could be used as a basis to challenge the validity or limit the scope of our patents or patent applications. A successful challenge to the validity or limitation of the scope of our patents or patent applications could limit our ability to commercialize our polymer materials technology and, consequently, reduce our revenues.

Moreover, competitors may infringe our patents or those that we license, or successfully avoid these patents through design innovation. To combat infringement or unauthorized use, we may need to resort to litigation, which can be expensive and time-consuming and may not succeed in protecting our proprietary rights. In addition, in an infringement proceeding a court may decide that our patents or other intellectual property rights are not valid or are unenforceable, or may refuse to stop the other party from using the intellectual property at issue on the ground that it is non-infringing. Policing unauthorized use of our intellectual property is difficult and expensive, and we may not be able to, or have the resources to, prevent misappropriation of our proprietary rights, particularly in countries where the laws may not protect these rights as fully as the laws of the United States.

We also rely on the law of trade secrets to protect unpatented technology and know-how. We try to protect this technology and know-how by limiting access to those employees, contractors and strategic partners with a need to know this information and by entering into confidentiality agreements with these parties. Any of these parties could breach the agreements and disclose our trade secrets or confidential information to our competitors, or these competitors might learn of the information in other ways. Disclosure of any trade secret not protected by a patent could materially harm our business.

**We may be subject to patent infringement claims, which could result in substantial costs and liability and prevent us from commercializing our potential products.**

Third parties may claim that our potential products or related technologies infringe their patents. Any patent infringement claims brought against us may cause us to incur significant expenses, divert the attention of our management and key personnel from other business concerns and, if successfully asserted against us, require us to pay substantial damages. In addition, as a result of a patent infringement suit, we may be forced to stop or delay developing, manufacturing or selling potential products that are claimed to infringe a patent covering a third party's intellectual property unless that party grants us rights to use its intellectual property. We may be unable to obtain these

rights on terms acceptable to us, if at all. Even if we are able to obtain rights to a third party's patented intellectual property, these rights may be non-exclusive, and therefore our competitors may obtain access to the same intellectual property. Ultimately, we may be unable to commercialize our potential products or may have to cease some of our business operations as a result of patent infringement claims, which could severely harm our business.

If our potential products infringe the intellectual property rights of others, we may be required to indemnify customers for any damages they suffer. Third parties may assert infringement claims against our current or potential customers. These claims may require us to initiate or defend protracted and costly litigation on behalf of customers, regardless of the merits of these claims. If any of these claims succeed, we may be forced to pay damages on behalf of these customers or may be required to obtain licenses for the products they use. If we cannot obtain all necessary licenses on commercially reasonable terms, we may be unable to continue selling such products.

**Our technology may be subject to government rights and retained research institution rights.**

We may have obligations to government agencies or universities in connection with the technology that we have developed, including the right to require that a compulsory license be granted to one or more third parties selected by certain government agencies. In addition, academic research partners often retain certain rights, including the right to use the technology for noncommercial academic and research use, to publish general scientific findings from research related to the technology, and to make customary scientific and scholarly disclosures of information relating to the technology. It is difficult to monitor whether our partners will limit their use of the technology to these uses, and we could incur substantial expenses to enforce our rights to our licensed technology in the event of misuse.



**The loss of certain of our key personnel, or any inability to attract and retain additional personnel, could impair our ability to attain our business objectives.**

Our future success depends to a significant extent on the continued service of our key management personnel, particularly Thomas E. Zelibor, our Chief Executive Officer and James S. Marcelli our President and Chief Operating Officer. Accordingly, the loss of the services of either of these persons would adversely affect our business and our ability to timely commercialize our products, and impede the attainment of our business objectives.

Our future success will also depend on our ability to attract, retain and motivate highly skilled personnel to assist us with product development and commercialization. Competition for highly educated qualified personnel in the polymer industry is intense. If we fail to hire and retain a sufficient number of qualified management, engineering, sales and technical personnel, we will not be able to attain our business objectives.

**If we fail to develop and maintain the quality of our manufacturing processes, our operating results would be harmed.**

The manufacture of our potential products is a multi-stage process that requires the use of high-quality materials and advanced manufacturing technologies. Also, polymer-related device development and manufacturing must occur in a highly controlled, clean environment to minimize particles and other yield and quality-limiting contaminants. In spite of stringent quality controls, weaknesses in process control or minute impurities in materials may cause a substantial percentage of a product in a lot to be defective. If we are not able to develop and continue to improve on our manufacturing processes or to maintain stringent quality controls, or if contamination problems arise, our operating results would be harmed.

