Lightwave Logic, Inc.
Form 424B3
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Registration No.
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PROSPECTUS

10,000,000 Shares

Common Stock

This prospectus relates to the sale of up to 10,000,000 shares of our common stock, par value $0.001, which may be offered by the selling shareholder, Lincoln Park Capital Fund, LLC, or Lincoln Park, from time to time. The shares of common stock being offered by the selling shareholder have been or are issuable pursuant to the Purchase Agreement with Lincoln Park dated as of June 6, 2013, which we refer to in this prospectus as the 2013 Purchase Agreement. Please refer to the section of this prospectus entitled "The Lincoln Park Transactions" for a description of the 2013 Purchase Agreement and the section entitled "Selling Shareholder" for additional information on Lincoln Park. Such registration does not mean that Lincoln Park will actually offer or sell the full number of these shares. We will not receive any proceeds from the sales of shares of our common stock by the selling shareholder; however, we may receive proceeds of up to $20,000,000 under the 2013 Purchase Agreement.

In consideration for entering into the 2013 Purchase Agreement, we issued to Lincoln Park 200,000 shares of our common stock as a commitment fee, and such shares are also being registered hereunder. The prices at which Lincoln Park may sell the shares will be determined by the prevailing market price for the shares or in negotiated transactions.

The selling stockholder may sell the shares of common stock described in this prospectus in a number of different ways and at varying prices. See "Plan of Distribution" for more information about how the selling stockholder may sell the shares of common stock being registered pursuant to this prospectus. The selling stockholder 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".

Our common stock is currently quoted on the OTC Markets (OTCQB) under the symbol "LWLG". On September 17, 2013, the last reported sale price of our common stock was $0.92 per share.

Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page 8 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 October 4, 2013.

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You should rely only on the information contained in this prospectus. We have not, and the selling shareholder has 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 is the selling shareholder 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.

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 8 and the financial statements and related notes beginning on page F-1.

Overview

Lightwave Logic, Inc. (then known as Eastern Idaho Internet Service, Inc.) was organized under the laws of the State of Nevada in 1997, where we engaged in the business of marketing Internet services until June 30, 1998 when our operations were discontinued. We were then inactive until we acquired PSI-TEC Corporation as our wholly owned subsidiary on July 14, 2004, at which time our name was changed to PSI-TEC Holdings, Inc. On October 20, 2006, we completed a parent-subsidiary merger with PSI-TEC Corporation whereby we were the surviving corporation of the merger, and our name was changed to Third-Order Nanotechnologies, Inc. On March 10, 2008, we changed our name to Lightwave Logic, Inc. to better suit our strategic business plan and to facilitate stockholder recognition of our Company and our business. 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.

We are a development stage, organic nonlinear materials and electro-optical device 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. Both types of materials are 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. Secondarily, we are 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-held 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 quoted 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 our Company and our business. Therefore, unless the context otherwise requires, all references herein to the "Company," "we," "our" or "us" and other similar terms means Lightwave Logic, Inc., a Nevada corporation.

In February and April 2011, respectively, the United States Patent Office granted us two patents: US Patent No. 7,894,695 covering our Tricyclic Spacer System for Non-Linear Optical Devices and US Patent No. 7,919,619 for Heterocyclical Chromophore Architectures directed to our Perkinamine TM chromophores. These composition of matter patents taken together protect the core of our electro-optical materials portfolio.

In March 2011, we entered into a research and development agreement with the City University of New York's Laboratory for Nano Micro Photonics (LaNMP) to develop Third-order non-linear devices. We believe that the combination of LaNMP's device capabilities together with our materials expertise should accelerate the development of all-optical devices.

In March 2011, the City University of New York's Laboratory for Nano Micro Photonics (LaNMP) fabricated our first-ever all optical waveguide using one of our Perkinamine NR TM chromophores. It is anticipated that LaNMP will use this device architecture to develop various all-optical devices including an all-optical transistor.

In March 2011, we announced a two-year research and development collaboration with the University of Alabama to explore the advanced energy capture properties of our Perkinamine TM class of chromophores. Our material absorbs light across a wide range of wavelengths from near infra-red into the near ultraviolet. The University intends to explore how to efficiently capture a wide range of solar radiation with our material.

In December 2011, we announced the discovery of a new material named Perkinamine IndigoTM. We believe this represents a major advancement in the field of organic nonlinear optical materials. The material demonstrated an unusually high electro-optical effect of greater than 250 picometers per volt with excellent thermal and photo stability. Independent research laboratories at Photon-X and The University of Colorado confirmed these characteristics. We do, however, have to do a complete characterization of these materials to fully understand what material properties are causing these results before any of our partners will move forward with this material. The major microelectronics company we are working with will be characterizing the material at their location using their proprietary devices while we continue our work with the University of Colorado, Boulder. In order to further characterize our Perkinamine class of materials, including Perkinamine IndigoTM, the Company has developed Mach-Zehnder interferometry and standard Teng-Man test set-ups in its own facilities. The Company’s optical lab is starting to test materials.

In June 2012 we opened a new internal research laboratory facility in Newark, Delaware in the Delaware Technology Park, near the University of Delaware. This new lab facility enables us to synthesize and test our materials in the same facility and will help us accelerate our development efforts. It is equipped with state of the art equipment necessary to expand our ability to conduct synthetic chemistry in much more tightly controlled conditions. Additionally, we have equipped a separate advanced optical laboratory at the same location where the necessary testing of material candidates will be performed as they emerge from our new synthesis laboratory.

In July 2012 we entered into an agreement with The University of Colorado, Boulder to conduct analytical testing and to carry out studies that will give a better understanding of the properties of a new class of composite organic electro-optic materials. This class of materials is our Perkinamine IndigoTM. The processing and measurements are to be carried out primarily at the Guided Wave Optics Laboratory (GWOL). The work is being done in close collaboration with Company personnel.

In September 2012 the United States Patent Office granted our Company U.S. Patent No. 8,269,004, entitled Heterocyclical Anti-Aromatic Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

In November 2012 Australia granted our Company Australian Patent No. AU2005302506 entitled Heterocyclical Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

In February 2013 we delivered to a potential large system supplier customer prototype devices that were coated with our advanced organic nonlinear electro-optical polymer, Perkinamine IndigoTM. Tests conducted by the University of Colorado, Boulder on coupons coated with the material demonstrated consistent R33 measurements from 100-125 picometers per volt, which exceeded the potential large system supplier customer's stated requirements.

In March 2013 we entered into a product development contractor agreement with EM Photonics (EMP) of Newark, Delaware to fabricate and test waveguides and phase modulators during an initial development phase using existing EMP polymer modulator design and processes.

In June 2013 we consolidated the EMP design program into our University of Colorado, Boulder (UCB) program after we fabricated structures with UCB that will be used as the basic building blocks of our Integrated Optical Device effort for the construction of both our advanced telecom modulator and data communications transceiver.

In April 2013 our potential large system supplier customer informed us that their preliminary testing results on the prototype devices coated with Perkinamine Indigo™ that we delivered to them in February 2013 demonstrated several of the key performance parameters that they desired. There are still additional tests that need to be completed. We are working with our potential customer utilizing our Perkinamine Indigo™ chromophore in a number of host polymers and will evaluate these polymers in conjunction with our chromophores for a specific performance attributes for their application.

In April 2013 Japan granted our Company Japanese Patent No. 5241234 entitled Heterocyclical Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

Corporate Information

Our principal executive office is located at 111 Ruthar Drive, Newark, DE 19711, and our telephone number is (302) 356-2717. Our website address is 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 the offering (1)	52,046,797 shares, including 200,000 initial commitment shares previously issued to Lincoln Park under the 2013 Purchase Agreement (and included in this offering).
Common Stock offered by the selling shareholder	Up to 10,000,000 shares, consisting of the 200,000 initial commitment shares already issued to Lincoln Park, up to 400,000 shares to be issued to Lincoln Park as additional commitment shares and the remaining shares to be purchased from time to time under the 2013 Purchase Agreement
Common stock to be outstanding after giving effect to the issuance of 10,000,000 shares to Lincoln Park under the 2013 Purchase Agreement	62,046,797 shares
Use of proceeds	We will not receive any proceeds from the sale of the shares of common stock by Lincoln Park. However, we may receive up to $20,000,000 from sales of shares under the 2013 Purchase Agreement. Any proceeds that we receive from sales to Lincoln Park under the 2013 Purchase Agreement will be used to further our business plan of expanding our research and development of our polymer materials technologies, commercialize potential optical devices and materials and for general and administrative 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 52,046,797 shares of common stock outstanding as of the date of this prospectus, and excludes:

• options to purchase 5,557,000 shares of our common stock pursuant to our 2007 Employee Stock Plan, of which 4,851,375 have vested as of the date of this prospectus, at a weighted average exercise price of $1.22 per share; and

• warrants to purchase an aggregate of 3,125,250 shares of our common stock, of which 3,010,668 have vested as of the date of this prospectus at a weighted average exercise price of $1.04 per share.

The Lincoln Park Transactions

On May 3, 2011, we executed a Purchase Agreement with Lincoln Park (referred to herein as the 2011 Purchase Agreement) and a registration rights agreement whereby we have the right to sell, at its sole discretion, to Lincoln Park up to $20,000,000 of our common stock, over a 30-month period. Under the 2011 Purchase Agreement, we sold Lincoln Park 4,194,840 shares of common stock and received $6,849,998 and $13,150,002 remains available. The 2011 Purchase Agreement terminates in December 2013.

On June 6, 2013, we entered into a new purchase agreement with Lincoln Park (referred to herein as the 2013 Purchase Agreement) pursuant to which Lincoln Park has agreed to purchase from us up to $20,000,000 of our common stock (subject to certain limitations) from time to time over a 30-month period. Also on June 6, 2013, we entered into a Registration Rights Agreement, or the Registration Rights Agreement, with Lincoln Park, pursuant to which we have filed with the SEC the registration statement that includes this prospectus to register for resale under the Securities Act of 1933, as amended, or the Securities Act, the shares that have been or may be issued to Lincoln Park under the 2013 Purchase Agreement.

Other than 200,000 shares of our common stock that we have already issued to Lincoln Park pursuant to the terms of the 2013 Purchase Agreement as consideration for its commitment to purchase shares of our common stock under the 2013 Purchase Agreement, we did not have the right to commence any sales to Lincoln Park under the 2013 Purchase Agreement until the SEC declared effective the registration statement of which this prospectus forms a part. Thereafter, we may, from time to time and at our sole discretion, direct Lincoln Park to purchase shares of our common stock in amounts up to 100,000 shares on any single business day so long as at least one business day has passed since the most recent purchase. We can also accelerate the amount of our common stock to be purchased under certain circumstances to up to 200,000 shares or $500,000 per purchase plus an additional "accelerated amount" under certain circumstances. The registration statement was declared effective on October 4, 2013. Except as described in this prospectus, there are no trading volume requirements or restrictions under the 2013 Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park. The purchase price of the shares that may be sold to Lincoln Park under the 2013 Purchase Agreement will be based on the market price of our common stock immediately preceding the time of sale as computed under the 2013 Purchase Agreement without any fixed discount; provided that in no event will such shares be sold to Lincoln Park when our closing sale price is less than $1.00 per share, subject to adjustment as provided in the 2013 Purchase Agreement. The purchase price per share will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, 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 2013 Purchase Agreement without fee, penalty or cost upon one business day notice. Lincoln Park may not assign or transfer its rights and obligations under the 2013 Purchase Agreement.

As of September 17, 2013, there were 52,046,797 shares of our common stock outstanding, of which 42,171,126 shares were held by non-affiliates, excluding the 200,000 shares that we have already issued to Lincoln Park under the 2013 Purchase Agreement. Although the 2013 Purchase Agreement provides that we may sell up to $20,000,000 of our common stock to Lincoln Park, only 10,000,000 shares of our common stock are being offered under this prospectus, which represents (i) 200,000 shares that we issued to Lincoln Park as a commitment fee (ii) an additional 9,400,000 shares which may be issued to Lincoln Park in the future under the 2013 Purchase Agreement and (iii) 400,000 shares that we are required to issue proportionally in the future, as an additional commitment fee, if and when we sell shares to Lincoln Park under the 2013 Purchase Agreement. If all of the 10,000,000 shares offered by Lincoln Park under this prospectus were issued and outstanding as of the date hereof, such shares would represent 17% of the total number of shares of our common stock outstanding and 20% of the total number of outstanding shares held by non-affiliates, in each case as of the date hereof. If we elect to issue and sell more than the 10,000,000 shares offered under this prospectus to Lincoln Park, which we have the right, but not the obligation, to do, we must first register for resale under the Securities Act any such additional shares, which could cause additional substantial dilution to our stockholders. The number of shares ultimately offered for resale by Lincoln Park is dependent upon the number of shares we sell to Lincoln Park under the 2013 Purchase Agreement.

Issuances 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 such issuance. 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 issuance to Lincoln Park.

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.

SUMMARY FINANCIAL DATA

The following tables summarize our financial data. We have derived the following summary of our statement of operations data for the years ended December 31, 2012 and 2011 from our audited financial statements appearing later in this prospectus. We have derived the following summary of our statement of operations data for the six months ended June 30, 2013 and 2012 and balance sheet data as of June 30, 2013 from our unaudited financial statements appearing later in this prospectus. Our historical results are not necessarily indicative of the results that may be expected in the future. You should read the summary of our financial data set forth below together with our financial statements and the related notes to those statements, as well as "Management's Discussion and Analysis of Financial Condition and Results of Operations" appearing later in this prospectus.

	Years Ended December 31,		Six Months Ended June 30,	
	2012	2011	2013	2012
Statement of Operations Data:				
NET SALES	$-	$-	$-	-
COST AND EXPENSE				
Research and development	2,489,747	1,682,557	986,498	927,662
General and administrative	1,936,417	1,633,786	881,004	851,050
LOSS FROM OPERATIONS	(4,426,164)	(3,316,343)	(1,867,502)	(1,778,712)
OTHER INCOME (EXPENSE)	(130,374)	(166,279)	(204,414)	(120,882)
NET LOSS	$(4,556,538)	$(3,482,622)	$(2,071,634)	(1,898,950)
Basic and Diluted Loss per Share	$(0.09)	$(0.08)	$(0.04)	(0.04)
Basic and Diluted Weighted Average Number of Shares	48,778,783	44,386,149	51,097,111	47,893,907

	As of June 30, 2013
Balance Sheet Data:	
Current assets	$ 3,425,951
Property and equipment - net	348,614
Other assets	-
Intangible assets - net	507,588
TOTAL ASSETS	$ 4,282,153
TOTAL LIABILITIES	210,503
TOTAL STOCKHOLDERS' EQUITY	4,071,650
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 4,282,153

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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 have incurred significant losses and experienced negative cash flow since our inception. We incurred a net loss of $4,556,538 for the year ended December 31, 2012 and $3,482,622 for the year ended December 31, 2011, and we also incurred a net loss of $2,071,634 for the six months ended June 30, 2013. We anticipate that we will continue to incur operating losses through at least the end of 2013.

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 are unable to achieve one or several of the above factors, we may be forced to cease operations.

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;
- Hire, train and integrate new personnel in all areas of our business; and
- 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 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 electro-optic polymers 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. 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:

- The market may not accept the price and/or performance of our products;
- 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
- The time required for us to achieve market acceptance of our products may exceed our capital resources that would require additional investment.

If we fail to accurately predict growth in new markets, or if we are exposed to any of the aforementioned risks, we could be forced to cease operations.

Our plan to develop relationships with strategic partners may not be successful which could have a materially adverse affect on our business.

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, which could have a material adverse effect on our business.

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, reduces any anticipated cost savings or revenue enhancement resulting from these ventures or may cause a material adverse effect on our business.

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 electro-optic polymer products, which could have a materially adverse effect on our business.

We are developing our electro-optic polymer 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. 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, the absence of which could have a materially adverse affect on our business.

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, and failure to achieve such objectives could have a materially adverse affect on our business.

Two of our significant target markets are the telecommunications and networking markets, which continue to be subject to overcapacity and slow growth or decline which could have a materially adverse affect on our business.

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 or 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 require additional capital to continue to fund our operations. 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 June 2014; 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. Other than the Lincoln Park financing transactions described below and throughout this prospectus, 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.

In May 2011, we entered into the 2011 Purchase Agreement with Lincoln Park, under which we may direct Lincoln Park to purchase up to, as of the date of this prospectus, a remaining $13,150,002 worth of shares of our common stock until December 2013, after which the 2011 Purchase Agreement terminates by its terms.

In June 2013, we entered into the 2013 Purchase Agreement with Lincoln Park, under which we may direct Lincoln Park to purchase up to $20,000,000 worth of shares of our common stock over a 30-month period once the registration statement of which this prospectus forms a part has been declared effective by the SEC. The registration statement was declared effective on October 4, 2013. However, the extent to which we will rely on the 2011 Purchase Agreement through December 2013, or the 2013 Purchase Agreement with Lincoln Park as sources of funding will depend on a number of factors, including the prevailing market price of our common stock and volume of trading and the extent to which we are able to secure working capital from other sources. More specifically, Lincoln Park does not have the obligation to purchase any shares of our common stock under the 2011 Purchase Agreement on any business day that the price of our common stock is less than $1.00 per share, and under the 2013 Purchase Agreement Lincoln Park does not have the obligation to purchase any shares of our common stock pursuant to a Regular Purchase on a purchase date where the closing sale price on the purchase date is below $1.00.

We are registering the resale of 10,000,000 shares by Lincoln Park pursuant to this prospectus. In the event we elect to issue more than the 10,000,000 shares offered hereby, we would be required to file a new registration statement and have it declared effective by the SEC. If obtaining sufficient funding from Lincoln Park does not occur or is prohibitively dilutive, we will need to secure another source of funding in order to satisfy our working capital needs. Should the financing we require to sustain our working capital needs be unavailable or prohibitively expensive when we require it, the consequences could be a material adverse effect on our business, operating results, financial condition and prospects.

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 prospectus. 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 either short-term or long-term capital requirements, or if planned revenues are not generated, we may be required to substantially limit our operations.

We may not be able to access the full amounts available under the 2011 Purchase Agreement or the 2013 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 2011 Purchase Agreement with Lincoln Park, we may direct Lincoln Park to purchase up to $20,000,000 worth of shares of our common stock over a 30-month period through December 2013. On any trading day selected by us, we may sell to Lincoln Park up to $200,000 of common stock by delivering a purchase notice to Lincoln Park. The Purchase Price of such shares is equal to the lesser of: (i) the lowest sale price of our common stock on the purchase date; or (ii) the arithmetic average of the three lowest closing sale prices for our common stock during the twelve consecutive trading days ending on the trading day immediately preceding the purchase date. Lincoln Park does not have the right or the obligation to purchase any shares of our common stock on any business day that the market price of our common stock is less than $1.00. To the extent that the market price of our common stock is below $1.00 per share on a trading day, we would not receive any proceeds under the Purchase Agreement for that day.

If the market price of our common stock is not below $9.50 per share, our sales will be limited to up to $1,000,000 of our common stock on each purchase date. If the market price of our common stock is not below $4.50 per share, our sales will be limited to up to $500,000 of our common stock on each purchase date. If the market price of our common stock is not below $3.50 per share, our sales will be limited to up to $400,000 of our common stock on each purchase date. If the market price of our common stock is not below $2.50 per share, our sales will be limited to up to $300,000 of our common stock on each purchase date.

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 2011 Purchase Agreement, which expires in December 2013. In addition, we only registered up to 10,000,000 shares of our common stock in connection with the 2011 Purchase Agreement, of which 150,839 shares were initial commitment shares previously issued to Lincoln Park. Assuming a purchase price of $1.00 per share, which is the minimum purchase price at which shares can be sold under the Purchase Agreement, and the issuance to Lincoln Park of an aggregate 10,000,000 shares, which would be comprised of 9,851,412 shares purchased at $1.00 per share and 148,588 shares issued as additional pro rata commitment shares for no additional consideration, the proceeds to us would only be $9,851,412. In the event we elect to issue more than 10,000,000 shares, we would be required to file a new registration statement and have it declared effective by the SEC.

Under the 2013 Purchase Agreement with Lincoln Park, we may direct Lincoln Park to purchase up to $20,000,000 worth of shares of our common stock over a 30-month period, commencing on the date of effectiveness of the registration statement of which this prospectus is made a part. 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, which may be increased to up to 200,000 shares depending on certain conditions as set forth in the 2013 Purchase Agreement, up to the aggregate commitment of $20,000,000 (we refer to these as Regular Purchases in this prospectus). If the market price of our common stock is not below $2.00 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 $2.50 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) 93% of the accelerated purchase date’s volume weighted average price.

The purchase price of the shares related to the $20,000,000 of future funding 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. However, Lincoln Park shall not have the right or the obligation to purchase any shares of our common stock pursuant to a Regular Purchase on a purchase date where the closing sale price on the purchase date is below $1.00. To the extent that the closing sale price of our common stock is below $1.00 per share on a purchase date, we would not receive any proceeds under the 2013 Purchase Agreement for that day.

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 2013 Purchase Agreement. In addition, we are only registering up to 10,000,000 shares of our common stock in connection with the 2013 Purchase Agreement, which includes 200,000 shares previously issued to Lincoln Park as initial commitment shares. Assuming a purchase price of $1.00 per share,

which is the minimum purchase price at which shares can be sold under the Purchase Agreement, and the issuance to Lincoln Park of 9,800,000 additional shares under the 2013 Purchase Agreement, which would be comprised of 9,400,000 shares purchased at $1.00 per share and 400,000 shares issued as additional pro rata commitment shares for no additional consideration, the proceeds to us would only be $9,400,000. In the event we elect to issue more than 9,800,000 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 2011 and 2013 Purchase Agreements may cause substantial dilution to our existing stockholders and could cause the price of our common stock to decline.

Under each of the 2011 and 2013 Purchase Agreements with Lincoln Park, 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 30 months (for the 2011 Purchase Agreement, through December 2013, and for the 2013 Purchase Agreement, from the date that the SEC declares effective the resale registration statement of which this prospectus is made a part). Generally, with respect to each 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 452,498 and 600,000 shares of common stock as a fee for Lincoln Park's commitment to purchase our shares under the 2011 Purchase Agreement and 2013 Purchase Agreement, respectively. Of these commitment shares, we issued 150,839 and 200,000 shares upon entering into the 2011 Purchase Agreement and 2013 Purchase Agreement, respectively. The remaining 198,329 and 400,000 commitment shares are issuable to Lincoln Park on a pro rata basis as additional purchases are made under the 2011 Purchase Agreement and 2013 Purchase Agreement, respectively.

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 each of the 2011 Purchase Agreement and 2013 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 and other issuances of shares of common stock or securities convertible into common stock will dilute your interest.

As of December 31, 2012, we have outstanding options and warrants to purchase an aggregate of 7,714,850 shares of our common stock at exercise prices ranging from $0.25 per share to $1.75 per share with a weighted average exercise price of $1.15 per share. As of June 30, 2013, we have outstanding options and warrants to purchase an aggregate of 8,582,250 shares of our common stock at exercise prices ranging from $0.25 per share to $1.75 per share with a weighted average exercise price of $1.16 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 2011 Purchase Agreement and the 2013 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 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:

- Fluctuating demand for our potential products and technologies;
- Announcements or implementation by our competitors of technological innovations or new products;
- Amount and timing of our costs related to our marketing efforts or other initiatives;
- The status of particular development programs and the timing of performance under specific development agreements;
- Timing and amounts relating to the expansion of our operations;
- 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 electro-optic polymer 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; and
- 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 which could have a materially adverse affect on our business.

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 which could cause us to incur substantial expenses which could have a materially adverse affect on our business.

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 intent 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 us, our suppliers and our customers.

If we decide to make commercial quantities of products at our facilities, we will be required to make significant capital expenditures to increase capacity which could have a materially adverse affect on our business.

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 which could have a materially adverse affect on our business.

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 single facility, and circumstances beyond our control may result in considerable interruptions which could harm our business.

We conduct significantly all of our research and development activities at a single facility. A disaster such as a fire, flood or severe storm at or near this facility 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, the costs of which may have a materially adverse affect on our business.

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, which could severely harm our business.

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 attestation requirements under Section 404(b) of Sarbanes-Oxley.

Our most recently filed annual report does not include an attestation report of the Company’s independent registered public accounting firm regarding internal control over financial reporting. Management’s report was not subject to attestation by the Company’s registered public accounting firm pursuant to rules of the Securities and Exchange Commission that permit the Company to provide only management’s attestation in this annual report. As a result, a material weakness in our internal controls may remain undetected for a longer period and such weakness may cause harm to our business.

Shares Eligible for Future Sale May Adversely Affect the Market.

From time to time, certain of the Company's shareholders may be eligible to sell all or some of their shares of common stock by means of ordinary brokerage transactions in the open market pursuant to Rule 144, promulgated under the Securities Act, subject to certain limitations. In general, a non-affiliate stockholder who has satisfied a six-month holding period may, under certain circumstances, sell its shares, without limitation. Any substantial sale of the Company's common stock pursuant to Rule 144 or pursuant to any resale prospectus may have a material adverse effect on the market price of our common stock.

There Is A Limited Market For Our Common Stock Which May Make It More Difficult For You To Sell Your Stock.

Our Company's common stock is quoted on the OTC Market (OTCQB) under the symbol "LWLG". The trading market for our common stock is limited, accordingly, there can be no assurance as to the liquidity of any markets that may develop for our common stock, your ability to sell our common stock, or the prices at which you may be able to sell our common stock.

We are subject to the "penny stock" rules and brokers cannot generally solicit the purchase of our common stock, which adversely affects its liquidity and market price.

The SEC has adopted regulations that generally define "penny stock" to be an equity security that has a market price of less than $5.00 per share, subject to specific exemptions. The market price of our common stock on the over-the-counter market has been substantially less than $5.00 per share and therefore we are currently considered a "penny stock" according to SEC rules. This designation requires any broker-dealer selling these securities to disclose certain information concerning the transaction, obtain a written agreement from the purchaser and determine that the purchaser is reasonably suitable to purchase the securities. These rules limit the ability of broker-dealers to solicit purchases of our common stock and therefore reduce the liquidity of the public market for our shares.

Our Company's Stock Price May Be Volatile.

The market price of our Company's common stock is likely to be highly volatile and could fluctuate widely in price in response to various factors, many of which are beyond our control, including:

- Technological innovations or new products and services by our Company or our competitors;
- Additions or departures of key personnel;
- Sales of our Company's common stock;
- Our Company's ability to integrate operations, technology, products and services;
- Our Company's ability to execute our business plan;
- Operating results below expectations;
- Loss of any strategic relationship;
- Industry developments;
- Economic and other external factors; and
- Period-to-period fluctuations in our Company's financial results.

Because we have a limited operating history, you may consider any one of these factors to be material. Our stock price may fluctuate widely as a result of any of the above listed factors.

In addition, the securities markets have from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of particular companies. These market fluctuations may also materially and adversely affect the market price of our Company's common stock.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that involve substantial risks and uncertainties. The forward-looking statements are contained principally in the sections entitled “Prospectus Summary”, “Risk Factors”, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Business” but are also contained elsewhere in this prospectus. In some cases, you can identify forward-looking statements by the words “may”, “might”, “will”, “could”, “would”, “should”, “expect”, “intend”, “plan”, “objective”, “anticipate”, “believe”, “estimate”, “pred “potential”, “continue” and “ongoing,” or the negative of these terms, or other comparable terminology intended to identify statements about the future. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus, we caution you that these statements are based on a combination of facts and factors currently known by us and our expectations of the future, about which we cannot be certain. Forward-looking statements include, but are not limited to, statements about:

- lack of available funding;
- general economic and business conditions;
- competition from third parties;
- intellectual property rights of third parties;
- regulatory constraints;
- changes in technology and methods of marketing;
- delays in completing various engineering and manufacturing programs;
- changes in customer order patterns;
- changes in product mix;
- success in technological advances and delivering technological innovations;
- shortages in components;
- production delays due to performance quality issues with outsourced components;
- other risks to which our Company is subject; and
- other factors beyond the Company's control.

In addition, you should refer to the “Risk Factors” section of this prospectus for a discussion of other important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this prospectus will prove to be accurate or that we will achieve the plans, intentions or expectations expressed or implied in our forward-looking statements. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. Any forward-looking statements we make in this prospectus speak only as of its date, and we undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

You should read this prospectus and the documents that we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

USE OF PROCEEDS

This prospectus relates to shares of our common stock that may be offered and sold from time to time by Lincoln Park. We will not receive any proceeds upon the sale of shares by Lincoln Park. However, we may receive proceeds of up to $20,000,000 under the 2013 Purchase Agreement with Lincoln Park, subject to the terms and conditions of the 2013 Purchase Agreement.

We will retain broad discretion in determining how we will allocate the proceeds from any sales to Lincoln Park. However, any proceeds that we receive from sales to Lincoln Park under the 2013 Purchase Agreement will be used to further our business plan of expanding our research and development of our polymer materials technologies, commercialize potential optical devices and materials and for general and administrative purposes.

Although we have no specific plans for use of proceeds as of the date of this prospectus, we believe that approximately 65% of any proceeds received may be used towards our research and development efforts which may include, without limitation, (a) retaining additional management, sales, marketing, technical and other staff to our workforce, (b) expanding our research and development facilities, including the purchase of additional laboratory and production equipment, (c) marketing our future products as they are introduced into the marketplace, (d) developing and maintaining collaborative relationships with strategic partners, (e) developing and improving our manufacturing processes and quality controls, and approximately 35% of any proceeds received may used for increasing our general and administrative activities related to our operations as a reporting public company and related corporate compliance requirements.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and our capitalization as of June 30, 2013:

Cash and cash equivalents	$3,259,183
Stockholders' equity:	
Preferred stock, $0.001 par value, 1,000,000 shares authorized, no shares issued or outstanding	-
Common stock, $0.001 par value, 100,000,000 shares authorized, 52,046,797 issued and outstanding	52,047
Additional paid-in-capital	34,523,103
Accumulated deficit	(15,827)
Deficit accumulated during development stage	(30,487,673)
Total stockholders' equity	4,071,650
Total capitalization	$4,282,153

The number of shares of common stock outstanding in the table above excludes, as of June 30, 2013 (a) 5,557,000 shares of our common stock issuable upon the exercise of outstanding options and (b) 3,025,250 shares of our common stock issuable upon the exercise of outstanding warrants, with a weighted average exercise price of $1.16 per share.

MARKET FOR COMMON EQUITY AND RELATED SHAREHOLDER MATTERS

Market For Common Equity

Our common stock is currently traded under the symbol "LWLG" on the OTC Markets (OTCQB). Previously, our common stock traded on the over-the-counter bulletin board.

The following table set forth below lists the closing high and low bid and ask for our common stock for each fiscal quarter for the last two fiscal years. The prices in the table reflect inter-dealer prices, without retail markup, markdown or commission and may not represent actual transactions.

		Bid		Ask	
		High	Low	High	Low
2011 (1)	1st Quarter	$1.56	$1.10	$1.58	$1.25
	2nd Quarter	$1.20	$0 (3)	$1.40	$0 (3)
	3rd Quarter	$---	(4) $--- (4)	$---	(4) $--- (4)
	4th Quarter	$---	(4) $--- (4)	$---	(4) $--- (4)
2012 (2)	1st Quarter	$2.85	$1.61	$2.87	$1.65
	2nd Quarter	$1.52	$0.86	$1.60	$0.90
	3rd Quarter	$0.96	$0.831	$0.98	$0.845
	4th Quarter	$1.21	$0.825	$1.23	$0.85
2013 (2)	1st Quarter	$1.65	$0.83	$1.66	$0.85
	2nd Quarter	$1.55	$0.83	$1.62	$0.835

(1) Reflects prices and information obtained from the over-the-counter bulletin board.
(2) Reflects prices and information obtained from the OTC Markets.
(3) Reflects that at least two market makers posted two-sided quotes for our common stock and all of the quotes were priced at zero.
(4) Reflects that no priced bids or asks were calculated because there was not a minimum of 2 two-sided quotes for our common stock.

Holders

As of September 17, 2013, we have a total of 52,046,797 shares of common stock issued and outstanding, held by approximately 94 shareholders of record. We do not have any shares of preferred stock issued or outstanding.

Dividends

No cash dividends have been declared or paid on our common stock to date. No restrictions limit our ability to pay dividends on our common stock. The payment of cash dividends in the future, if any, will be contingent upon our Company's revenues and earnings, if any, capital requirements and general financial condition. The payment of any dividends is within the discretion of our board of directors. Our board of director's present intention is to retain all earnings, if any, for use in our business operations and, accordingly, the board of directors does not anticipate paying any cash dividends in the foreseeable future.

Securities Authorized for Issuance under Equity Compensation Plans

Equity Compensation Plans as of December 31, 2012

Equity Compensation Plan Information

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders (1)	5,372,000	$1.20	1,482,450
Equity compensation plans not approved by security holders (2)	2,066,500	$0.95	0
Total	7,438,500	$1.13	1,482,450

(1) Reflects our 2007 Employee Stock Plan for the benefit of our directors, officers, employees and consultants.
(2) We have reserved 8,000,000 shares of common stock for such persons pursuant to that plan.

Comprised of common stock purchase warrants we issued for services.

Penny Stock Regulations and Restrictions on Marketability

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a market price of less than $5.00, other than securities registered on certain national securities exchanges or quoted on the NASDAQ system, provided that current price and volume

information with respect to transactions in such securities is provided by the exchange or system. The penny stock rules require a broker-dealer, prior to a transaction in a penny stock, to deliver a standardized risk disclosure document prepared by the SEC, that: (a) contains a description of the nature and level of risk in the market for penny stocks in both public offerings and secondary trading; (b) contains a description of the broker's or dealer's duties to the customer and of the rights and remedies available to the customer with respect to a violation of such duties or other requirements of the securities laws; (c) contains a brief, clear, narrative description of a dealer market, including bid and ask prices for penny stocks and the significance of the spread between the bid and ask price; (d) contains a toll-free telephone number for inquiries on disciplinary actions; (e) defines significant terms in the disclosure document or in the conduct of trading in penny stocks; and (f) contains such other information and is in such form, including language, type size and format, as the SEC shall require by rule or regulation.

The broker-dealer also must provide, prior to effecting any transaction in a penny stock, the customer with (a) bid and offer quotations for the penny stock; (b) the compensation of the broker-dealer and its salesperson in the transaction; (c) the number of shares to which such bid and ask prices apply, or other comparable information relating to the depth and liquidity of the market for such stock; and (d) a monthly account statement showing the market value of each penny stock held in the customer's account.

In addition, the penny stock rules require that prior to a transaction in a penny stock not otherwise exempt from those rules, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's written acknowledgment of the receipt of a risk disclosure statement, a written agreement as to transactions involving penny stocks, and a signed and dated copy of a written suitability statement.

These disclosure requirements may have the effect of reducing the trading activity for our common stock. Therefore, stockholders may have difficulty selling our securities.

Recent Sales of Unregistered Securities

The Company made the following securities issuances without registering the securities under the Securities Act:

Securities Issued for Cash

Fiscal Year Ended December 31, 2010:

April – December 2010	Common stock – 947,200 shares of common stock at $0.25 per share for aggregate proceeds of $236,800 pursuant to warrant exercises.
May 2010	Common stock – 15,000 shares of common stock at $0.25 per share for aggregate proceeds of $3,750 pursuant to option exercises.
April 2010	Common stock – 10,000 shares of common stock at $0.345 per share for aggregate proceeds of $3,450 pursuant to a warrant exercise.
June 2010	Common stock – 25,000 shares of common stock at $0.50 per share for aggregate proceeds of $12,500 pursuant to a warrant exercise.
April 2010	Common stock – 282,500 shares of common stock at $1.00 per share for aggregate proceeds of $282,500 pursuant to warrant exercises.
August - December 2010	Common stock/Warrants - 1,500,000 shares of common stock and warrants to purchase 375,000 shares of common stock for aggregate proceeds of $1,500,000 pursuant to a private offering.

Fiscal Year Ended December 31, 2011:

June 2011	Common stock – 185,185 shares of common stock for aggregate proceeds of $200,000 pursuant to the 2011 Purchase Agreement.
3rd/4th FQ 2011	Common stock/Warrants - 1,000,000 shares of common stock and warrants to purchase 1,000,000 shares of common stock for

	aggregate proceeds of $1,000,000 pursuant to a private offering.

Fiscal Year Ended December 31, 2012:

January 2012	Warrant Exercise – 250,000 shares of common stock at $.65 per share for aggregate proceeds of $162,500.
January 2012	Warrant Exercise – 40,000 shares of common stock at $1.25 per share for aggregate proceeds of $50,000.
February 2012	Warrant Exercise – 20,000 shares of common stock at $.34 per share for aggregate proceeds of $6,900.
April 2012	Warrant Exercise – 400,000 shares of common stock at $.25 per share for aggregate proceeds of $100,000.
April 2012	Warrant Exercise – 500,000 shares of common stock at $.25 per share for aggregate proceeds of $125,000.

Fiscal Year Ending December 31, 2013:

March 2013	Warrant Exercise - 12,500 shares of common stock purchased at $1.25 for proceeds of $15,625.
June 2013	Warrant Exercise – 20,000 shares of common stock purchased at $0.345 for proceeds of $6,900.

Securities Issued For Services

Fiscal Year Ended December 31, 2010:

January 2010	Warrant - 650,000 shares of common stock at $1.51 per share for services.
March 2010	Warrant - 150,000 shares of common stock at $0.25 per share for services.
August 2010	Common stock - 4,800 shares of common stock for $6,000 in services.
November 2010	Common stock - 5,000 shares of common stock for $4,650 in services.
December 2010	Common stock - 10,000 shares of common stock for $12,000 in services.

Fiscal Year Ended December 31, 2011:

January 2011	Warrant - 10,000 shares of common stock at $1.25 per share for legal services.
January 2011	Warrant - 25,000 shares of common stock at $1.25 per share for research and development.
March 2011	Common stock - 10,000 shares of common stock for $14,500 investor relations expense.
April 2011	Warrant - 150,000 shares of common stock at $1.18 per share for accounting services.
May/June 2011	Common stock – 153,847 shares of common stock for commitment fee to institutional investor.
June 2011	Common stock - 10,000 shares of common stock for $10,400 in services.
September 2011	Common stock - 10,000 shares of common stock for $14,500 in services.

October 2011	Common stock – 2,018 shares of common stock for $2,163 in services.

Fiscal Year Ended December 31, 2012:

February 2012	Common Stock - 1,406 shares of common stock at $1.14 per share for services.
March 2012	Warrant - 10,000 shares of common stock at $1.69 per share for services.
May 2012	Warrant - 100,000 shares of common stock at $1.20 per share for services.
December 2012	Warrant - 125,000 shares of common stock at $0.93 per share for services.

Fiscal Year Ended December 31, 2013:

March 2013	Option grant - 75,000 shares of common stock at $1.16 per share issued for services. The option was valued at $81,076 using the Black-Scholes Option Pricing Formula.
May 2013	Option grant – 10,000 shares of common stock at $1.03 per share issued for services. The option was valued at $9,574 using the Black-Scholes Option Pricing Formula.
May 2013	Option grant – 100,000 shares of common stock at $1.00 per share issued for services. The option was valued at $80,824 using the Black-Scholes Option Pricing Formula.
June 2013	Common Stock – 200,000 shares of common stock for services valued at $170,000.

Securities Issued Pursuant to our 2007 Employee Stock Plan

Fiscal Year Ended December 31, 2010:

December 2010	Stock options – 100,000 shares of common stock at $1.50 per share.
December 2010	Stock options – 585,000 shares of common stock at $1.00 per share.

Fiscal Year Ended December 31, 2011:

May 2011	Stock options - 200,000 shares of common stock at $1.12 per share.
August 2011	Stock options - 150,000 shares of common stock at $1.01 per share.
November 2011	Stock options - 150,000 shares of common stock at $0.63 per share.
December 2011	Stock options – 250,000 shares of common stock at $1.01 per share.
December 2011	Stock options - 150,000 shares of common stock at $1.30 per share.

Fiscal Year Ended December 31, 2012:

March 2012	Stock options - 100,000 shares of common stock at $1.69 per share.
March 2012	Stock options - 25,000 shares of common stock at $1.69 per share.
May 2012	Stock options - 500,000 shares of common stock at $1.30 per share.
June 2012	Stock options – 200,000 shares of common stock at $0.90 per share.
August 2012	Stock options - 100,000 shares of common stock at $0.925 per share.
August 2012	Stock options - 50,000 shares of common stock at $0.93 per share.

Fiscal Year Ending December 31, 2013:

August 2013	Stock options - 25,000 shares of common stock at $0.84 per share.
August 2013	Stock options – 50,000 shares of common stock to a Director at $0.84 per share.

No underwriters were utilized and no commissions or fees were paid with respect to any of the above transactions. These persons were the only offerees in connection with these transactions. We relied on Section 4(2) and Rule 506 of Regulation D of the Securities Act since the transaction does not involve any public offering.

DILUTION

Investors who purchase our common stock will be diluted to the extent of the difference between the public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering. Net tangible book value per share is determined by dividing our total tangible assets less total liabilities by the number of outstanding shares of our common stock. As of June 30, 2013, we had a net tangible book value of $3,564,062, or approximately $0.0685 per share of common stock.