**The complexity of our anticipated products may lead to errors, defects and bugs, which could result in the necessity to redesign products and could negatively, impact our reputation with customers.**

Products as complex as those we intend to market might contain errors, defects and bugs when first introduced or as new versions are released. Delivery of products with production defects or reliability, quality or compatibility problems could significantly delay or hinder market acceptance of our products or result in a costly recall and could damage our reputation and adversely affect our ability to sell our products. If our products experience defects, we may need to undertake a redesign of the product, a process that may result in significant additional expenses.

We may also be required to make significant expenditures of capital and resources to resolve such problems. There is no assurance that problems will not be found in new products after commencement of commercial production, despite testing by our suppliers, our customers, and us.

**If we decide to make commercial quantities of products at our facilities, we will be required to make significant capital expenditures to increase capacity.**

We lack the internal ability to manufacture products at a level beyond the stage of early commercial introduction. To the extent we do not have an outside vendor to manufacture our products, we will have to increase our internal production capacity and we will be required to expand our existing facilities or to lease new facilities or to acquire entities with additional production capacities. These activities would require us to make significant capital investments and may require us to seek additional equity or debt financing. We cannot assure you that such financing would be available to us when needed on acceptable terms, or at all. Further, we cannot assure you that any increased demand for our potential products would continue for a sufficient period of time to recoup our capital investments associated with increasing our internal production capacity.

In addition, we do not have experience manufacturing our potential products in large quantities. In the event of significant demand for our potential products, large-scale production might prove more difficult or costly than we anticipate and lead to quality control issues and production delays.

**We may not be able to manufacture products at competitive prices.**

To date, we have produced limited quantities of products for research, development, demonstration and prototype purposes. The cost per unit for these products currently exceeds the price at which we could expect to profitably sell them. If we cannot substantially lower our cost of production as we move into sales of products in commercial quantities, our financial results will be harmed.

**We conduct significantly all of our research and development activities at a limited number of facilities, and circumstances beyond our control may result in considerable interruptions.**

We conduct significantly all of our research and development activities at a limited number of facilities. A disaster such as a fire, flood or severe storm at or near one of our facilities could prevent us from further developing our technologies or manufacturing our potential products, which would harm our business.

**We are subject to regulatory compliance related to our operations.**

We are subject to various U.S. governmental regulations related to occupational safety and health, labor and business practices. Failure to comply with current or future regulations could result in the imposition of substantial fines, suspension of production, alterations of our production processes, cessation of operations, or other actions, which could harm our business.

**We may be unable to export our potential products or technology to other countries, convey information about our technology to citizens of other countries or sell certain products commercially, if the products or technology are subject to United States export or other regulations.**

We are developing certain polymer-based products that we believe the United States government and other governments may be interested in using for military and information gathering or antiterrorism activities. United States government export regulations may restrict us from selling or exporting these potential products into other countries, exporting our technology to those countries, conveying information about our technology to citizens of other countries or selling these potential products to commercial customers. We may be unable to obtain export licenses for products or technology if necessary. We currently cannot assess whether national security concerns would affect our potential products and, if so, what procedures and policies we would have to adopt to comply with applicable existing or future regulations.

**We may incur liability arising from the use of hazardous materials.**

Our business and our facilities are subject to a number of federal, state and local laws and regulations relating to the generation, handling, treatment, storage and disposal of certain toxic or hazardous materials and waste products that we use or generate in our operations. Many of these environmental laws and regulations subject current or previous owners or occupiers of land to liability for the costs of investigation, removal or remediation of hazardous materials.

In addition, these laws and regulations typically impose liability regardless of whether the owner or occupier knew of, or was responsible for, the presence of any hazardous materials and regardless of whether the actions that led to the presence were taken in compliance with the law. In our business, we use hazardous materials that are stored on site. We use various chemicals in our manufacturing process that may be toxic and covered by various environmental controls. An unaffiliated waste hauler transports the waste created by use of these materials off-site. Many environmental laws and regulations require generators of waste to take remedial actions at an off-site disposal location even if the disposal was conducted lawfully. The requirements of these laws and regulations are complex, change frequently and could become more stringent in the future. Failure to comply with current or future environmental laws and regulations could result in the imposition of substantial fines, suspension of production, alteration of our production processes, cessation of operations or other actions, which could severely harm our business.

**A material weakness in internal controls may remain undetected for a longer period because of our Company's exemption from the auditor**