Dilution in net tangible book value per share represents the difference between the amount per share paid by purchasers of common stock in this offering, assuming a purchase price of $1.00 per share, which is the minimum purchase price at which shares can be sold under the 2013 Purchase Agreement, and the pro forma as adjusted net tangible book value per share of common stock immediately after the completion of this offering. Of the 10,000,000 shares being offered hereunder, 200,000 shares were previously issued to Lincoln Park at June 30 2013. Therefore, after giving effect to our assumed receipt of $9,330,000 in estimated net proceeds from the issuance of 9,800,000 additional shares of common stock under the 2013 Purchase Agreement and registered in this offering (assuming a purchase price of $1.00 per share and the issuance of 400,000 additional commitment shares for no additional cash consideration, offering expenses of $70,000, and assuming all such sales and issuances were made on June 30, 2013), our pro forma as adjusted net tangible book value as of June 30, 2013 would have been approximately $12,894,062, or $0.2085 per share. This would represent an immediate increase in the net tangible book value of $0.14 per share to existing shareholders attributable to this offering. The following table illustrates this per share dilution:

Assumed public offering price per share of common stock (minimum allowed price)	$1.00
As adjusted net tangible book value per share as of June 30, 2013	0.0685
Increase in as adjusted net tangible book value per share attributable to this offering	0.1400
Pro forma net tangible book value per share after this offering	02085
Dilution per share to new investors	$0.7915

To the extent that we sell more or less than $20,000,000 worth of shares under the 2013 Purchase Agreement, or to the extent that some or all sales are made at prices in excess of the minimum allowable purchase price of $1.00 per share, then the dilution reflected in the table above will differ. The above table is based on 52,046,797 shares of our common stock outstanding as of June 30, 2013, adjusted for the assumed sale of $9,400,000 in shares to Lincoln Park under the 2013 Purchase Agreement at the assumed minimum purchase price described above. In addition, the calculations in the foregoing table do not take into account, as of June 30, 2013:

• 5,557,000 shares of our common stock issuable upon the exercise of outstanding options; and

• 3,025,250 shares of our common stock issuable upon the exercise of outstanding warrants, with a weighted average exercise price of $1.04 per share.

To the extent that options or warrants are exercised, new options are issued under our equity benefit plans, or we issue additional shares of common stock in the future, there may be further dilution to investors participating in this offering. In addition, we may choose to raise additional capital because of market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our shareholders.

SELECTED FINANCIAL DATA

You should read the following selected financial data together with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and accompanying notes included later in this prospectus. The selected financial data in this section is not intended to replace our financial statements and the accompanying notes.

We have derived the selected statement of operations data for the years ended December 31, 2012 and 2011 and the selected balance sheet data as of December 31, 2012 and 2011 from our audited financial statements that are included in this prospectus. We have derived the statement of operations data for the years ended December 31, 2010, 2009 and 2008 and the selected balance sheet data as of December 31, 2010, 2009 and 2008 from our audited financial statements that are not included in this prospectus.

Our historical results are not necessarily indicative of the results to be expected in any future period.

	Year Ended December 31,				
	2012	2011	2010	2009	2008
Statement of Operations Data:					
NET SALES	$-	$-	$3,200	$-	$-
COST AND EXPENSE					
Research and development	2,489,747	1,682,557	1,709,171	1,662,813	1,421,955
General and administrative	1,936,417	1,633,786	2,006,900	1,058,071	2,820,398
LOSS FROM OPERATIONS	(4,426,164)	(3,316,343)	(3,712,871)	(2,720,884)	(4,242,353)
OTHER INCOME (EXPENSE)	(130,374)	(166,279)	(361)	(987)	(98,254)
NET LOSS	$(4,556,538)	$(3,482,622)	$(3,713,232)	$(2,721,871)	$(4,340,607)
Basic and Diluted Loss per Share	$(0.09)	$(0.08)	$(0.09)	$(0.07)	$(0.12)
Basic and Diluted Weighted Average Number of Shares	48,778,783	44,386,149	42,253,450	39,431,766	34,726,411

	Year Ended December 31,				
Balance Sheet Data:	2012	2011	2010	2009	2008
Current assets	$3,026,854	$401,580	$1,028,056	$513,362	$100,423
Property and equipment - net	300,994	88,751	97,568	104,087	61,726
Other assets		-	-	-	-
Intangible assets - net	488,526	431,104	346,009	261,215	212,416
TOTAL ASSETS	$3,816,374	$921,435	$1,471,633	$878,664	$374,565
TOTAL LIABILITIES	155,328	238,426	116,012	131,676	168,027
TOTAL STOCKHOLDERS' EQUITY	3,661,046	683,009	1,355,621	746,988	206,538

TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$3,816,374	$921,435	$1,471,633	$878,664	$374,565

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following management's discussion and analysis of financial condition and results of operations provides information that management believes is relevant to an assessment and understanding of our plans and financial condition. The following selected financial information is derived from our historical financial statements and should be read in conjunction with such financial statements and notes thereto set forth elsewhere herein and the "Forward-Looking Statements" explanation included herein.

Overview

Lightwave Logic, Inc. (then known as Eastern Idaho Internet Service, Inc.) was organized under the laws of the State of Nevada in 1997, where we engaged in the business of marketing Internet services until June 30, 1998 when our operations were discontinued. We were then inactive until we acquired PSI-TEC Corporation as our wholly owned subsidiary on July 14, 2004, at which time our name was changed to PSI-TEC Holdings, Inc. On October 20, 2006, we completed a parent-subsidiary merger with PSI-TEC Corporation whereby we were the surviving corporation of the merger, and our name was changed to Third-Order Nanotechnologies, Inc. On March 10, 2008, we changed our name to Lightwave Logic, Inc. to better suit our strategic business plan and to facilitate stockholder recognition of our Company and our business. 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.

We are a development stage, organic nonlinear materials and electro-optical device 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. Both types of materials are 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. Secondarily, 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.

In order to transmit digital information at extremely high-speeds (wide bandwidth) over the Internet, it is necessary to convert the electrical signals produced by a computer into optical signals for transmission over long-distance fiber-optic cable. Molecularly engineered materials known as electro-optic polymers when designed into optical devices perform the actual conversion of an electrical signal to an optical signal.

We are currently developing electro-optic polymers that promise performance many times faster than any technology currently available and that have unprecedented thermal stability. High-performance electro-optic materials produced by our Company have demonstrated stability as high as 350 degrees Celsius. Stability above 250 degrees Celsius is necessary for vertical integration into many semi-conductor production lines. In December 2011 one of our non-linear optical polymers, Perkinamine IndigoTM demonstrated an unusually high electro-optical effect of greater than 250 picometers per volt on 1.5 micron films with excellent thermal and photo stability. Independent research laboratories at Photon-X and The University of Colorado confirmed these characteristics. We continued our development program on Perkinamine IndigoTM to better understand the properties that gave us the results reported in December 2011. More recent measurements have shown an electro-optical effect closer to 100 picometers per volt in a 500 nm thin films. We are continuing to perform development work to better understand these results.

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

Our revenue model relies substantially on the assumption that we will be able to successfully develop non-linear polymer materials and photonic device products, which will use non-linear all-optical and electro-optic polymers for applications within the industries described below. When appropriate, we intend to create specific materials for each of these applications and use our proprietary knowledge base to continue to enhance its discoveries.

- telecommunications/data communications
- backplane optical interconnects
- cloud computing and data centers
- photovoltaic cells
- medical applications
- satellite reconnaissance
- navigation systems
- radar applications
- optical filters
- special light modulators
- all-optical transistors
- entertainment

To be successful, we must, among other things:

- Develop and maintain collaborative relationships with strategic partners;
- Continue to expand our research and development efforts for our products;
- Develop and continue to improve on our manufacturing processes and maintain stringent quality controls;
- Produce commercial quantities of our products at commercially acceptable prices;
- Rapidly respond to technological advancements;
- Attract, retain and motivate qualified personnel; and
- Obtain and retain effective intellectual property protection for our products and technology.

We believe that Moore's Law (a principle which states the number of transistors on a silicon chip doubles approximately every eighteen months) will create markets for our high-performance electro-optic materials and photonic device products.

Plan of Operation

Since inception, we have been engaged primarily in the research and development of our polymer materials technologies and potential photonic device products. We are devoting significant resources to engineer next-generation electro-optic polymers 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, government agencies and internal device development. We expect to continue to develop products that we intend to introduce to these rapidly changing markets and to seek to identify new markets. We expect to continue to make significant operating and capital expenditures for research and development activities.

As we move from a development stage company to a product supplier, we expect that our financial condition and results of operations will undergo substantial change. In particular, we expect to record both revenue and expense from product sales, to incur increased costs for sales and marketing and to increase general and administrative expense. Accordingly, the financial condition and results of operations reflected in our historical financial statements are not expected to be indicative of our future financial condition and results of operations.

On September 25, 2006 we obtained independent laboratory results that confirmed the thermal stability of our PerkinamineTM electro-optic materials. Thermal stability as high as 350 degrees Celsius was confirmed, significantly exceeding many other then commercially available high performance electro-optic materials, such as CLD-1 that exhibits thermal degradation in the range of 250 degrees Celsius to 275 degrees Celsius. This high temperature stability of our materials eliminates a major obstacle to vertical integration of electro-optic polymers into standard microelectronic manufacturing processes (e.g. wave/vapor-phase soldering) where thermal stability of at least 300 degrees Celsius is required. In independent laboratory tests, ten-percent material degradation, a common evaluation of overall thermal stability, did not occur until our PerkinamineTM materials base was exposed to temperatures as high as 350 degrees Celsius, as determined by Thermo-Gravimetric Analysis (TGA). The test results supported our Company's progress to introduce our materials into commercial applications such as optical interconnections, high-speed telecom and datacom modulators, and military/aerospace components.

On September 26, 2006, we were awarded the 2006 Electro-Optic Materials Technology Innovation of the Year Award by Frost & Sullivan. Frost & Sullivan's Technology Innovation of the Year Award is bestowed upon candidates whose original research has resulted in innovations that have, or are expected to bring, significant contributions to multiple industries in terms of adoption, change, and competitive posture. This award recognizes the quality and depth of our Company's research and development program as well as the vision and risk-taking that enabled us to undertake such an endeavor.

In July 2007, our Company developed an innovative process to integrate our unique architecture into our anticipated commercial devices, whereby dendritic spacer systems are attached to its core chromophore. In the event we are successful in developing a commercially viable product, we believe these dendrimers will reduce the cost of manufacturing materials and reduce the cost and complexity of tailoring the material to specific customer requirements.

In March 2008, we commenced production of our first prototype photonic chip, which we delivered to Photon-X, LLC to fabricate a prototype polymer optical modulator and measure its technical properties. In June 2009 we released test results conducted by Dr. C.C. Teng that re-confirmed our previous test results.

In August 2009, Photon-X, LLC commenced a compatibility study, process sequences, and fabricated wafers/chips containing arrays of phase modulators. The first one hundred plus modulators (bench top devices) were completed at the end of October 2009, and were successfully characterized for insertion loss, Vpi, modulation dynamic range and initial frequency response in March 2010. The multi-step manufacturing process we utilized to fabricate our modulators involved exposing our proprietary PerkinamineTM materials to extreme conditions that is typically found in standard commercial manufacturing settings. Our step-by-step analysis throughout the fabrication process demonstrated to us that our PerkinamineTM materials could successfully withstand each step of the fabrication process without damage.

In August 2009, we retained Perdix, Inc. in Boulder, Colorado to help us identify and build prototype products for high growth potential target markets in fiber optic telecommunications systems. During October 2009, we initiated the development and production of our prototype amplitude modulator, which can ultimately be assembled into 1- and 2-dimensional arrays that are useful for optical computing applications, such as encryption and pattern recognition. We expected our initial prototype amplitude modulator to be completed by the end of the second quarter 2010. We continued to work on this device throughout 2010 and discovered its design had limitations so we terminated the program to take a different design approach. We embarked on the new design approach in 2011 with another partner, Boulder Nonlinear Systems (BNS). A feasibility study with the new design partner was started in late 2011. This research and development program continued through 2012 into the first half of 2013, and it is expected to be completed by the end of the third quarter of 2013. We expect the results of this study will guide us on how to better design our prototype spatial light modulator.

In December 2009, we filed our sixth patent application. The provisional application covers stable free radical chromophores for use in Non-Linear optical applications. The new polymeric electro-optic material has enormous potential in spatial light modulation and all optical signal processing (light switching light).

In March 2010, we successfully concluded the electrical and optical performance testing stage of our proof of principle prototype phase modulator and began application engineering of our technology in customer design environments. The Company is working directly with interested large system suppliers to attempt to engineer specific individual electro-optic materials in support of their proprietary device designs, which would be implemented in next generation products.

In October of 2010, we completed the concept stage of a novel design for an advanced optical computing application and moved forward into the design stage with Celestech, Inc. of Chantilly, Virginia. This application is presently on hold while Celestech continues to engage its customer on its schedule. Additionally, we are working on three other applications with Celestech, two of which are in white paper design stage. Development of these applications continued through 2012 and into 2013. If these projects continue to move forward, they will incorporate one or more of our Company’s advanced electro-optical polymer materials.

In October of 2010, we announced the results of testing performed by Lehigh University that demonstrated the Third-order non-linear properties of our proprietary molecules in the Perkinamine NRTM chromophore class. Lehigh University determined that the material was 100 times stronger than the highest off-resonance small molecule currently known. They also determined that it was 2,600 times more powerful than fused silica and demonstrated extremely fast (less than 1 picosecond) photo-induced non-linear response that would be capable of modulation at a rate of 1 THz (terahertz). Additional testing at Lehigh University of the Company’s other Perkinamine class of materials demonstrated Third-order non-linear properties, which may have utility in all optical switches.

In February and April 2011, respectively, the United States Patent Office granted our Company two patents: US Patent No. 7,894,695 covering our Tricyclic Spacer System for Non-Linear Optical Devices and US Patent No. 7,919,619 for Heterocyclical Chromophore Architectures directed to our PerkinamineTM chromophores. These composition of matter patents taken together protect the core of our electro-optical materials portfolio.

In March 2011, we entered into a research and development agreement with the City University of New York’s (“CUNY”) Laboratory for Nano Micro Photonics (LaNMP) to develop Third-order non-linear devices. The combination of LaNMP’s device capabilities together with our materials expertise should accelerate the development of all-optical devices. The agreement ran through the end of 2011. The goal of the project was to fabricate and test slot waveguides embedded with two types of nonlinear optical polymers obtained from our Company. These two polymers were PerkinamineTM and Perkinamine NRTM. In CUNY’s final report it showed they successfully demonstrated that the Perkinamine and Perkinamine NR survived their 170o C processing temperature without degradation. According to

their report, they were successful in one processing run wherein they showed the possibility to realize waveguides with very smooth sidewalls. Reflectivity measurements carried out under optical pumping showed phase shift in the PerkinamineTM material. We are continuing research in this area with the University of Colorado, Boulder.

In March 2011 the City University of New York's Laboratory for Nano Micro Photonics (LaNMP) fabricated our first-ever all optical waveguides using PerkinamineTM and Perkinamine NRTM chromophores. It is anticipated that LaNMP could use this device architecture to develop various all-optical devices including an all-optical transistor. This effort, starting with an all-optical switch, is being continued at the University of Colorado, Boulder through an agreement entered into in January 2013.

In December 2011, we announced the discovery of a new material named Perkinamine IndigoTM. We believe this represents a major advancement in the field of organic nonlinear optical materials. The material demonstrated an unusually high electro-optical effect of greater than 250 picometers per volt with excellent thermal and photo stability. Independent research laboratories at Photon-X and The University of Colorado confirmed these characteristics. We do, however, have to do a complete characterization of these materials to fully understand what material properties are causing these results before any of our partners will move forward with this material. The potential large system supplier we are working with will be characterizing the material at their location using their proprietary devices while we continue our work with the University of Colorado, Boulder. In order to further characterize our Perkinamine class of materials, including Perkinamine IndigoTM, the Company has developed Mach-Zehnder interferometry and standard Teng-Man test set-ups in its own facilities. The Company's optical lab is testing and measuring the electro-optic coefficient of our materials.

In June 2012 we opened a new internal research laboratory facility in Newark, Delaware in the Delaware Technology Park, near the University of Delaware. This new lab facility enables us to synthesize and test our materials in the same facility and will help us accelerate our development efforts. It is equipped with state of the art equipment necessary to expand our ability to conduct synthetic chemistry in much more tightly controlled conditions. Additionally, we have equipped a separate advanced optical laboratory at the same location where the necessary testing of material candidates will be performed as they emerge from our new synthesis laboratory.

In July 2012 we entered into an agreement with The University of Colorado, Boulder to conduct analytical testing and to carry out studies that will give a better understanding of the properties of a new class of composite organic electro-optic materials. This class of materials is our Perkinamine IndigoTM. The processing and measurements are to be carried out primarily at the Guided Wave Optics Laboratory (GWOL). The work is being done in close collaboration with Company personnel.

In September 2012 the United States Patent Office granted our Company U.S. Patent No. 8,269,004, entitled Heterocyclical Anti-Aromatic Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

In November 2012 Australia granted our Company Australian Patent No. AU2005302506 entitled Heterocyclical Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

In February 2013 we delivered to a potential large system supplier customer prototype devices that were coated with our advanced organic nonlinear electro-optical polymer, Perkinamine IndigoTM. Tests conducted by the University of Colorado, Boulder on coupons coated with the material demonstrated consistent R33 measurements from 100-125 picometers per volt, which exceeded the potential large system supplier customer's stated requirements.

In March 2013 we entered into a product development contractor agreement with EM Photonics (EMP) of Newark, Delaware to fabricate and test waveguides and phase modulators during an initial development phase using existing EMP polymer modulator design and processes. In June 2013 we consolidated the EMP design program into our University of Colorado, Boulder (UCB) program after we fabricated structures with UCB that will be used as the basic building blocks of our Integrated Optical Device effort for the construction of both our advanced telecom modulator and data communications transceiver.

In April 2013 our potential large system supplier customer informed us that their preliminary testing results on the prototype devices coated with Perkinamine Indigo™ that we delivered to them in February 2013 demonstrated several of the key performance parameters that they desired. There are still additional tests that need to be completed. We are working with our potential customer utilizing our Perkinamine Indigo™ chromophore in a number of host polymers and will evaluate these polymers in conjunction with our chromophores for a specific performance attributes for their application.

In April 2013 Japan granted our Company Japanese Patent No. 5241234 entitled Heterocyclical Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

We ultimately intend to use our next-generation non-linear all-optical and electro-optic polymers for future applications vital to the following industries. We expect to create specific materials for each of these applications as appropriate:

- telecommunications/data communications
- backplane optical interconnects
- cloud computing and data centers
- photovoltaic cells
- medical applications
- satellite reconnaissance
- navigation systems
- radar applications
- optical filters
- special light modulators
- all-optical transistors and
- entertainment

In an effort to maximize our future revenue stream from our non-linear all-optical and electro-optic polymer products, our business model anticipates that our revenue stream will be derived from one or some combination of the following: (i) technology licensing for specific product applications; (ii) joint venture relationships with significant industry leaders; or (iii) the production and direct sale of our own electro-optic device components. Our objective is to be a leading provider of proprietary technology and know-how in the photonic device markets. In order to meet this objective, subject to successful testing of our technology and having available financial resources, we intend to:

- Develop non-linear all-optical and electro-optic polymers and photonic devices;
- Continue to develop proprietary intellectual property;
- Streamline our product development process;
- Develop a comprehensive marketing plan;
- Maintain/develop strategic relationships with government agencies, private firms, and academic institutions; and
- Continue to attract and retain high level science and technology personnel to our Company.

Our Proprietary Products in Development

As part of a two-pronged marketing strategy, our Company is developing several devices, which are in various stages of development that utilize our organic nonlinear optical materials.

They include:

Telecommunications Modulator

We have recently begun a second-generation design of a unique telecommunications modulator incorporating our newly developed material PerkinamineTM Indigo. To date, we have completed phase one of the second-generation design, and the first set of optical structures that will be used as the basic building blocks of our unique telecommunications modulator. We intend to have a working bench-top prototype sometime during 2013 followed by fully packaged modulators for commercial marketing. We anticipate this modulator will be able to exceed the performance of existing legacy modulators by an order of magnitude, and will allow for improvements in the form of reduced power consumption and reduced device cost.

Spatial Light Modulator

We have a development program to develop a Spatial Light Modulator with an outside manufacturer, Boulder Nonlinear Systems (BNS) utilizing certain PerkinamineTM chromophores. A spatial modulator is a form of optical computer that can perform various advanced tasks, such as object and facial recognition, by using advanced mathematical calculations known as Fourier Transforms. Our organic nonlinear optical materials can potentially produce update rates of more than a million times per second, which is a significant improvement in processing speed over existing Liquid Crystal Display technology that updates at only 30 to 60 times per second.

Optical Filter

We are in preliminary design and fabrication phases of development of an optical filter using our proprietary PerkinamineTM and Perkinamine NRTM materials within a SiNx photonics platform. A tunable optical filter is ideal for any application requiring tuning over a wide range of wavelengths. Initial work has been done in collaboration with City University of New York, but limitations in their process capabilities have led us to seek alternate fabrication facilities, which are underway at this time.

All-Optical Switch

An all-optical switch is one that enables signals in optical fibers or networks to be selectively switched from one fiber or circuit to another. Many device designs have been developed and commercialized in today's telecom networks to effect optical switching by using mechanical or electrical control elements to accomplish the switching event. Future networks will require all-optical switches that can be more rapidly activated with a low energy and short duration optical (light) control pulse. We are in early development of an all-optical switch in collaboration with the University of Colorado, Boulder under a sponsored research agreement.

Multi-Channel Optical Modem

We are in early feasibility study of a multi-wavelength optical modem that will enable an order of magnitude increase in Internet capacity over legacy fiber.

Additionally, we must create an infrastructure, including operational and financial systems, and related internal controls, and recruit qualified personnel. Failure to do so could adversely affect our ability to support our operations.

We have incurred substantial net losses since inception. We have satisfied our capital requirements since inception primarily through the issuance and sale of our common stock. During 2004 we raised approximately $529,000 from the issuance of convertible promissory notes, of which $30,000 was converted into common stock of the Company during 2004 and the remaining $499,000 converted in 2005. Also, during 2005, we raised an aggregate of $1,000,000 from the private sale of our common stock. During 2006 we raised approximately $425,000 from the private sale of our common stock, of which $200,000 was rescinded during 2007. During 2007 we raised approximately $2,301,524 from the private sale of our common stock. During 2008 we raised approximately $414,000 from the private sale of our common stock and $375,270 from the exercise of outstanding warrants. Through June 30, 2009, we raised approximately $855,000 from the private sale of our common stock. We also issued shares of our common stock and warrants to purchase shares of our common stock in exchange for services rendered to our Company, including professional services. During October 2009 we obtained proceeds of $455,000 from the exercise of outstanding warrants. During 2010 we raised $1,500,000 from the private sale of our common stock and $539,000 from the exercise of outstanding options and warrants. We also issued shares of our common stock and warrants to purchase shares of our common stock in exchange for services rendered to our Company.

During 2011 we raised $1,000,000 from the private sale of our common stock and warrants to purchase our common stock. We also issued shares of our common stock and warrants to purchase shares of our common stock in exchange for services rendered to our Company.

Additionally, in May 2011, we signed an agreement with Lincoln Park Capital Fund, LLC (“Lincoln Park”) to sell up to $20 million of common stock. Under the agreement subject to certain conditions and at our sole discretion, Lincoln Park has committed to invest up to $20 million in our common stock over a 30-month period. We filed a registration statement with the U.S. Securities and Exchange Commission covering the resale of the shares that may be issued to Lincoln Park. Lincoln Park is obligated to make purchases as we direct in accordance with the agreement, which may be terminated by us at any time, without cost or penalty. Sales of shares are made in specified amounts and at prices that are based upon the market prices of our common stock immediately preceding the sales to Lincoln Park. The agreement expires in December 2013.

During 2011 Lincoln Park purchased 185,185 shares of common stock for proceeds of $200,000. During 2012 Lincoln Park purchased 3,539,100 shares of common stock for proceeds of $4,849,999. Also, during 2012, we raised $447,700 from the exercise of options and warrants. For the six months ending June 30, 2013, Lincoln Park purchased 1,628,386 shares of common stock for proceeds of $1,800,001.

In June 2013 we signed a new agreement with Lincoln Park to sell up to $20 million of common stock. Under the agreement subject to certain conditions and at our sole discretion, Lincoln Park has committed to invest up to $20 million in the Company’s common stock over a 30-month period. We filed a registration statement with the U.S. Securities and Exchange Commission covering the resale of the shares that may be issued to Lincoln Park. Sales of shares will be made in specified amounts and at prices that are based upon the market prices of our Company's common stock.

Results of Operations

Comparison of Three Months Ended June 30, 2013 to Three Months Ended June 30, 2012

Revenues

As a development stage company, we had no revenues during the three months ended June 30, 2013 and 2012. The Company is in various stages of material evaluation and product development with potential customers and expects the next revenue stream to be in prototype devices, application and non-recurring engineering charges and sale of electro-optic polymer materials prior to moving into production.

Operating Expenses

Our operating expenses were $964,502 and $1,009,113 for the three months ended June 30, 2013 and 2012, respectively, for a decrease of $44,611. This is primarily due to increases in salaries and wages, laboratory materials and supplies, laboratory rent, depreciation, laboratory electro-optic device prototype, development and outsourced testing expenses, insurance expense, professional fees, internet and website design, accounting and conferences offset by decreases in non-cash stock option and warrant amortization and legal expenses.

Included in our operating expenses for the three months ended June 30, 2013 was $531,116 for research and development expenses compared to $455,253 for the three months ended June 30, 2012, for an increase of $75,863. This is primarily due to increases in salaries and wages, laboratory materials and supplies, laboratory rent, depreciation and laboratory electro-optic device prototype, development and outsourced testing expenses offset by a decrease in non-cash stock option and warrant amortization.

Research and development expenses currently consist primarily of compensation for employees engaged in internal research, product and application development activities; laboratory operations, outsourced material testing and prototype electro-optic device design, development and processing work; customer testing; fees; costs; and related operating expenses.

We expect to continue to incur substantial research and development expense to develop and commercialize our electro-optic material platform. These expenses will increase as a result of accelerated development effort to support commercialization of our non-linear optical polymer materials technology; outsourcing work to build device prototypes; expanding and equipping in-house laboratories; hiring additional technical and support personnel; engaging a senior technical advisor; pursuing other potential business opportunities and collaborations; customer testing and evaluation; and incurring related operating expenses.

Wages and salaries increased $70,712 from $134,148 for the three months ended June 30, 2012 to $204,860 for the three months ended June 30, 2013 primarily due to additional employees hired to perform in-house material testing and material and device development in the Company's new lab facility. Accordingly laboratory materials and supplies increased $17,918 from $6,142 for the three months ended June 30, 2012 to $24,060 for the three months ended June 30, 2013. Also, laboratory electro-optic device prototype, development and outsourced testing expenses increased $48,397 to $109,737 for the three months ended June 30, 2013 from $61,340 for the three months ended June 30, 2012 as the Company expands its prototype development efforts.

Non-cash stock option amortization decreased $95,604 from $191,956 for the three months ended June 30, 2012 to $96,352 for the three months ended June 30, 2013.

During the second half of 2012, the Company leased additional laboratory space and rent expense increased accordingly $6,538 from $12,960 for the three months ended June 30, 2012 to $19,498 for the three months ended June 30, 2013. Depreciation expense increased $19,743 from $9,282 for the three months ended June 30, 2012 to $29,025 for the three months ended June 30, 2013 primarily due to the additional equipment purchased for the new lab facility.

General and administrative expense consists primarily of compensation and support costs for management staff, and for other general and administrative costs, including executive, sales and marketing, investor relations, accounting and finance, legal, consulting and other operating expenses.

General and administrative expenses decreased $120,474 to $433,386 for the three months ended June 30, 2013 compared to $553,860 for the three months ended June 30, 2012. The decrease is due primarily to decreases in non-cash amortization of options and warrants and legal expense offset by increases in wages and salaries, insurance expense, professional fees, internet and website design, accounting and conferences.

Non-cash stock compensation decreased by $170,779 to $89,163 for the three months ended June 30, 2013 compared to $259,942 for the three months ended June 30, 2012.

Legal fees decreased $17,258 to $51,438 for the three months ended June 30, 2013 compared to $68,696 for the three months ended June 30, 2012.

Wages and salaries increased $13,193 to $127,395 for the three months ended June 30, 2013 from $114,202 for the three months ended June 30, 2012.

Insurance increased $21,229 from $31,523 for the three months ended June 30, 2012 to $52,752 for the three months ended June 30, 2013.

Conferences increased $8,115 to $8,115 for the three months ended June 30, 2013 compared to $0 for the three months ended June 30, 2012.

Internet and website expenses increased $5,786 to $9,208 for the three months ended June 30, 2013 compared to $3,422 for the three months ended June 30, 2012.

Professional fees increased $5,000 to $5,000 for the three months ended June 30, 2013 compared to $0 for the three months ended June 30, 2012.

Accounting fees increased $3,990 to $24,090 for the three months ended June 30, 2013 compared to $20,100 for the three months ended June 30, 2012 primarily for the implementation of an employee stock option software program for interactive option exercises by employees and directors under the 2007 Employee Stock Plan.

We expect general and administrative expense to increase in future periods as we increase the level of corporate and administrative activity, including increases associated with our operation as a public company; and significantly increase expenditures related to the future production and sales of our products.

Other Income (Expense)

Other income (expense) increased $166,170 to ($184,661) for the three months ended June 30, 2013 from ($18,491) for the three months ended June 30, 2012, relating primarily to the commitment fee associated with the resale of shares to an institutional investor of a new agreement for resale during the corresponding three-month period.

Net Loss

Net loss was $1,149,163 and $1,027,604 for the three months ended June 30, 2013 and 2012, respectively, for an increase of $121,559, primarily due to an increase in salaries and wages, laboratory materials and supplies, laboratory rent, depreciation, laboratory electro-optic device prototype, development and outsourced testing expenses, commitment fee to institutional investor, insurance expense, professional fees, internet and website design, accounting and conferences offset by decreases in non-cash stock option and warrant amortization and legal expenses.

Comparison of Six months Ended June 30, 2013 to Six Months Ended June 30, 2012

Revenues

As a development stage company, we had no revenues during the six months ended June 30, 2013 and 2012. The Company is in various stages of material evaluation and product development with potential customers and expects the next revenue stream to be in prototype devices, application and non-recurring engineering charges and sale of electro-optic polymer materials prior to moving into production.

Operating Expenses

Our operating expenses were $1,867,502 and $1,778,712 for the six months ended June 30, 2013 and 2012, respectively, for an increase of $88,790. This increase in operating expenses was due primarily to increases in salaries and wages, laboratory lease rent, depreciation, laboratory materials and supplies, insurance expense, accounting, and conferences offset by decreases in laboratory electro-optic device prototype, development and outsourced testing expenses, non-cash stock option and warrant amortization and legal expenses.

Included in our operating expenses for the six months ended June 30, 2013 was $986,498 for research and development expenses compared to $927,662 for the six months ended June 30, 2012, for an increase of $58,836. This is primarily due to increases in salaries and wages, laboratory materials and supplies, laboratory rent and depreciation offset by decreases in laboratory electro-optic device prototype, development and outsourced testing expenses and non-cash stock option and warrant amortization.

Research and development expenses currently consist primarily of compensation for employees engaged in internal research, product and application development activities; laboratory operations, outsourced material testing and prototype electro-optic device design, development and processing work; customer testing; fees; costs; and related operating expenses.

We expect to continue to incur substantial research and development expense to develop and commercialize our electro-optic material platform. These expenses will increase as a result of accelerated development effort to support commercialization of our non-linear optical polymer materials technology; outsourcing work to build device prototypes; expanding and equipping in-house laboratories; hiring additional technical and support personnel; engaging a senior technical advisor; pursuing other potential business opportunities and collaborations; customer testing and evaluation; and incurring related operating expenses.

Wages and salaries increased $107,231 from $269,963 for the six months ended June 30, 2012 to $377,194 for the six months ended June 30, 2013 primarily due to additional employees hired to perform in-house material testing and material and device development in the Company's new lab facility. Accordingly laboratory materials and supplies increased $15,587 from $22,594 for the six months ended June 30, 2012 to $38,181 for the six months ended June 30, 2013. Also, laboratory electro-optic device prototype, development and outsourced testing expenses decreased $7,701, to $167,620 for the six months ended June 30, 2013 from $175,321 for the six months ended June 30, 2012.

Non-cash stock option amortization decreased $114,244 from $340,881 for the six months ended June 30, 2012 to $226,637 for the six months ended June 30, 2013.

During the second half of 2012, the Company leased additional laboratory space and rent expense increased accordingly $23,376 from $15,621 for the six months ended June 30, 2012 to $38,997 for the six months ended June 30, 2013. Depreciation expense increased $35,648 from $15,726 for the six months ended June 30, 2012 to $51,374 for the six months ended June 30, 2013 primarily due to the additional equipment purchased for the new lab facility.

General and administrative expense consists primarily of compensation and support costs for management staff, and for other general and administrative costs, including executive, sales and marketing, investor relations, accounting and finance, legal, consulting and other operating expenses.

General and administrative expenses increased $29,954 to $881,004 for the six months ended June 30, 2013 compared to $851,050 for the six months ended June 30, 2012. The increase is due primarily to increases in wages and salaries, insurance expense, accounting and conferences offset by decreases in non-cash amortization of options and warrants and legal expense.
In May 2012, the board of directors appointed its current Non-Executive Chairman of the board of directors as its Executive Chairman of the board of directors and Chief Executive Officer. As a result, wages and salaries increased $54,266 to $255,973 for the six months ended June 30, 2013 from $201,707 for the six months ended June 30, 2012.

Non-cash stock compensation decreased by $93,980 to $228,802 for the six months ended June 30, 2013 compared to $322,782 for the six months ended June 30, 2012.

Insurance increased $46,308 from $53,378 for the six months ended June 30, 2012 to $99,686 for the six months ended June 30, 2013.

Accounting fees increased $7,390 to $46,990 for the six months ended June 30, 2013 compared to $39,600 for the six months ended June 30, 2012 primarily for the implementation of an employee stock option software program for interactive option exercises by employees and directors under the 2007 Employee Stock Plan.

Conferences increased $8,445 to $9,060 for the six months ended June 30, 2013 compared to $615 for the six months ended June 30, 2012.

Legal fees decreased $8,186 to $89,272 for the six months ended June 30, 2013 compared to $97,458 for the six months ended June 30, 2012.

We expect general and administrative expense to increase in future periods as we increase the level of corporate and administrative activity, including increases associated with our operation as a public company; and significantly increase expenditures related to the future production and sales of our products.

Other Income (Expense)

Other income (expense) increased $83,894 to ($204,132) for the six months ended June 30, 2013 from ($120,238) for the six months ended June 30, 2012, relating primarily to the commitment fee associated with the resale of shares to an institutional investor of new agreement for resale during the corresponding six-month period.

Net Loss

Net loss was $2,071,634 and $1,898,950 for the six months ended June 30, 2013 and 2012, respectively, for an increase of $172,684, due primarily to increases in salaries and wages, laboratory lease rent, depreciation, laboratory materials and supplies, insurance expense, accounting, conferences and commitment fee to institutional investor offset by decreases in outsourced testing expenses, non-cash stock option and warrant amortization and legal expenses.

Significant Accounting Policies

Our discussion and analysis of our financial condition and results of operations are based on our 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 and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates based upon historical experience and various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Our actual results may differ materially from these estimates.

We believe our significant accounting policies affect our more significant estimates and judgments used in the preparation of our financial statements. Our Annual Report on Form 10-K for the year ended December 31, 2012 contains a discussion of these significant accounting policies. There have been no significant changes in our significant accounting policies since December 31, 2012. See our Note 1 in our unaudited financial statements for the six months ended June 30, 2013, as set forth herein.

Liquidity and Capital Resources

During the six months ended June 30, 2013, net cash used in operating activities was $1,374,206 and net cash used in investing activities was $126,015, which was due primarily to the Company's research and development activities and general and administrative expenditures. Net cash provided by financing activities for the six months ended June 30, 2013 was $1,822,525. At June 30, 2013, our cash and cash equivalents totaled $3,259,183, our assets totaled $4,282,153, our liabilities totaled $210,503, and we had stockholders' equity of $4,071,650.

Sources and Uses of Cash

Our future expenditures and capital requirements will depend on numerous factors, including: the progress of our research and development efforts; the rate at which we can, directly or through arrangements with original equipment manufacturers, introduce and sell products incorporating our polymer materials technology; the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights; market acceptance of our products and competing technological developments; and our ability to establish cooperative development, joint venture and licensing arrangements. We expect that we will incur approximately $3,000,000 of expenditures over the next 12 months. Our cash requirements are expected to increase at a rate consistent with the Company's path to revenue growth as we expand our activities and operations with the objective of commercializing our electro-optic polymer technology during 2013. We continue to develop and test our next generation electro-optic and third-order material platform to support and cultivate potential customers, strategic partners and develop photonic devices. Management believes our initial revenue stream will be in prototype devices, application and non-recurring engineering charges, and material charges for specialty non-linear application prior to moving into full commercialization and production.

Our business does not presently generate the cash needed to finance our current and anticipated operations. Presently, our Company has a cash position of approximately $3,020,000; based upon our current cash position and expenditures of approximately $250,000 per month and no debt service, management believes we have sufficient funds currently to finance our operations through July 2014. We plan to continue obtaining additional financing, now and in the future, until such time that we can conduct profitable revenue-generating activities.

Such future sources of financing may include cash from equity offerings, exercise of stock options, warrants and proceeds from debt instruments; but we cannot assure you that such equity or borrowings will be available or, if available, will be at rates or prices acceptable to us.

In May 2011 we signed our stock purchase agreement with Lincoln Park whereby subject to certain conditions and at our sole discretion, Lincoln Park has committed to purchase up to $20 million of our common stock over a 30-month period. We registered for resale by Lincoln Park 10,000,000 shares of our common stock in June 2011. The stock purchase agreement expires in December 2013. In June 2013 we signed our new stock purchase agreement with Lincoln Park to sell up to $20 million of common stock whereby subject to certain conditions and at our sole discretion, Lincoln Park has committed to purchase up to $20 million of our common stock over a 30-month period. We filed a registration statement with the U.S. Securities and Exchange Commission covering the resale of the shares that may be issued to Lincoln Park pursuant to the new stock purchase agreement. Pursuant to both agreements, Lincoln Park is obligated to make purchases as the Company directs in accordance with the purchase agreements,

which may be terminated by the Company at any time, without cost or penalty. Sales of shares will be made in specified amounts and at prices that are based upon the market prices of our Company's common stock immediately preceding the sales to Lincoln Park. We expect this financing to provide our Company with sufficient funds to maintain its operations for the foreseeable future. With the additional capital, we expect to achieve a level of revenues attractive enough to fulfill our development activities and adequate enough to support our business model for the foreseeable future. We cannot assure you that we will meet the conditions of the stock purchase agreement with Lincoln Park in order to obligate Lincoln Park to purchase our shares of common stock. In the event we fail to do so, and other adequate funds are not available to satisfy either short-term or long-term capital requirements, or if planned revenues are not generated, we may be required to substantially limit our operations. This limitation of operations may include reductions in capital expenditures and reductions in staff and discretionary costs.

There are no trading volume requirements or restrictions under the purchase agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park. Lincoln Park has no right to require any sales by us, but is obligated to make purchases from us as we direct in accordance with the purchase agreement. We can also accelerate the amount of common stock to be purchased under certain circumstances. There are no limitations on use of proceeds, financial or business covenants, restrictions on future funding, rights of first refusal, participation rights, penalties or liquidated damages in the purchase agreement. We may terminate the purchase agreement at any time, at our discretion, without any penalty or cost to us. Lincoln Park may not assign or transfer its rights and obligations under the purchase agreement.

We expect that our cash used in operations will increase during 2013 and beyond as a result of the following planned activities:

- The addition of management, sales, marketing, technical and other staff to our workforce;
- Increased spending for the expansion of our research and development efforts, including purchases of additional laboratory and production equipment;
- Increased spending in marketing as our products are introduced into the marketplace;
- Developing and maintaining collaborative relationships with strategic partners;
- Developing and improving our manufacturing processes and quality controls; and
- Increases in our general and administrative activities related to our operations as a reporting public company and related corporate compliance requirements.

Analysis of Cash Flows

Net cash used in operating activities was $1,374,206 for the six months ended June 30, 2013, primarily attributable to the net loss of $2,071,634 adjusted by $78,071 in warrants issued for services, $377,368 in options issued for services, $204,274 in common stock issued for services, $59,333 in depreciation expenses and patent amortization expenses, ($76,793) in prepaid expenses and $55,175 in accounts payable and accrued expenses. Net cash used in operating activities consisted of payments for research and development, legal, professional and consulting expenses, rent and other expenditures necessary to develop our business infrastructure.

Net cash used by investing activities was $126,015 for the six months ended June 30, 2013, consisting of $26,493 in cost for intangibles and $99,522 in asset additions primarily for the new lab facility.

Net cash provided by financing activities was $1,822,525 for the six months ended June 30, 2013 and consisted of $1,800,000 proceeds from resale of common stock to an institutional investor and $22,525 from the exercise of warrants.

Inflation and Seasonality

We do not believe that our operations are significantly impacted by inflation. Our business is not seasonal in nature.

BUSINESS

General

Lightwave Logic, Inc. is developing a new generation of advanced organic nonlinear materials to be used to make electro-optic polymers and non-linear all-optical polymers and devices that utilize them. These polymer-based materials, when used in modulators or waveguide structures, can convert high-speed electronic signals into optical (light) signals for use in communications systems, high-speed data transfer or advanced high speed computing. In the case of nonlinear all-optical polymers, certain of our Company's materials can be used in devices that use light waves to switch other light waves, in other words, have third-order properties.

Organic material with electro-optic characteristics is the core active ingredient in high-speed fiber-optic telecommunication systems. Utilizing our proprietary technology, we are in the process of engineering advanced organic polymers that we believe may lead to significant performance advancements, component size and cost reduction, ease of processing, and thermal and temporal stability. We believe that polymer materials engineered at the molecular level may have a significant role in the future development of commercially significant electro-optic related products.

Our organic materials work by affecting the optical properties of light in the presence of an electric field at extremely high frequencies (wide bandwidths), but possess inherent advantages to inorganic materials.

Currently, the core electro-optic material contained in most modulators is a crystalline material, such as lithium niobate or gallium arsenide. The following chart describes some of the characteristics of crystalline materials and electro-optical polymers.

Crystalline Materials	Electro-optical Polymers
Must be manufactured in strict dust-free conditions since even slight contamination can render them inoperable	Capable of being manufactured in less stringent environmental conditions. Capable of being tailored at the molecular level for optimal performance characteristics
More expensive to manufacture	Less expensive to manufacture
Limited to telecommunication speeds that are less than 40Gb/s (40 billion digital bits of data per second)	Demonstrated the ability to perform at speeds that are greater than 100Gb/s (100 billion digital bits of data per second)
Lithium niobate devices require large power levels (modulation voltages) to operate and are large in size -- typically measuring about four inches long (considering that most integrated circuits are literally invisible to the naked eye, these devices are enormous)	Require significantly lower power levels, up to 60% less (modulation voltages) to operate and are capable of miniaturization
Requires more elaborate, expensive mechanical packaging (housings) generally comprised of materials, such as gold-plated Kovar, in order to assure operational integrity over required time	Initial tests indicate no requirement for more elaborate, expensive packaging (housings)

and operating temperature ranges

We consider organic polymers with electro-optic qualities to be the most feasible technology for future high-speed (wide bandwidth) electronic-optical conversion. Due to the ease of processing afforded by electro-optic polymers, as well as their capacity to foster component size reduction, we believe electro-optic polymers have the potential to replace existing high-speed fiber-optics components that are used today in many commercial and military applications.

We also believe the miniaturization provided by advanced electro-optic polymers may allow for the successful fabrication of chip-to-chip (backplane) optical interconnect devices for computers that create the high-speed data transmission necessary for extremely high-speed computations. Further, we believe that additional potential applications for electro-optic polymers may include phased array radar, cable television (CATV), input-output devices for large data center applications, high speed computing, electronic counter measure (ECM) systems, ultra-fast analog-to-digital conversion, land mine detection, radio frequency photonics, spatial light modulation and all-optical (light-switching-light) signal processing.

Our Electro-Optic Technology Approach

Our proposed solution to produce high-performance, high-stability electro-optic polymers for high-speed (wide bandwidth) telecommunication applications lies in a less mainstream, yet firmly established, scientific phenomenon called aromaticity. Aromaticity causes a high degree of molecular stability. It is a molecular arrangement wherein atoms combine into multi-membered rings and share their electrons among each other. Aromatic compounds are 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.

For the past two decades, corporations as well as numerous universities and U.S. Government Agencies, have been attempting to produce high-performance, high-stability electro-optic polymers for high-speed (wide bandwidth) telecommunication applications. These efforts have largely been unsuccessful due, in our opinion, to the industry's singular adherence to an industry pervasive engineering model known as the Bond Length Alternation (BLA) theory model. The BLA model, like all other current industry-standard molecular designs, consists of molecular designs containing long strings of atoms called polyene chains. Longer polyene chains provide higher electro-optic performance, but are also more susceptible to environmental threats, which result in unacceptably low-performing, thermally unstable electro-optic polymers.

As a result, high frequency modulators engineered with electro-optic polymers designed on the BLA model or any other polyene chain design models are unstable over typical operating temperature ranges, and often exhibit performance degradation within days, hours or even minutes. Similarly, lower frequency modulators exhibit comparable failings, but to a lesser extent. These flaws, in most cases, have prevented commercial quality polymer-based modulators operating at 10-40Gb/s from entering the commercial marketplace. The thermal stability of these devices does not generally meet the minimum Telcordia GR-468 operating temperature range (-40 degrees Celsius to +85 degrees Celsius) much less the more harsh MILSPEC 883D (military specification) range of -55 degrees Celsius to 150 degrees Celsius.

None of our patented molecular designs rely on the BLA polyene chain design model.

Our Intellectual Property

We have the following issued U.S. Patents:

US 7 919 619 - Heterocyclical Chromophore Architectures (Granted April 5, 2011)
US 7 894 695- Tricyclic Spacer Systems for Nonlinear Optical Devices (Granted – February 22, 2011)
US 8 269 004- Heterocyclical Chromophore Architectures (Granted September 18, 2012)
US 8 298 326 - Tricyclic Spacer Systems for Nonlinear Optical Devices (Granted- October 30, 2012)

We also have the following issued Australian Patent:

AU 2005302506 - Heterocyclical Chromophore Architectures (Granted November 29, 2012)

In April 2013 Japan granted our Company Japanese Patent No. 5241234 entitled Heterocyclical Chromophore Architectures. This patent protects the unique molecular structures that give our chromophores the thermal stability necessary to withstand CMOS processing temperatures without compromising electro-optical effects.

In addition, we have twenty-six pending patent applications (including six patent families with applications in Australia, Canada, China, European Patent Office, Japan and the U.S. based on the PCT and U.S. applications below) in the field of nonlinear optic chromophore design as follows:

12/956597- Stable Free Radical Chromophores, processes for preparing the same.
13/307663- Stable Free Radical Chromophores, processes for preparing the same.

PCT/US05/39212- Tricyclic Spacer Systems for Nonlinear Optical Devices
PCT/US05/39664- Anti-Aromatic Chromophore Architectures
PCT/US05/39213- Heterocyclical Anti-Aromatic Chromophore Architectures
PCT/US05/39010- Heterocyclical Chromophore Architectures
PCT/US06/11637- Heterocyclical Chromophore Architectures with Novel Electronic Acceptor Systems.

Heterocyclical Anti-Aromatic Systems Two of our provisional patents cover heterocyclical anti-aromatic electronic conductive pathways, which are the heart of our high-performance, high-stability molecular designs. The completely heterocyclical nature of our molecular designs "lock" conductive atomic orbitals into a planar (flat) configuration, which provides improved electronic conduction and a significantly lower reaction to environmental threats (e.g. thermal, chemical, photochemical, etc.) than the BLA design paradigm employed by other competitive electro-optic polymers. The anti-aromatic nature of these structures dramatically improves the "zwitterionic-aromatic push-pull" of the systems, providing for low energy charge transfer. Low energy charge transfer is important for the production of extremely high electro-optic character.

Heterocyclical Steric Hindering System This patent describes a nitrogenous heterocyclical structure for the integration of steric hindering groups that are necessary for the nanoscale material integration. Due to the [pi]-orbital configuration of the nitrogen bridge, this structure has been demonstrated not to interfere with the conductive nature of the electronic conductive pathway and thus is non-disruptive to the electro-optic character of the core molecular construction. The quantum mechanical design of the system is designed to establish complete molecular planarity (flatness) for optimal performance.

Totally Integrated Material Engineering System This patent covers material integration structures under a design strategy known as Totally Integrated Material Engineering. These integration structures provide for the "wrapping" of the core molecule in sterically hindering groups that maximally protect the molecule from environmental threats and maximally protect it from microscopic aggregation (which is a major cause of performance degradation and optical loss) within a minimal molecular volume. These structures also provide for the integration of polymerizable groups for integration of materials into a highly stable cross-linked material matrix.

Historic Breakthroughs and Results

During 2004, independent quantum mechanical calculations performed on our electro-optic polymer designs at government laboratories located at the Naval Air Warfare Center Weapons Division in China Lake, California suggested that our initial aromatic molecules perform two and a half (2.5) to three and three-tenths (3.3) times more efficiently than currently available telecom grade electro-optic polymers. Our conclusion was that performance improvements of this magnitude indicate a significant breakthrough in the field of fiber-optic telecommunication.

In May and June of 2006, performance evaluations of one of our first extremely high-performance electro-optic materials were performed by electro-optic expert, Dr. C.C. Teng, co-inventor of the renowned Teng-Man test, and subsequently confirmed by the University of Arizona's College of Optical Sciences. Under identical laboratory conditions at low molecular loadings, one of our molecular designs outperformed one of the industry's highest performance electro-optic systems by a factor as high as 650%. Our conclusion was that the Teng-Man test established the validity of our novel, patent pending molecular design paradigm known as CSC (Cyclical Surface Conduction) theory; and that the success of CSC theory has the potential to establish the fundamental blueprint of electro-optic material design for decades to come, and to have broad application in commercial and military telecommunication and advanced computational systems.

On September 25, 2006 we obtained independent laboratory results that confirmed the thermal stability of our PerkinamineTM electro-optic materials. Thermal stability as high as 350 degrees Celsius was confirmed, significantly exceeding many other then commercially available high performance electro-optic materials, such as CLD-1 that exhibits thermal degradation in the range of 250 degrees Celsius to 275 degrees Celsius. This high temperature stability of our materials eliminates a major obstacle to vertical integration of electro-optic polymers into standard microelectronic manufacturing processes (e.g. wave/vapor-phase soldering) where thermal stability of at least 300 degrees Celsius is required. In independent laboratory tests, ten-percent material degradation, a common evaluation of overall thermal stability, did not occur until our PerkinamineTM materials base was exposed to temperatures as high as 350 degrees Celsius, as determined by Thermo-Gravimetric Analysis (TGA). The test results supported our Company's progress to introduce our materials into commercial applications such as optical interconnections, high-speed telecom and datacom modulators, and military/aerospace components.

In July 2007, our Company developed an innovative process to integrate our unique architecture into our anticipated commercial devices, whereby dendritic spacer systems are attached to its core chromophore. In the event we are successful in developing a commercially viable product, we believe these dendrimers will reduce the cost of manufacturing materials and reduce the cost and complexity of tailoring the material to specific customer requirements.

In March 2008, we commenced production of our first prototype photonic chip, which we delivered to Photon-X, LLC to fabricate a prototype polymer optical modulator and measure its technical properties. In June 2009 we released test results conducted by Dr. C.C. Teng that re-confirmed our previous test results.

In August 2009, Photon-X, LLC commenced a compatibility study, process sequences, and fabricated wafers/chips containing arrays of phase modulators. The first one hundred plus modulators (bench top devices) were completed at the end of October 2009, and were successfully characterized for insertion loss, Vpi, modulation dynamic range and initial frequency response in March 2010. The multi-step manufacturing process we utilized to fabricate our modulators involved exposing our proprietary PerkinamineTM materials to extreme conditions that are typically found in standard commercial manufacturing settings. Our step-by-step analysis throughout the fabrication process demonstrated to us that our PerkinamineTM materials could successfully withstand each step of the fabrication process without damage.

In August 2009, we retained Perdix, Inc. in Boulder, Colorado to help us identify and build prototype products for high growth potential target markets in fiber optic telecommunications systems. During October 2009, we initiated the development and production of our prototype amplitude modulator, which can ultimately be assembled into 1- and 2-dimensional arrays that are useful for optical computing applications, such as encryption and pattern recognition.

In March 2010 we successfully concluded initial electrical and optical performance testing stage of our prototype phase modulator and began Application Engineering of our technology in customer design environments and working directly with interested large system suppliers to attempt to engineer specific individual product materials and device designs for sale to or by these suppliers.

In October of 2010 we completed the concept stage of a novel design for an advanced optical computing application and moved forward into the design stage with Celestech, Inc. of Chantilly, Virginia. If this project moves forward it will incorporate one of our advanced electro-optical polymer materials.

In October of 2010 we announced the results of testing performed by Lehigh University that demonstrated the Third-order non-linear properties of our proprietary molecules in the Perkinamine NRTM chromophore class. Lehigh University determined that the material was 100 times stronger than the highest off-resonance small molecule currently known. They also determined that it was 2,600 times more powerful than fused silica and demonstrated extremely fast (less than 1 picosecond) photo-induced non-linear response that would be capable of modulation at raters of 1 THz (terahertz).

In March 2011 we entered into a research and development agreement with the City University of New York’s Laboratory for Nano Micro Photonics (LaNMP) to develop Third-order non-linear devices. The combination of LaNMP’s device capabilities together with our materials expertise should accelerate the development of all-optical devices.

In March 2011 the City University of New York’s Laboratory for Nano Micro Photonics (LaNMP) fabricated our first-ever all optical waveguides using PerkinamineTM and Perkinamine NRTM chromophores. It is anticipated that LaNMP could use this device architecture to develop various all-optical devices including an all-optical transistor. This effort, starting with an all-optical switch, is being continued at the University of Colorado, Boulder through an agreement entered into in January 2013.

In March 2011 we announced a two-year research and development collaboration with the University of Alabama to explore the advanced energy capture properties of our PerkinamineTM class of chromophores. Our material absorbs light across a wide range of wavelengths from near infrared into the near ultraviolet. We have subsequently ended our relationship with the University.

In December 2011, we announced the discovery of a new material named Perkinamine IndigoTM. We believe this represents a major advancement in the field of organic nonlinear optical materials. These are initial results and we have much to learn about how to harness full potential of Perkinamine IndigoTM. The material demonstrated an

unusually high electro-optical effect of greater than 250 picometers per volt at 1550 nanometers with excellent thermal and photo stability. Independent research laboratories at Micron Inc., Photon-X and The University of Colorado confirmed these characteristics.

In June 2012 we opened a new internal research laboratory facility in Newark, Delaware in the Delaware Technology Park, near the University of Delaware. This new lab facility enables us to synthesize and test our materials in the same facility and will help us accelerate our development efforts. It is equipped with state of the art equipment necessary to expand our ability to conduct synthetic chemistry in much more tightly controlled conditions. Additionally, we have equipped a separate advanced optical laboratory at the same location where the necessary testing of material candidates will be performed as they emerge from our new synthesis laboratory.

In July 2012 we entered into an agreement with The University of Colorado, Boulder to conduct analytical testing and to carry out studies that will give a better understanding of the properties of a new class of composite organic electro-optic materials. This class of materials is our Perkinamine IndigoTM. The processing and measurements are to be carried out primarily at the Guided Wave Optics Laboratory (GWOL). The work is being done in close collaboration with Company personnel.

In February 2013 we delivered to a potential large system supplier customer prototype devices that were coated with our advanced organic nonlinear electro-optical polymer, Perkinamine IndigoTM. Tests conducted by the University of Colorado, Boulder on coupons coated with the material demonstrated consistent R33 measurements from 100-125 picometers per volt, which exceeded the potential large system supplier customer's stated requirements.

In March 2013 we entered into a product development contractor agreement with EM Photonics (EMP) of Newark, Delaware to fabricate and test waveguides and phase modulators during an initial development phase using existing EMP polymer modulator design and processes.

In June 2013 we consolidated the EMP design program into our University of Colorado, Boulder (UCB) program after we fabricated structures with UCB that will be used as the basic building blocks of our Integrated Optical Device effort for the construction of both our advanced telecom modulator and data communications transceiver.

In April 2013 our potential large system supplier customer informed us that their preliminary testing results on the prototype devices coated with Perkinamine Indigo™ that we delivered to them in February 2013 demonstrated several of the key performance parameters that they desired. There are still additional tests that need to be completed. We are working with our potential customer utilizing our Perkinamine Indigo™ chromophore in a number of host polymers and will evaluate these polymers in conjunction with our chromophores for a specific performance attributes for their application.

The Electro-Optic Device Market

General

Electro-optic devices such as fiber-optic modulators translate electric signals into optical signals. Such devices are used in communication systems to transfer data over fiber-optic networks. Optical data transfer is significantly faster and more efficient than transfer technologies using only electric signals, permitting more cost-effective use of bandwidth for broadband Internet and voice services.

Two distinct technologies currently exist for the fabrication of fiber-optic devices, such as fiber-optic modulators. The first, which is the more traditional technology, utilizes an electro-optically active inorganic core crystalline material (e.g. lithium niobate). The second, which is the focus of the Company's research and development, involves the exploitation of electro-optic polymers.

Traditional Technology - Inorganic Crystals

Traditional technology translates electric signals into optical signals generally relying upon electro-optic materials, such as lithium niobate or gallium arsenide. Five of the largest inorganic fiber-optic component manufactures hold approximately 85% of the electro-optic modulator component market. They are JDSU, Sumitomo, Oclaro, Fujitsu and ThorLabs. These companies are heavily invested in the production of crystalline-based electro-optic modulator technologies, as well as the development of novel manufacturing techniques and integrated laser/modulator designs. While each company possesses their own modulator design and processing patents, the underlying core constituents (lithium niobate, gallium arsenide, indium phosphide) occur in nature and as such cannot be patented.

New Technology - Organic Polymers

Our developing technology that translates electric signals into optical signals relies upon organic electro-optic materials, such as electro-optic polymers. Electro-optic polymers involve the material integration of specifically engineered organic (carbon-based) compounds. The molecular designs of these compounds are precise and do not occur naturally; thus they may be protected under patent law.

Polymer-based electro-optic modulators may provide considerable advantages over traditional inorganic fiber-optic technology in terms of:

- Cost
- Size and versatility
- Modulating/switching speed
- Optical transmission properties

- Lower operating voltages
- Generate less heat

We hold an extensive amount of internally developed intellectual property in the field of electro-optic molecular design that, as a whole, attempts to fundamentally solve these and other problems associated with these molecular structures. We believe our provisional patents describe broad, highly unique techniques for novel paradigms in molecular design.

Our innovative solution lies in a very well known scientific phenomenon called aromaticity, which causes a high degree of molecular stability. Aromaticity is a molecular arrangement wherein atoms combine into multi-membered 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. Until now, to our knowledge, no one has been able to propose molecular designs that could effectively exploit aromaticity in the design of a high-performance electro-optic polymer.

We believe now that we have fabricated electro-optic molecular architectures that do in fact exhibit extremely high thermal stability, our technologies may soon replace inorganic electro-optic materials in the marketplace due to their considerable advantages over traditional inorganic fiber-optic materials.

Our Target Markets

Our proprietary electro-optic polymers are designed at the molecular level for potentially superior performance, stability and cost-efficiency and we believe may have the potential to replace more expensive, lower-performance materials and devices used in fiber-optic ground, wireless and satellite communication networks. We believe our organic electro-optic polymers may have broad applications in civilian and military telecommunications and advanced computational systems. Potential future applications may include: (i) telecommunications/data communications; (ii) backplane optical interconnects; (iii) cloud computing and data centers; (iv) photovoltaic cells; (v) medical applications; (vi) satellite reconnaissance; (vii) navigation systems; (viii) radar applications; (ix) optical filters; (x) spatial light modulators; (xii) all-optical transistors and (xiii) entertainment.

Telecommunications/Data Communications

Telecommunications is one of the primary initial target applications for electro-optic polymers. Telecommunication companies are currently faced with the enormous challenge to keep up with the tremendous explosion in demand for bandwidth due to the popularity of Internet enabled devices accessing all forms of streaming media, along with voice messaging, text messaging and cloud based data access.

The challenge for these companies is converting digital information in the form of electric signals into optical information and back. Their networks rely upon optical modulators based around inorganic materials, such as lithium niobate, to accomplish this task. These existing legacy modulators have inherent limitations in terms of maximum data rates, error correction, and costs associated with their manufacture and other operating costs related to drive voltage and heat dissipation due to the complexities of producing single crystalline ingots of sufficient diameter (3 to 5 inches). Also, strict environmental controls must be enforced during the growth of the core crystalline material.

Replacing these inorganic materials with organic polymer materials made with PerkinamineTM chromophores would offer significant improvements in data rates; reduce form factor; require less error correction along with a significant reduction in drive voltage leading to less heat dissipation and hence reduce the overall cost of operation with regard to site cooling. Polymers are not inherently costly to produce nor do they require such strict environmental conditions. Due to their material flexibility (e.g. ability to more easily mold into specific topologies) they are expected to enable smaller, cheaper, faster, less expensive, and more integrated network components. In many laboratory tests, electro-optic polymers have demonstrated substantial (3-10x) transmission data speed improvements over crystalline technologies (lithium niobate, gallium arsenide, indium phosphide).

Backplane Optical Interconnects

Organic nonlinear polymer based devices offer advantages in Active Optical cables that are used in data communications in computer-to-computer or server-to-server applications. It is reported that backplane optical interconnects are envisioned by members within leading corporations (including IBM, Intel and Agilent Technologies) as the future of high-speed computation. These components can potentially replace copper circuitry with photons carrying digital information over fiber optic cable in CPU architecture to manage CPU-to-graphics, CPU–to-memory and CPU-to-I/O device interactions that have previously operated over an internal electrical bus. On-Chip optical buses can increase performance and decrease cost. They could speed the transmission of information within an integrated circuit, among integrated circuit chips in a module, and across circuit boards at speeds unattainable with traditional metallic interconnections and bus structures. Additionally, our organic polymer material

possesses the thermal stability necessary to survive Complementary Metal Oxide Semiconductor (CMOS) processing temperatures that gives it the ability to be spin-coated directly on silicon substrates. In the future, all-optical (light-switching-light) signal processing could become possible using an advanced version of our chemistry.

Cloud computing and data centers

Big data is a general term used to describe the voluminous amount of unstructured and semi-structured data a company creates -- data that would take too much time and cost too much money to load into a relational database for analysis. Companies are looking to cloud computing in their data centers to access all the data. Inherent speed and bandwidth limits of traditional solutions and the potential of organic polymer devices offer an opportunity to increase the bandwidth, reduce costs and improved speed of access.

Photovoltaic Cells

A solar cell (also called a photovoltaic cell) is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect. It is a form of photoelectric cell (in that it's electrical characteristics—e.g. current, voltage, or resistance—vary when light is incident upon it) which, when exposed to light, can generate and support an electric current without being attached to any external voltage source. These cells are very inefficient. Organic nonlinear polymers offer potential increases in the efficiency of photovoltaic cells that could be orders of magnitude greater than LCD technology.

Medical Applications

Medical Applications for electro-optic polymers have been proposed for many varied applications, including dentistry, oncology and protein identification. Although experimental, it is believed that the successful fabrication of high-stability electro-optic polymers could open up many future applications such as these. Other medical applications such as the higher-speed transmission of medical records, X-ray and MRI scans over the Internet would be improved by the broadening of Internet bandwidth.

Satellite Reconnaissance

Satellite reconnaissance applications include a specific target market within the Department of Defense, the 14-member Intelligence Community and their contractors. Electro-optic polymers have historically been seen as attractive for potential application in this market due to the constant need for the fastest bandwidth transmission to meet the needs of national security.

Navigation Systems

Navigation systems for both advanced aerial and missile guidance require the use of electro-optic gyroscopes. These devices are currently fabricated out of lithium niobate or similar electro-optic materials; the application of electro-optic polymers would facilitate the development of more accurate and architecturally simple device designs.

Radar Applications

Radar Applications, specifically phased array radar, has been traditionally understood as a potential application for successful electro-optic material designs, along with electronic counter measure systems (ECM) systems, ultra-fast analog-to-digital conversion, land mine detection, radio frequency photonics and spatial light modulation.

Optical Filters

Optical filters are devices that utilize optical waveguides and various other structures like ring resonators that can be made with organic nonlinear materials that can filter out a specific wavelengths from one waveguide and redirect them to a different waveguide.

Spatial Light Modulators

Spatial Light Modulators (SLMs) are optical computing devices that can be used in various recognition applications by collecting and correlating optical input to stored images in a database using complex mathematical computations based around calculated light intensity at various point on an image. Existing Liquid Crystal display technology that is accurate, but too slow for widespread adoption has hampered proliferation of these devices.

All-Optical Transistors

All-optical transistors are expected to be included in the future market of all-optic devices. All-optical devices convert data in the form of input light signals to a secondary light data stream. Some experts anticipate that all-optical transistors will replace traditional transistors used today in microprocessors. All-optical transistors are expected to enable the fabrication of an entirely new high-speed generation of "polymer" based computers that operate on light instead of electricity, which in turn should significantly improve computation speeds.

Entertainment

Entertainment applications, including CATV and Internet, are a highly important potential application subdivision of the telecommunication market. The ever-increasing number of entertainment services such as VOD (video on demand) and digital cable, as well as the future ability to download television and movies real-time from the Internet, drives the demand for ever-increasing bandwidth. Flexible displays utilizing organic light emitting diodes are inherently compatible with our polymer waveguides.

Our Business Strategy

The Company has recently revised its business strategy from a materials only approach into a strategy that includes developing devices, components and potentially sub-systems. Our economic model anticipates that our revenue stream will be derived from one or some combination of the following: (i) technology licensing for specific product application; (ii) joint venture relationships with significant industry leaders; or (iii) the production and direct sale of our own electro-optic device components. Our objective is to be a leading provider of proprietary technology and know-how in the electro-optic device market. In order to meet this objective, we intend, subject to successful testing of our technology and having available financial resources, to:

- Develop non-linear all-optical and electro-optic polymers and photonic devices.
- Continue to develop proprietary intellectual property.
- Streamline our product development process.
- Develop a comprehensive marketing plan.
- Maintain/develop strategic relationships with government agencies, private firms, and academic institutions.
- Continue to attract and retain high level science and technology personnel to our Company.

Develop Electro-Optic Product Devices

We intend to utilize our proprietary optical polymer technology to create an initial portfolio of commercially feasible electro-optic polymer product devices and applications for various markets, including telecommunications and government. We expect our initial product device line to include high-speed 40Gb/s and 100Gb/s modulators and system applications.

Continue to Develop Proprietary Intellectual Property

We plan to advance our core competence in electro-optic polymer technology by continuing to develop proprietary materials, processes, designs and devices. We also plan to protect our technology by filing patent applications where appropriate, obtaining exclusive technology rights where available, and taking other appropriate steps to secure and protect our intellectual property.

Streamline Our Product Development Process

We intend to streamline our development process and to design, fabricate and test proprietary materials and potential electro-optic polymer devices in order to position our Company to take advantage of emerging market opportunities.

In 2011 we retained the services of EOvation Advisors LLC, a technology and business advisory firm founded by Dr. Frederick Leonberger, former chief technology officer at JDS Uniphase Corporation, a leading provider of communications test and measurement solutions, and optical products. Dr. Leonberger is presently a senior advisor to the Company and its Board of Directors in assisting our Company with strategic planning and the design of optical modulators that we intend to develop.

Develop a Comprehensive Marketing Plan

We are presently building a sales and marketing organization dedicated to developing customers and multiple distribution channels for our products. We plan to aggressively pursue sales of our potential products through the use of industry-specific sales organizations, such as electro-optic component representatives and distributors. In addition, we plan to target market leaders as initial customers and to leverage relationships with these market leaders to obtain future contracts and sales references.

Maintain/Develop Strategic Relationships with Government Agencies, Private Firms, and Academic Institutions

Since the formation of our Company, we have had numerous strategic relationships with government agencies that have provided us with funding and access to important technology. We intend to establish, re-establish or maintain our relationships with:

- DARPA, the Defense Advance Research Project Agency by sharing the technical data and test results on our aromatic molecular materials.
- Strategic partners ranging from micro-electronic component firms to large-scale computer companies. We believe strategic alliances and/or technology licensing will be a crucial step in commercializing our novel technologies and achieving competitive advantages.
- The National Science Foundation, an independent federal agency created by Congress to promote the progress of science; to advance the national health, prosperity, welfare and to secure the national defense through advanced and promising new technologies.
    - The University of Delaware, an institution well known for excellence in optical engineering.
    - The Guided Wave Optics Laboratory (GWOL) of the University of Colorado at Boulder (UCB).

Continue to Attract and Retain High-Level Science and Technology Personnel

In May 2007, we retained Dr. David F. Eaton as our Interim Chief Technology Officer and in January 2008, Dr. Eaton became our permanent Chief Technology Officer until his resignation as such in November 2011. Dr. Eaton now serves as our scientific advisor, a non-executive position. Previously, Dr. Eaton spent thirty years with DuPont where he worked in research & development, research & development management and business leadership positions. Dr. Eaton spearheaded DuPont's entry into polymer-based components for fiber optic telecommunication by founding DuPont Photonics Technology, a wholly owned subsidiary of DuPont.

In March 2008, we retained Terry Turpin as our Optical Computing expert. Mr. Turpin began his engineering career developing computing engines for the National Security Agency (NSA) where he served as Chief of the Advanced Processing Technologies Division, representing the NSA on the Tri-Service Optical Processing Committee organized by the Under Secretary of Defense for Research and Engineering.

In November 2008, we retained Howard E. Simmons, III, PhD to our technology team. Dr. Simmons is a graduate of MIT and Harvard, who spent 25 years with DuPont engaged in research & development at the corporate and business unit level. Mr. Simmons has contributed to programs in organic light emitting diodes (OLEDS), printable electronics, graphic arts, optical recording materials and fundamental polymer research and holds 26 patents.

In February 2009, we retained Anthony J. Cocuzza, PhD to our technology team. Dr. Cocuzza worked for 30 years in medicinal chemistry and brings a highly developed set of synthetic and analytical skills to our Company. A graduate of Princeton, Dr. Cocuzza spent 24 years with DuPont engaged in corporate research & development and with DuPont's joint venture with Merck.

In November 2011 we retained Dr. Louis C. Glasgow as our Chief Technology Officer and effective as of May 15, 2013, Dr. Glasgow is employed solely as our Senior Technical Advisor. For seven years Dr. Glasgow worked at Corning, Inc. as the Director of Organic Technology. Prior to that, Dr. Glasgow spent 28 years working at DuPont in various capacities, his last being Director of Innovation.
In December 2011, we retained Dr. Frederick Leonberger, PhD as our Senior Advisor. Dr Leonberger is the former Chief Technology Officer of JDS Uniphase, Inc. We previously retained EOvation Advisors LLC, a technology and business advisory firm founded by Dr. Frederick Leonberger, as a consultant to the Company. Dr. Leonberger is presently assisting our Company with strategic planning and the design of optical modulators that we intend to develop. He also serves as an advisor to our Board of Directors.

In August 2012 we retained Dr. Babu Sundar to our technology team. Dr. Sundar received a B.Sc. in chemistry from Voorhees College, University of Madras in 1980, and a M.Sc. in organic chemistry from the University of Madras, Chennai. He received his Ph.D. in organic synthesis from the Indian Institute of Sciences in Bangalore, where he studied Radical cyclization routes to terpenes and furans. Dr. Sundar has over 13 years of experience working in medicinal and organic chemistry at Astra Zeneca Pharmaceuticals and most recently Cephalon, Inc. Dr. Sundar has published 25 manuscripts, has been granted 10 patents, and has been the lead author on 7 journal publications.

In March 2013 we retained Mr. Lou Bintz as our Manager of Product Development. Mr. Bintz brings almost two decades of experience in research and business development activities involving fiber and polymer optical sensors, electro-optic modulators, high power laser diodes, HDTV CRT systems, and OLED design fabrication and testing. His technical management experience includes principal investigator for a USAF electro-optic polymer modulator government contract, group leader of image quality and electron deflection units for Philips Global USA, and engineering manager of process development at Nlight Photonics. He was an original member of Lumera Photonics and was the lead photonic device scientist whose duties included device design and modeling capabilities, optical testing specification and build out of optical test and characterization facilities, as well complete ground up build out

of class 100 clean room electro-optic waveguide fabrication facilities. Mr. Bintz has strong experience in six sigma based lean manufacturing methodologies & management of high volume production environments, and holds six US patents and four international patents in the field of electro-optic photonic device design and fabrication. He received his B.S. in engineering physics and M.S. in electrical engineering degrees from the University of Colorado, Boulder.

Our Research and Development Process

Our research and development process consists of the following steps:

- We develop novel polymer materials utilizing our patented and patent pending technology to meet certain performance specifications. We then develop methods to synthesize larger quantities of such material.
- We conduct a full battery of tests at the completion of the synthesis of each new polymer material to evaluate its characteristics. We also create development strategies to optimize materials to meet specifications for specific applications.
- We integrate data from the material characterization and test results to fabricate devices. We analyze device-testing results to refine and improve fabrication processes and methods. In addition, we investigate alternative material and design variations to possibly create more efficient fabrication processes.
- We create an initial device design using simulation software. Following device fabrication, we run a series of optical and electronic tests on the device.

We have and expect to continue to make significant operating and capital expenditures for research and development. Included in our operating expenses for the year ended December 31, 2012 was $2,489,747 for research and development expenses compared to $1,682,557 for the year ended December 31, 2011, for an increase of $807,190.

Our Proprietary Products in Development

As part of a two-pronged marketing strategy, our Company is developing several optical devices, which are in various stages of development and that utilize our organic nonlinear optical materials. They include:

Telecommunications Modulator

We have recently begun a second-generation design of a unique telecommunications modulator incorporating our newly developed material PerkinamineTM Indigo. We intend to have a working bench-top prototype sometime during 2013 followed by fully packaged modulators for commercial marketing. We anticipate this modulator will be able to exceed the performance of existing legacy modulators by an order of magnitude, and will allow for improvements in the form of reduced power consumption and reduced device cost.

Spatial Light Modulator

We have a development program to develop a Spatial Light Modulator with an outside manufacturer, Boulder Nonlinear Systems (BNS) utilizing certain PerkinamineTM chromophores. A spatial modulator is a form of optical computer that can perform various advanced tasks, such as object and facial recognition, by using advanced mathematical calculations known as Fourier Transforms. Our organic nonlinear optical materials can potentially produce update rates of more than a million times per second, which is a significant improvement in processing speed over existing Liquid Crystal Display technology that updates at only 30 times per second.

Optical Filter

We are in preliminary design and fabrication phases of development of an optical filter using our proprietary PerkinamineTM and Perkinamine NRTM materials within a SiNx photonics platform. Initial work has been done in collaboration with City University of New York, but limitations in their process capabilities have led us to seek alternate fabrication facilities, which are underway at this time.

All-Optical Switch

An all-optical switch is one that enables signals in optical fibers or networks to be selectively switched from one fiber or circuit to another. Many device designs have been developed and commercialized in today’s telecom networks to effect optical switching by using mechanical or electrical control elements to accomplish the switching event. Future networks will require all-optical switches that can be more rapidly activated with a low energy and short duration optical (light) control pulse. We are in early development of an all-optical switch in collaboration with the University of Colorado, Boulder and a potential customer.

Multi-Channel Optical Modem

We are in early feasibility study of a multi-wavelength optical modem that will enable an order of magnitude increase in Internet capacity over legacy fiber.

Our Current Strategic Partners

University of Colorado Boulder

The Guided Wave Optics Laboratory (GWOL) of the University of Colorado at Boulder (UCB) is the research laboratory of Prof. Alan Mickelson. Active research areas at present include nonlinear optics in polymers, plasmonic meta-materials and silicon photonics. Facilities at GWOL include cleanroom for optical and electrical device fabrication, VIS/IR lasers and optical benches for testing, high-speed electronics for driving subsystems and micro positioning necessary for coupling to nano optics as well as fiber optic systems. GWOL has been performing optical testing as a customer service since its inception in 1984. They possess capabilities such as Teng Mann electro-optic coefficient determination, thin film processing and basic device design.

EM Photonics

EM Photonics is a decade old company that develops high performance computing and embedded systems solutions primarily for image processing, scientific computing, and linear algebra fields. Solutions resolve customer problems with methodical approaches to integrate a well-balanced system that optimizes performance, size, weight, power, or a combination of these factors. EM Photonics maximizes any platform to create novel solutions for commercial, military and defense clients.

Boulder Non-Linear Systems

Boulder Nonlinear Systems, Inc. is a Colorado company that designs, manufactures and sells liquid crystal based photonics devices and systems. BNS builds unique analog liquid crystal on silicon modulators used in applications ranging from holographic storage to microscopic cell manipulation. The company's advanced liquid crystal technology is used in telecommunications, medical instruments, defense, and manufacturing.

University of Delaware

The Department of Electrical and Computer Engineering and its facilities, clean rooms and electro-optic device fabrication is under the guidance of Dr. Dennis Prather. His focus is on both theoretical and experimental aspects of active and passive photonic elements and their integration/demonstration into functional systems. Their research team is focused on solutions for the most complicated areas of interest to the US Government, which includes nano-photonic devices, solar cells and imaging systems. Their team has also utilized and produced working polymer modulators under the sponsorship of the Air Force Research Laboratory in Dayton, OH.

Our Past Government Program Participation

Our Company has been a participant in several vital government sponsored research and development programs with various government agencies that protect the interests of our country. The following is a list of some of the various divisions of government agencies that have provided us with advisory, financial and/or materials support in the pursuit of high-speed electro-optic materials. We are not partnered with, strategically related to, or financially supported by any governmental agency at this time. Our previous relationships included:

- National Reconnaissance Office (NRO)
- Properties Branch of the Army Research Laboratory on the Aberdeen Proving Grounds in Aberdeen, Maryland.
- Defense Advance Research Project Agency (DARPA)
- Naval Air Warfare Center Weapons Division in China Lake, California
- Air Force Research Laboratory at Wright-Patterson Air Force Base in Dayton, Ohio

Our Competition

The markets we are targeting for our electro-optic polymer technology are intensely competitive. Among the largest fiber-optic component manufactures are Finisar, JDSU, Oclaro, NeoPhotonics, OpLink and CyOptics. Additional the five largest inorganic modulator component manufacturers hold approximately 85% of the electro-optic modulator component market. They are JDSU, Sumitomo, Oclaro, Fujitsu and ThorLabs. These companies are heavily invested in the production of crystalline-based electro-optic modulator technologies, as well as the development of novel manufacturing techniques and modulator designs.

We consider Gigoptix, Inc., as our primary competitor. They have designed and patented potentially commercially feasible electro-optic polymers and hold an exclusive license to all electro-optic polymeric technology developed at the University of Washington.

We believe that through the commercialization of our technology, we will be poised to obtain a significant portion of the component manufacturing market. Electro-optic polymers demonstrate several advantages over other technologies, such as inorganic-based technologies, due to their reduced manufacturing and processing costs, higher performance and lower power requirements. Our patented organic polymers and future electro-optic devices have demonstrated significant stability advantages over our known competitor's materials.

We believe the principal competitive factors in our target markets are:

- The ability to develop and commercialize highly stable optical polymer-based materials and optical devices, including obtaining appropriate patent and proprietary rights protection.
- Lower cost, high production yield for these products.
- The ability to enable integration and implement advanced technologies.
- Strong sales and marketing, and distribution channels for access to products.

We believe that our current business planning will position our Company to compete adequately with respect to these factors. Our future success is difficult to predict because we are an early stage company with all of our potential products still in development.

Many of our existing and potential competitors have substantially greater research and product development capabilities and financial, scientific, marketing and human resources than we do. As a result, these competitors may:

- Succeed in developing products that are equal to or superior to our potential products or that achieve greater market acceptance than our potential products.
- Devote greater resources to developing, marketing or selling their products.
- Respond 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.
- Take advantage of acquisition or other opportunities more readily than we can.

Our Laboratory Facilities

In June 2012 we opened a new internal research and development laboratory facility in Newark, Delaware in the Delaware Technology Park, near the University of Delaware. This lab facility enables us to synthesize and test our materials in the same facility and will help us accelerate our development efforts. It is equipped with state of the art equipment necessary to expand our ability to conduct synthesis chemistry in much more tightly controlled conditions. Additionally, we have equipped a separate advanced optical laboratory at the same location where the necessary testing of material candidates will be performed as they emerge from our new synthesis laboratory for timely feedback.

Employees

We currently have 8 full-time employees and7 part-time employees, and we retain several independent contractors on an as-needed basis. We believe that we have good relations with our employees.

Legal Proceedings

We are not currently a party to or engaged in any material legal proceedings. However, we may be subject to various claims and legal actions arising in the ordinary course of business from time to time.

MANAGEMENT

The following table sets forth, as of the date of this prospectus, the name, age, position and term/period served of each person who serves as an executive officer, director and significant employee of our Company. There are no family relationships among any of our executive officers, directors and significant employees.

Name	Age	Position	Term as a Director
Thomas E. Zelibor	58	Chair of the Board of Directors; Chief Executive Officer	1 year
James S. Marcelli	65	Director; President; Chief Operating Officer	1 year
Andrew J. Ashton	39	Director; Senior Vice President; Secretary	1 year
Terry Turpin	70	Optical Computing Guru(1)	---
Ross Fasick	80	Director	1 year
William C. Pickett, III	69	Director	1 year
Joseph A. Miller	71	Director	1 year
Ronald A Bucchi	57	Director	1 year

(1) Optical Computing Guru is not an executive officer position, but our Company anticipates that Mr. Turpin's expertise in optical computing and his respect in the optical computing community will significantly contribute to the development of our Company.

Business Experience

Thomas E. Zelibor, Rear Admiral, USN (Ret). RADM Zelibor has served as our Chief Executive Officer and Chair of the Board of Directors (executive) since May 2012. RADM Zelibor previously served as Non-Executive Chair of the Board of Directors of our Company since October 2011, and has served as a director of our Company since July 2008. He also previously served on our Operation Committee. RADM Zelibor is in charge of the overall general management of the Company and supervision of Company policies, setting the Company's strategies, formulating and overseeing the Company's business plan, raising capital, expanding the Company's management team and the general promotion of the Company. RADM Zelibor has over twenty years of strategic planning and senior leadership experience. Since April 2011 Mr. Zelibor served as the Chief Executive Officer and President of Zelibor & Associates, LLC, a management-consulting firm. From July 2008 to April 2011, Mr. Zelibor served as the Chief Executive Officer and President of Flatirons Solutions Corp., a professional services firm that provides consulting, systems integration, systems & software engineering, and program management expertise to corporate and government clients. Previously, from July 2006 to July 2008, RADM Zelibor, served as the Dean of the College of Operational and Strategic Leadership at the United States Naval War College where he was responsible for the adoption of a corporate approach to leadership development. Prior to that time, RADM Zelibor served in a number of positions, including as Director of Global Operations, United States Strategic Command; Director, Space, Information Warfare, Command and Control on the Navy staff; Department of the Navy, Deputy Chief Information Officer (CIO), Navy; Commander, Carrier Group Three and Commander, Naval Space Command.

Mr. James S. Marcelli. Mr. Marcelli has served as an officer and director of our Company since August 2008. Since May 2012 Mr. Marcelli has served as our Company’s President and Chief Operating Officer. Previously, from August 2008 to April 2012, Mr. Marcelli served as our President and Chief Executive Officer. Mr. Marcelli is in charge of the day-to-day operations of our Company and its movement to a fully functioning commercial corporation, and also serves as our Company’s principal financial officer. Since 2000, Mr. Marcelli has served as the president and chief executive officer of Marcelli Associates, a consulting company that offers senior management consulting, mentoring, and business development services to start-up and growth companies. Business segments Mr. Marcelli has worked with included an Internet networking gaming center, high speed custom gaming computers, high tech manufacturing businesses and business service companies.

Mr. Andrew J. Ashton. Mr. Ashton has served as an officer and director of our Company since July 2004. Mr. Ashton has served as our Senior Vice president since April 2009. Since 2004, his assistance in the creation of the synthetic chemistry of our novel molecular architecture has been fundamental to our Company's success. His current duties include the development of chemical synthesis, providing extensive analytical support and assisting with our Company's management goals. Mr. Ashton is a skilled computer scientist and organic chemist who began his career in 1998 at the Army Research Laboratory on the Aberdeen Proving Grounds where he helped to design and implement computer interfaces for fiberglass composite analysis.

Mr. Terry Turpin. Mr. Turpin has served as our Optical Computing expert since March 2008. Since October 2006, Mr. Turpin has been a member of the UMBC College of Natural Science and Mathematics Advisory Board. Until January 2007, when Northrop Grumman Space & Mission Systems Corp. acquired Essex Corporation, Mr. Turpin was a director of Essex Corporation. Mr. Turpin remained Senior Vice President and Chief Scientist for Essex Corporation after its acquisition until April 2007. Mr. Turpin was appointed as a director of Essex Corporation in January 1997 and became its Senior Vice President and Chief Scientist in 1996. He joined Essex Corporation through a merger with SEDC where he was Vice President and Chief Scientist from September 1984 through June 1989. From December 1983 to September 1984 he was an independent consultant. From 1963 through December 1983, the National Securities Agency (NSA) employed Mr. Turpin. He was Chief of the Advanced Processing Technologies Division for ten years. He holds patents for optical computers and adaptive optical components. Mr. Turpin represented NSA on the Tri-Service Optical Processing Committee organized by the Under Secretary of Defense for Research and Engineering. He received a Bachelor of Science degree in Electrical Engineering from the University of Akron in 1966 and a Master of Science degree in Electrical Engineering from Catholic University in Washington, D.C. in 1970.

Dr. Ross Fasick. Dr. Ross Fasick has served as a director of our Company since July 2008. Dr. Fasick has a broad spectrum of global business and chemistry experience that spans over thirty years. Dr. Fasick spent the early years of his career with DuPont as a research chemist primarily working with polymers and dyes. During his thirty year tenure at DuPont, Dr. Fasick held diverse positions ranging from manufacturing and business development to making divestitures and acquisitions. He served as both President of DuPont’s Brazil division and Director of worldwide paint operations. He completed his DuPont career as Senior VP of Polymers and Automotive, a division that generates multi-billion dollar annual revenues. Since his retirement, Dr. Fasick has remained an active board and committee member for private college and pre-college level institutions. Dr. Fasick earned his Ph.D. in organic chemistry at the University of Delaware.

Mr. William C. Pickett, III. Mr. Pickett has served as a director of our Company since January 2008. Mr. Pickett enjoyed a 32 year career with E.I. DuPont de Nemours & Co., where he worked in numerous financial leadership positions, including serving from February 2002 to April 2004 as Chief Financial Officer of Invista, DuPont’s $7 billion man-made fibers company, which was ultimately sold to Koch Industries, Inc. From 2005 through 2011, Mr. Pickett served on the Board of Directors of the Ronald McDonald House of Delaware. He also served as Treasurer, was a member of the Executive Committee, and chaired the Finance Committee. He is currently a member of that organization's Finance Committee. Since 2004, Mr. Pickett has served on the Board of Trustees of Operation Warm, a not-for-profit organization, and chairs their Audit Committee. Mr. Pickett received his MBA from the Harvard Business School and a BA from Trinity College.

Dr. Joseph A. Miller, Jr. Dr. Miller has served as a director of our Company since May 10, 2011. From 2002 to May 2012, Dr. Miller served as Executive Vice President and Chief Technology Officer of Corning Incorporated, having joined Corning Incorporated in 2001 as Senior Vice President and Chief Technology Officer. Prior to joining Corning Incorporated, Dr. Miller was with E.I. DuPont de Nemours, Inc., where he served as Chief Technology Officer and Senior Vice President for Research and Development since 1994. Dr. Miller began his career with DuPont in 1966. Dr. Miller is a director of Greatbatch, Inc. and Dow Corning Corporation and holds a doctorate degree in Chemistry from Penn State University.

Mr. Ronald A. Bucchi. Mr. Bucchi has served as a director of our Company since June 11, 2012. Mr. Bucchi is currently a self employed C.P.A. with a specialized practice that concentrates in CEO consulting, strategic planning, mergers, acquisitions, business sales and tax. He works with domestic and international companies. Mr. Bucchi is currently a member of the board of directors of First Connecticut Bancorp, Inc. (Farmington Bank) (FBNK:NASDAQ GM), serving on Asset Liability Committee, the Governance and Loan committees in addition to chairing the Audit committee. He is currently the Treasurer and a member of the Board of Directors of the Petit Family Foundation, Inc. He has served on numerous other community boards and is past Chairman of the Wheeler Clinic and the Wheeler

YMCA. He is a member of the Connecticut Society of Certified Public Accountants, American Institute of Certified Public Accountants and the National Association of Corporate Directors. Mr. Bucchi is a graduate of the Harvard Business School Executive Education program with completed course studies in general board governance, audit and compensation and a graduate of Central Connecticut State University where he received his B.S. in Accounting.

The Board of Directors believes that each of the Directors named above has the necessary qualifications to be a member of the board of directors. Each Director has exhibited during his prior service as a director the ability to operate cohesively with the other members of the board of directors. Moreover, the Board of Directors believes that each director brings a strong background and skill set to the Board of Directors, giving the Board of Directors as a whole competence and experience in diverse areas, including corporate governance and board service, finance, management and industry experience.

Each Director of the Company holds such position until the next annual meeting of shareholders and until his successor is duly elected and qualified. The officers hold office until the first meeting of the board of directors following the annual meeting of shareholders and until their successors are chosen and qualified, subject to early removal by the board of directors.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Securities Exchange Act of 1934 requires that our executive officers and directors, and persons who own more than ten percent (10%) of a registered class of our equity securities, file reports of ownership and changes in ownership with the SEC. Executive officers, directors and greater-than-ten percent stockholders are required by SEC regulations to furnish us with all Section 16(a) forms they file. To the best of our knowledge, based solely upon a review of Forms 3 and 4 and amendments thereto furnished to our Company during its most recent fiscal year and Forms 5 and amendments thereto furnished to our Company with respect to its most recent fiscal year, and any written representation referred to in paragraph (b)(1) of Item 405 of Regulation S-K, all of our executive officers, directors and greater-than-ten percent (10%) stockholders complied with all Section 16(a) filing requirements.

Code of Ethics

Our Company has adopted a Code of Ethics that applies to all of the Company's employees, including its principal executive officer and principal accounting officer. A copy of our Code of Ethics is available for review on the "Investors" page of our Company's website www.lightwavelogic.com. The Company intends to disclose any changes in or waivers from its Code of Ethics by posting such information on its website.

Nominating Committee

Our Board of Directors does not have a nominating committee. This is due to our development stage and smaller sized Board of Directors. Instead of having such a committee, our entire Board of Directors historically has searched for and evaluated qualified individuals to become nominees for membership on our Board of Directors. No material changes to the procedures by which our stockholders may recommend nominees to our Board of Directors has occurred since we last provided disclosure regarding these procedures in our Definitive Schedule 14A filed on June 28, 2013.

Audit Committee

Our Company has in place a separately designated standing audit committee in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934, as amended. Our audit committee is governed by an audit committee charter, a current copy of which is available to security holders on our web site located at www.lightwavelogic.com.

Our audit committee has reviewed and discussed the audited financial statements with management and has discussed with its independent auditors the matters required to be discussed by the statement on Auditing Standards No. 61, as amended (AICPA, Professional Standards, Vol. 1, AU section 380) as adopted by the Public Company Accounting Oversight Board in Rule 3200T. The audit committee has received the written disclosures and the letter from its independent accountant required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent accountant's communications with the audit committee concerning independence, and has discussed with its independent accountant its independent accountant's independence. Based on the review and discussions described above, the audit committee recommended that the audited financial statements be included in our Annual Report on Form 10-K for the last fiscal year for filing with the Securities and Exchange Commission.

Our audit committee is comprised of Ronald A. Bucchi, William C. Pickett, III, Joseph A Miller, Jr. and Ross Fasick. Mr. Bucchi serves as our audit committee financial expert as that term is defined by the rules promulgated by the Securities and Exchange Commission. Mr. Bucchi is an independent director, as defined below in Certain Relationships and Related Transactions, and Director Independence.

Operations Committee

On June 13, 2011, our board of directors established an Operations Committee and adopted an Operations Committee Charter in order to utilize the talent of our members of the board of directors on a temporary basis for various short term registrant projects. Pursuant to the terms of the Operations Committee Charter, our board of directors is charged with affirmatively determining that any director appointed to the Operations Committee does not have a relationship that would interfere with the exercise of independent judgment in carrying out his responsibilities as a director. As of the date of this prospectus, the Operations Committee is inactive.

Risk Oversight

The Board of Directors is actively involved in the oversight of risks, including strategic, operational and other risks, which could affect our business. The Board of Directors does not have a standing risk management committee, but administers this oversight function directly through the Board of Directors as a whole, which oversee risks relevant to their respective functions. The Board of Directors considers strategic risks and opportunities and administers its respective risk oversight function by evaluating management's monitoring, assessment and management of risks, including steps taken to limit our exposure to known risks, through regular interaction with our senior management and in board and committee deliberations that are closed to members of management. The interaction with management occurs not only at formal board and committee meetings but also through periodic and other written and oral communications.

Meetings of the Board and Committees

During 2012, there were five (5) meetings of the Board of Directors. Each current director attended at least 75% of the total number of meetings of the board held in 2012. The Board of Directors also acted at times by unanimous written consent, as authorized by our bylaws and the Nevada Revised Statutes.

EXECUTIVE COMPENSATION

The table below summarizes all compensation awarded to, earned by, or paid to our named executive officers for the fiscal years ended December 31, 2012 and 2011.

Summary Compensation Table

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	All Other Compensation ($)	Total ($)
(a)	(b)	(c)	(d)	(e)	(f)	(i)	(j)
Thomas E. Zelibor	2012	140,000	0	1,607	610,922	5,100	757,629
CEO, Chmn. of the Board (1)	2011	0	0	1,163	128,169	8,438	138,770
James S. Marcelli	2012	200,000	0	0	347,243	0	547,243
President, COO Director (2)	2011	200,000	0	0	364,122	0	564,122
Louis Glasgow Former Chief Technology Officer (3)	2012	86,588	0	0	26,304	0	112,892
	2011	17,333	0	0	4,384	0	21,717

(1) Mr. Zelibor has served as our Chief Executive Officer since May 1, 2012; and prior to that time, he served as a non-executive member of our Board of Directors. Pursuant to an employment agreement, effective May 1, 2012, Mr. Zelibor received a salary of $17,500 per month and an option to purchase up to 500,000 shares of common stock at an exercise price of $1.30 per share. On August 29, 2013, the Company and Mr. Zelibor amended his employment agreement whereby Mr. Zelibor will now receive a salary of $18,750 per month. The options vest quarterly over one year in equal installments of 125,000 shares per quarter beginning May 1, 2012. On July 11, 2008, Mr. Zelibor was awarded an option to purchase up to 100,000 shares of common stock at an exercise price of $1.75 per share. The option vests 25,000 shares immediately and the remaining annually over three years in equal annual installments of 25,000 shares per year beginning July 11, 2009. On November 9, 2012 the options were extended to July 10, 2015. On August 29, 2008, Mr. Zelibor was awarded an option to purchase up to 150,000 shares of common stock at an exercise price of $1.42 per share. The option vests 37,500 shares immediately and the remaining annually over three years in equal annual installments of 37,500 shares per year beginning August 29, 2009. On November 9, 2012 the options were extended to August 28, 2015. On December 13, 2010, Mr. Zelibor was awarded an option to purchase up to 100,000 shares of common stock at an exercise price of $1.00 per share. The option vests 25,000 shares immediately and the remaining annually over three years in equal annual installments of 25,000 shares per year beginning November 4, 2011. On December 19, 2011, Mr. Zelibor was awarded an option to purchase up to 250,000 shares of common stock at an exercise price of $1.01 per share. The option vests 62,500 shares immediately and the remaining annually over three years in equal annual installments of 62,500 shares per year beginning December 19, 2011. The values described in column (e) reflect shares of common stock for services related to our Operation Committee prior to May 1, 2012, the values described in column (f) reflect vested Options and the values described in column (i) reflect consulting fees paid to Mr. Zelibor prior to May 1, 2012. The compensation includes the amount for services rendered to the Company in his capacity as both an officer and a director.

(2) Mr. Marcelli served as our Chief Executive Officer and President from August 1, 2008 to April 30, 2012, and has served as our President and Chief Operating Officer since May 1, 2012. Pursuant to an employment agreement, effective August 1, 2010, and subsequently amended, Mr. Marcelli received a salary of $16,667 per month and an option to purchase up to 100,000 shares of common stock at an exercise price of $1.50 per share. Those options vest quarterly over two years in equal installments of 12,500 shares per quarter beginning August 1, 2010. Pursuant to a previous employment agreement, Mr. Marcelli received, among other things, an option to purchase up to 1,050,000 shares of common stock at an exercise price of $1.75 per share. The options vest quarterly over three years in equal installments of 87,500 shares per quarter beginning November 1, 2008. On November 9, 2012 the options were extended to July 31, 2015. Pursuant to a renewal and amendment to his employment agreement on May 17, 2013, effective August 1, 2013, Mr. Marcelli shall receive a salary of $17,917 per month and was granted 100,000 options at an exercise price of $1.00 per share, which shall vest in equal quarterly installments of 25,000 options commencing October 1, 2013 (the options shall be made pursuant to the Company's 2007 Employee Stock Plan and are subject to the terms of the Plan's standard non-statutory stock option agremeent). Additionally, in the event Mr. Marcelli's employment terminates upon his death and the key man life insurance is in place for Mr. Marcelli, we will continue to pay the base cash compensation described in Mr. Marcelli's employment agreement to his estate through the remainder of term of his employment agreement, or 90 days, whichever is greater. The values described in column (f) reflect vested options. The compensation includes the amount for services rendered to the Company in his capacity as both an officer and a director.

(3) Mr. Glasgow served as our Chief Technology Officer from November 1, 2011 through May 15, 2013, and currently serves as Senior Technical Advisor. Pursuant to an employment agreement, effective November 1, 2011, Mr. Glasgow received a salary of $8,667 per month and an option to purchase up to 150,000 shares of common stock at an exercise price of $0.63 per share. The options vest quarterly over three years in equal installments of 12,500 shares per quarter beginning November 1, 2011. Effective October 1, 2012, Mr. Glasgow's employment agreement was amended to modify the salary amount to $500 per day. The values described in column (f) reflect vested options.

Other than as described above, at no time during the last fiscal year was any outstanding option otherwise modified or re-priced, and there was no tandem feature, reload feature, or tax-reimbursement feature associated with any of the stock options we granted to our executive officers or otherwise; except that our Company modified the option awards provided to its officers and directors pursuant to our 2007 Employee Stock Plan so that in the event of a change in control of our Company, such person's options will become fully vested and/or exercisable, as the case may be, immediately prior to such change in control, and shall remain exercisable as set forth in their stock option agreement.

We grant stock awards and stock options to our executive officers based on their level of experience and contributions to our Company. The aggregate fair value of awards and options are computed in accordance with FASB ASC 718 and are reported in the Summary Compensation Table above in the columns (e) and (f).

The table below summarizes all of the outstanding equity awards for our named executive officers as of December 31, 2012, our latest fiscal year end.

Outstanding Equity Awards At Fiscal Year-End

	Option Awards					Stock Awards			
Name	Number of securities underlying unexercised options(#) exercisable	Number of securities underlying unexercised options(#) unexercisable	Equity incentive plan awards: number of securities underlying unexercised unearned options(#)	Option exercise price ($)	Option expiration date	Number of shares or units of stock that have not vested (#)	Market value of shares of units of stock that have not vested ($)	Equity incentive plan awards: number of unearned shares, units or other rights that have not vested (#)	Equity incentive plan awards: market or payout value of unearned shares, units or other rights that have not vested ($)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Thomas E. Zelibor	100,000	0	--	1.75	7/10/15	--	--	--	--
CEO, Chairman of the Board(1)(4)	150,000	0	--	1.42	8/28/15	--	--	--	--
	75,000	25,000		1.00	12/12/15	--	--	--	--

	125,000	125,000		1.01	12/19/16	--	--	--	--
	375,000	125,000		1.69	4/30/22	--	--	--	--
James S. Marcelli President, COO, Director(2)(4)	100,000	--	--	1.50	7/31/15	--	--	--	--
	1,050,000	--	--	1.75	7/31/15	--	--	--	--
Louis Glasgow Former Chief Technology Officer (3)(4)	50,000	100,000		0.63	10/31/16	--	--	--	--

(1) On May 1, 2012, Mr. Zelibor received an option to purchase up to 500,000 shares of common stock at an exercise price of $1.30 per share. The options vest quarterly over one year in equal installments of 125,000 shares per quarter beginning May 1, 2012. On July 11, 2008, Mr. Zelibor was awarded an option to purchase up to 100,000 shares of common stock at an exercise price of $1.75 per share. The option vests 25,000 shares immediately and the remaining annually over three years in equal annual installments of 25,000 shares per year beginning July 11, 2009. On November 9, 2012 the options were extended to July 10, 2015. On August 29, 2008, Mr. Zelibor was awarded an option to purchase up to 150,000 shares of common stock at an exercise price of $1.42 per share. The option vests 37,500 shares immediately and the remaining annually over three years in equal annual installments of 37,500 shares per year beginning August 29, 2009. On November 9, 2012 the options were extended to August 28, 2015. On December 13, 2010, Mr. Zelibor was awarded an option to purchase up to 100,000 shares of common stock at an exercise price of $1.00 per share. The option vests 25,000 shares immediately and the remaining annually over three years in equal annual installments of 25,000 shares per year beginning November 4, 2011. On December 19, 2011, Mr. Zelibor was awarded an option to purchase up to 250,000 shares of common stock at an exercise price of $1.01 per share. The option vests 62,500 shares immediately and the remaining annually over three years in equal annual installments of 62,500 shares per year beginning December 19, 2011.

(2) On August 1, 2008 Mr. Marcelli received an option to purchase up to 1,050,000 shares of our common stock. The options vest quarterly over three years in equal installments of 87,500 shares per quarter beginning November 1, 2008. On August 1, 2010, Mr. Marcelli received an option to purchase up to 100,000 shares of our common stock. The options vest quarterly over two years in equal installments of 12,500 shares per quarter beginning August 1, 2010. On November 9, 2012 the options were extended to July 31, 2015.

(3) On November 1, 2011 Mr. Glasgow received an option to purchase up to 150,000 shares of our common stock. The options vest quarterly over three years in equal installments of 12,500 shares per quarter beginning November 1, 2011.

(4) In the event of a change in control of our Company, such person’s options will become fully vested and/or exercisable, as the case may be, immediately prior to such change in control, and shall remain exercisable as set forth in their stock option agreement.

Compensation of Directors

Set forth below is a summary of the compensation of our directors during our December 31, 2012 fiscal year.

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Non-Qualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
James S. Marcelli (1)	--	--	--	--	--	--	--
Andrew J. Ashton (1)	--	--	--	--	--	--	--
Ross Fasick (2)	--	--	--	--	--	--	--

William C. Pickett, III (3)	--	--	--	--	--	--	--
Thomas E. Zelibor (4)	5,100	1,607	613,805	--	--	--	620,512
Joseph A. Miller (5)	--	--	--	--	--	--	--
Ronald A. Bucchi (6)	--		145,150	--	--	--	145,150

(1) Serves as an executive officer and a director but receives no additional compensation for serving as a director.

(2) On July 21, 2008, Mr. Fasick received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.75 that vest pursuant to the following schedule: 25,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 25,000 options per year commencing on July 21, 2009. On November 9, 2012 the options were extended to July 20, 2015. On August 29, 2008, Mr. Fasick received an option to purchase up to 150,000 shares of company stock at an exercise price of $1.42 that vest pursuant to the following schedule: 37,500 shares vest immediately and 37,500 shares vest at the end of every 12 month period commencing August 29, 2008. On November 9, 2012 the options were extended to August 23, 2015. On December 13, 2010, Mr. Fasick received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.00 that vest pursuant to the following schedule: 25,000 shares vest immediately and 25,000 shares vest at the end of every 12 month period commencing November 4, 2010.

(3) On January 8, 2008, Mr. Pickett received an option to purchase up to 100,000 shares of company stock at an exercise price of $0.72 that vest pursuant to the following schedule: 25,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 25,000 options per year commencing on January 8, 2009. On November 9, 2012 the options were extended to January 8, 2015. On August 29, 2008, Mr. Pickett received an option to purchase up to 250,000 shares of company stock at an exercise price of $1.42 that vest pursuant to the following schedule: 137,500 shares vest immediately and 37,500 shares vest at the end of every 12 month period commencing August 29, 2008. On November 9, 2012 the options were extended to August 28, 2015. Mr. Pickett was awarded 250,000 options instead of 150,000 options on August 29, 2008 in recognition of the additional assistance he provided to the Company during his initial tenure as a director. On December 13, 2010, Mr. Pickett received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.00 that vest pursuant to the following schedule: 25,000 shares vest immediately and 25,000 shares vest at the end of every 12 month period commencing November 4, 2010.

(4) On July 11, 2008, Mr. Zelibor received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.75 that vest pursuant to the following schedule: 25,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 25,000 options per year commencing on July 11, 2009. On November 9, 2012 the options were extended to July 10, 2015. On August 29, 2008, Mr. Zelibor received an option to purchase up to 150,000 shares of company stock at an exercise price of $1.42 that vest pursuant to the following schedule: 37,500 shares vested immediately and 37,500 shares vest at the end of every 12 month period commencing August 29, 2008. On November 9, 2012 the options were extended to August 28, 2015. On December 13, 2010, Mr. Zelibor received an option to purchase up to 100,000 shares of company stock at an exercise price of $1.00 that vest pursuant to the following schedule: 25,000 shares vest immediately and 25,000 shares vest at the end of every 12 month period commencing November 4, 2010. On December 19, 2011, Mr. Zelibor received an option to purchase up to 250,000 shares of company stock at an exercise price of $1.01 that vest pursuant to the following schedule: 62,500 shares vest immediately and 62,500 shares vest at the end of every 12 month period commencing December 19, 2012. On February 22, 2012 Mr. Zelibor received 1,406 shares of common stock. On May 1, 2012, Mr. Zelibor received an option to purchase up to 500,000 shares of company stock at an exercise price of $1.30 that vest pursuant to the following schedule: 125,000 shares vest immediately and 125,000 shares vest at the end of every 3 month period commencing August 1, 2012. The May 1, 2012 option was issued for serving as an executive officer and a director. Since his appointment as Chief Executive Officer on May 1, 2012, Mr. Zelibor receives no additional compensation for serving as a director. The $5,100 cash payment reflects consulting fees paid to Mr. Zelibor prior to May 1, 2012.

(5) On May 10, 2011, Mr. Miller received an option to purchase up to 200,000 shares of company stock at an exercise price of $1.12 that vest pursuant to the following schedule: 50,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 50,000 options per year commencing on May 10, 2012.

(6)

On June 11, 2012, Mr. Bucchi received an option to purchase up to 200,000 shares of company stock at an exercise price of $0.90 that vest pursuant to the following schedule: 50,000 shares vested immediately; and the remaining options vest in 3 equal annual installments of 50,000 options per year commencing on June 11, 2013.

In the event of a change in control of our Company, all of the above person's options become fully vested and/or exercisable, as the case may be, immediately prior to such change in control, and shall remain exercisable as set forth in their stock option agreement.

Compensation Committee

Our Board of Directors currently has no standing compensation committee or committee performing similar functions. This is due to the Company's development stage, lack of business operations, the small number of executive officers involved with the Company, and the fact that the Company operates with few employees. The Company's entire Board of Directors currently participates in the consideration of executive officer and director compensation. Our Board of Directors will continue to evaluate, from time to time, whether it should appoint standing compensation committee.

Compensation Policies and Practices As They Relate To Our Risk Management

No risks arise from our Company's compensation policies and practices for our employees that are reasonably likely to have a material adverse effect on our Company.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Policies and Procedures for Related-Party Transactions

Our Company does not have any formal written policies or procedures for related party transactions, however in practice, our Board of Directors reviews and approves all related party transactions and other matters pertaining to the integrity of management, including potential conflicts of interest, trading in our securities, or adherence to standards of business conduct.

Director Independence

Although we are currently quoted on the OTC Markets (OTCQB), our Board has reviewed each of the directors' relationships with the Company in conjunction with Section 121 of the listing standards of the NYSE Amex and has affirmatively determined that four of our directors, Ross Fasick, William C. Pickett, III, Joseph A. Miller, Jr. and Ronald A. Bucchi, are independent directors in that they are independent of management and free of any relationship that would interfere with their independent judgment as members of our Board of Directors. Our Company does not have a separately designated nominating or compensation committee or committee performing similar functions; therefore, our full Board of Directors currently serves in these capacities. Three members of our Board of Directors, Thomas E. Zelibor, James S. Marcelli and Andrew J. Ashton, are not considered independent directors pursuant to the standards described above. Mr. Bucchi serves as our audit committee financial expert as that term is defined by the rules promulgated by the Securities and Exchange Commission.

PRINCIPAL SHAREHOLDERS

The following table sets forth, as of September 17, 2013, the names, addresses, amount and nature of beneficial ownership and percent of such ownership of each person or group known to us to be the beneficial owner of more than five percent (5%) of our common stock:

Security Ownership of Certain Beneficial Owners

Name and Address of Beneficial Owner (1)	Amount and Nature Of Beneficial Ownership		% of Class Owned (6)	
Frederick J. Goetz, Jr. (2)	2,857,298	(4)	5.49	%
Andrew J. Ashton (Senior Vice President, Secretary and Director of the Company)	2,981,667	(4)	5.73	%
Frederick J. Goetz (2)(3)	6,390,580	(4)(5)	12.28	%
Mary Goetz (2)	6,390,580	(4)(5)	12.28	%

(1) In care of our Company at 111 Ruthar Drive, Newark, Delaware 19711.
(2) Frederick J. Goetz (deceased) and Mary Goetz were husband and wife, and Frederick J. Goetz, Jr. is their son.
(3) Frederick J. Goetz (deceased) is the record holder of the shares. To our best knowledge, as of the date hereof, Jennifer Goetz is the Administer of the Estate of Frederick J. Goetz.
(4) To our best knowledge, as of the date hereof, such holders had the sole voting and investment power with respect to the voting securities beneficially owned by them, unless otherwise indicated herein. Includes the person's right to obtain additional shares of common stock within 60 days from the date hereof.
(5) Consists of (i) 3,349,654 shares of common stock owned of record by Frederick J. Goetz (deceased); and (ii) 3,040,926 shares of common stock owned by Mary Goetz.
(6) Based on 52,046,797 shares of common stock outstanding on September 17, 2013.

The following table sets forth, as of September 17, 2013, the names, addresses, amount and nature of beneficial ownership and percent of such ownership of our common stock of each of our officers and directors, and officers and directors as a group:

Security Ownership of Management

Name and Address (1)	Amount and Nature of Beneficial Ownership (2)		% Owned (3)(4)	
Thomas E. Zelibor Chief Executive Officer, Principal Executive Officer and Chmn. of the Board of Directors	993,424	(5)	1.88	%
James S. Marcelli President, Chief Operating Officer, Principal Financial Officer and Director	1,440,000	(6)	2.71	%

Andrew J. Ashton Senior Vice President, Secretary, and Director	2,981,667			5.73	%
Louis C. Glasgow Former Chief Technology Officer, Current Senior Technical Advisor	87,500	(7	)	*	
Ross Fasick Director	364,000	(8	)	*	
William C. Pickett, III Director	446,000	(9	)	*	
Joseph A. Miller, Jr. Director	150,000	(10	)	*	
Ronald A. Bucchi Director	290,600	(11	)	*	
Directors and Officers as a Group (8 persons):	6,753,191			12.21	%

* Less than 1%.

(1) In care of our Company at 111 Ruthar Drive, Newark, Delaware 19711.

(2) To our best knowledge, as of the date hereof, such holders had the sole voting and investment power with respect to the voting securities beneficially owned by them, unless otherwise indicated herein. Includes the person's right to obtain additional shares of common stock within 60 days from September 17, 2013.

(3) Based on 52,046,797 shares of common stock outstanding on September 17, 2013. Does not include shares underlying: (i) options to purchase shares of our common stock under our 2007 Plan and (ii) outstanding warrants to purchase shares of our common stock.

(4) If a person listed on this table has the right to obtain additional shares of common stock within 60 days from September 17, 2013, the additional shares are deemed to be outstanding for the purpose of computing the percentage of class owned by such person, but are not deemed to be outstanding for the purpose of computing the percentage of any other person.

(5) Consists of 43,424 shares of common stock and an option to purchase up to 950,000 shares of common stock exercisable within 60 days from September 17, 2013.

(6) Consists of 240,000 shares of common stock and an option to purchase up to 1,200,000 shares of common stock exercisable within 60 days from September 17, 2013.

(7) Consists of an option to purchase up to 87,500 shares of common stock exercisable within 60 days from September 17, 2013.

(8) Consists of 39,000 shares of common stock and an option to purchase up to 325,000 shares of common stock exercisable within 60 days from September 17, 2013.

(9) Consists of 21,000 shares of common stock and an option to purchase up to 425,000 shares of common stock exercisable within 60 days from September 17, 2013.

(10) Consists of an option to purchase up to 150,000 shares of common stock exercisable within 60 days from September 17, 2013.

(11) Consists of 160,600 shares of common stock and options to purchase up to 130,000 shares of common stock exercisable within 60 days from September 17, 2013. Mr. Bucchi disclaims beneficial ownership of 53,000 shares held by his spouse.

We are not aware of any arrangements that could result in a change of control.

THE LINCOLN PARK TRANSACTIONS

General

On May 3, 2011, we executed the 2011Purchase Agreement and a registration rights agreement whereby we had the right to sell, at its sole discretion, to Lincoln Park up to $20,000,000 of our common stock, over a 30-month period. Under the 2011 Purchase Agreement, we sold Lincoln Park 4,194,840 shares of common stock and received $6,849,998 and $13,150,002 remains available.

On June 6, 2013, we entered into the 2013 Purchase Agreement and the Registration Rights Agreement with Lincoln Park. Pursuant to the terms of the 2013 Purchase Agreement, Lincoln Park has agreed to purchase from us up to $20,000,000 of our common stock (subject to certain limitations) from time to time over a 30-month period. Pursuant to the terms of the Registration Rights Agreement, we have filed with the SEC the registration statement that includes this prospectus to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the 2013 Purchase Agreement.

Concurrently with the execution of the 2013 Purchase Agreement on June 6, 2013, we issued to Lincoln Park 400,000 shares of our common stock as a fee for its commitment to purchase additional shares of our common stock under the 2013 Purchase Agreement. Other than the shares of our common stock that we have already issued to Lincoln Park as described above, we did not have the right to commence any further sales to Lincoln Park under the 2013 Purchase Agreement until the SEC declared effective the registration statement of which this prospectus forms a part. Thereafter and upon satisfaction of the other conditions set forth in the 2013 Purchase Agreement, we may, from time to time and at our sole discretion, direct Lincoln Park to purchase shares of our common stock in amounts up to 100,000 shares on any single business day so long as at least one business day has passed since the most recent purchase. We can also accelerate the amount of our common stock to be purchased under certain circumstances to up to 200,000 shares or $500,000 per purchase, plus an additional "accelerated amount" under certain circumstances. The registration statement was declared effective on October 4, 2013. The purchase price per share is based on the market price of our common stock immediately preceding the time of sale as computed under the 2013 Purchase Agreement without any fixed discount.

Purchase of Shares Under the 2013 Purchase Agreement

Under the 2013 Purchase Agreement, on any business day selected by us, we may direct Lincoln Park to purchase up to 100,000shares of our common stock on any such business day so long as one business day has passed since the last purchase. On any day that the closing sale price of our common stock is not below $2.00 the purchase amount may be increased, at our sole discretion, to up to 200,000 shares per purchase and on any day that the closing sale price of our common stock is not below $2.50 the purchase amount may be increased, at our sole discretion, to up to 250,000 shares per purchase, at our sole discretion, to up to $500,000 per purchase. Such purchases are hereinafter referred to as "Regular Purchases". The purchase price per share for each such Regular Purchase will be equal to the lower of:

- the lowest sale price for our common stock on the purchase date of such shares; or
- the arithmetic average of the three lowest closing sale prices for our common stock during the 12 consecutive business days ending on the business day immediately preceding the purchase date of such shares.

In addition to Regular Purchases described above, we may also direct Lincoln Park, on any business day on which we have properly submitted a Regular Purchase notice, to purchase an additional amount of our common stock, which we refer to as an Accelerated Purchase, not to exceed the lesser of:

- 30% of the aggregate shares of our common stock traded during normal trading hours on the purchase date; and

- two times the number of purchase shares purchased pursuant to the corresponding Regular Purchase.

The purchase price per share for each such Accelerated Purchase will be equal to the lower of:

- 93% of the volume weighted average price during (i) the entire trading day on the purchase date, if the volume of shares of our common stock traded on the purchase date has not exceeded a volume maximum calculated in accordance with the 2013 Purchase Agreement, or (ii) the portion of the trading day of the purchase date (calculated starting at the beginning of normal trading hours) until such time at which the volume of shares of our common stock traded has exceeded such volume maximum; or
- the closing sale price of our common stock on the purchase date.

In the case of both Regular Purchases and Accelerated Purchases, the purchase price per share will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction occurring during the business days used to compute the purchase price.

Other than as set forth above, there are no trading volume requirements or restrictions under the 2013 Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park.

Minimum Purchase Price

Under the 2013 Purchase Agreement, we have set a floor price of $1.00 per share. Lincoln Park shall not purchase any shares of our common stock on any day that the closing sale price of our common stock is below the floor price. The floor price will be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split or other similar.

Events of Default

Events of default under the 2013 Purchase Agreement include the following:

- the effectiveness of the registration statement of which this prospectus forms a part lapses for any reason (including, without limitation, the issuance of a stop order), or any required prospectus supplement and accompanying prospectus are unavailable for the resale by Lincoln Park of our common stock offered hereby, and such lapse or unavailability continues for a period of 10 consecutive business days or for more than an aggregate of 30 business days in any 365-day period;
- suspension by our principal market of our common stock from trading for a period of three consecutive business days;
    - the de-listing of our common stock from our principal market, provided our common stock is not immediately thereafter trading on the New York Stock Exchange, the NASDAQ Global Market, the NASDAQ Global Select Market, the NASDAQ Capital Market, the NYSE Amex or the OTC Bulletin Board (or nationally recognized successor thereto);
    - the transfer agent's failure for five business days to issue to Lincoln Park shares of our common stock which Lincoln Park is entitled to receive under the 2013 Purchase Agreement;
- any breach of the representations or warranties or covenants contained in the 2013 Purchase Agreement or any related agreement which has or which could have a material adverse effect on us subject to a cure period of five business days;
- any voluntary or involuntary participation or threatened participation in insolvency or bankruptcy proceedings by or against us; or
- if at any time we are not eligible to transfer our common stock electronically or a material adverse change in our business, financial condition, operations or prospects has occurred.

Lincoln Park does not have the right to terminate the 2013 Purchase Agreement upon any of the events of default set forth above. During an event of default, all of which are outside of Lincoln Park's control, shares of our common stock cannot be sold by us or purchased by Lincoln Park under the 2013 Purchase Agreement.

Our Termination Rights

We have the unconditional right, at any time, for any reason and without any payment or liability to us, to give notice to Lincoln Park to terminate the 2013 Purchase Agreement. In the event of bankruptcy proceedings by or against us, the 2013 Purchase Agreement will automatically terminate without action of any party.

No Short-Selling or Hedging by Lincoln Park

Lincoln Park has agreed that neither it nor any of its affiliates shall engage in any direct or indirect short-selling or hedging of our common stock during any time prior to the termination of the 2013 Purchase Agreement.

Effect of Performance of the 2013 Purchase Agreement on Our Stockholders

All 10,000,000 shares registered in this offering which may be sold by us to Lincoln Park under the 2013 Purchase Agreement are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold over a period of up to 36 months commencing on the date that the registration statement including this prospectus became effective. The sale by Lincoln Park of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and to be highly volatile. Lincoln Park may ultimately purchase all, some or none of the 10,000,000 shares of common stock registered in this offering. If we sell these shares to Lincoln Park, Lincoln Park may sell all, some or none of such shares. Therefore, sales to Lincoln Park by us under the 2013 Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock. In addition, if we sell a substantial number of shares to Lincoln Park under the 2013 Purchase Agreement, or if investors expect that we will do so, the actual sales of shares or the mere existence of our arrangement with Lincoln Park may 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 such sales. However, we have the right to control the timing and amount of any sales of our shares to Lincoln Park and the 2013 Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

Pursuant to the terms of the 2013 Purchase Agreement, we have the right, but not the obligation, to direct Lincoln Park to purchase up to $20,000,000 of our common stock. Depending on the price per share at which we sell our common stock to Lincoln Park, we may be authorized to issue and sell to Lincoln Park under the 2013 Purchase Agreement more shares of our common stock than are offered under this prospectus. If we choose to do so, we must first register for resale under the Securities Act any such additional shares, which could cause additional substantial dilution to our stockholders. The number of shares ultimately offered for resale by Lincoln Park under this prospectus is dependent upon the number of shares we direct Lincoln Park to purchase under the 2013 Purchase Agreement.

The following table sets forth the amount of gross proceeds we would receive from Lincoln Park from our sale of shares to Lincoln Park under the 2013 Purchase Agreement at varying purchase prices:

Assumed Average Purchase Price Per Share	Number of Registered Shares to be Issued if Full Purchase (1)(2)	Percentage of Outstanding Shares After Giving Effect to the Issuance to Lincoln Park (3)	Proceeds from the Sale of Shares to Lincoln Park Under the $20M 2013 Purchase Agreement
$1.00 (4)	10,200,000	16.39%	$10,000,000
$1.50	10,300,000	16.52%	$15,000,000
$2.00	10,400,000	16.65%	$20,000,000
$3.00	8,400,000	13.90%	$20,000,000
$4.00	6,114,284	10.51%	$19,999,997.50
	4,844,443	8.52%	$19,999,998

(1) Although the 2013 Purchase Agreement provides that we may sell up to $20,000,000 of our common stock to Lincoln Park, we are only registering 10,000,000 shares under this prospectus, which may or may not cover all the shares we ultimately sell to Lincoln Park under the 2013 Purchase Agreement, depending on the purchase price per share. As a result, we have included in this column only those shares that we are registering in this offering including the applicable additional commitment shares issuable to Lincoln Park.

(2) The number of registered shares to be issued excludes the 200,000 commitment shares because no proceeds will be attributable to such commitment shares.

(3) The denominator is based on 52,046,797 shares outstanding as of September 17, 2013, adjusted to include the 200,000 shares issued to Lincoln Park as commitment shares in connection with this offering and the number of shares set forth in the adjacent column which we would have sold to Lincoln Park at the applicable assumed average purchase price per share. The numerator does not include the 200,000 shares issued to Lincoln Park as commitment shares in connection with this offering, and is based on the number of shares registered in this offering to be issued under the 2013 Purchase Agreement which includes the additional commitment shares issued pro rata as up to $20,000,000 of our common stock is purchased by Lincoln Park at the applicable assumed purchase price per share set forth in the adjacent column. The number of shares in such column does not include shares that may be issued to Lincoln Park under the 2013 Purchase Agreement which are not registered in this offering.

(4) Under the 2013 Purchase Agreement, we may not sell and Lincoln Park may not purchase any shares on a day in which the closing sale price of our common stock is below $1.00, as may be adjusted in accordance with the 2013 Purchase Agreement.

SELLING SHAREHOLDER

The shares of common stock being offered by the selling shareholder are those to be issued to Lincoln Park under the 2013 Purchase Agreement. We are registering the shares of common stock in order to permit Lincoln Park to offer the shares for resale from time to time. Lincoln Park is not a licensed broker-dealer or an affiliate of a licensed broker-dealer. Neither Lincoln Park nor any of its affiliates has held a position or office, or had any other material relationship, with us within the past three years.

We do not know when or in what amounts Lincoln Park may offer shares for sale. Lincoln Park may elect not to sell any or all of the shares offered by this prospectus. Because Lincoln Park may offer all or some of the shares, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares, we cannot estimate the number of the shares that will be held by Lincoln Park after completion of the offering. However, for purposes of this table, we have assumed that, after completion of the offering, all of the shares covered by this prospectus will be sold by Lincoln Park.

The following table presents information regarding Lincoln Park. The information concerning beneficial ownership has been taken from our stock transfer records and information provided by Lincoln Park and is dated as of September 17, 2013. Beneficial ownership has been calculated in accordance with the rules of the SEC, which generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities and include shares of common stock issuable pursuant to the exercise of stock options or warrants that are either immediately exercisable or exercisable within 60 days of September 17, 2013.

Selling Shareholder	Shares Beneficially Owned Before Offering		Percentage of Outstanding Shares Beneficially Owned Before Offering		Shares to be Sold in the Offering Assuming the Company Issues Maximum No. of Shares in the Offering		Percentage of Outstanding Shares Beneficially Owned After Offering
Lincoln Park Capital Fund, LLC (1)	814,954	(2)	1.56	%	10,000,000	(3)	*

* Less than one percent (1%).

(1) Josh Scheinfeld and Jonathan Cope, the principals of Lincoln Park, are deemed to be beneficial owners of all of the shares of common stock owned by Lincoln Park. Messrs. Scheinfeld and Cope have shared voting and disposition power over the shares being offered under this prospectus.

(2) Includes (a) 814,954 shares of common stock, of which 150,830 shares are initial commitment shares from the 2011 Purchase Agreement, 200,000 shares are initial commitment shares from the 2013 Purchase Agreement and 200,000 shares were purchased not pursuant to the 2011 or 2013 Purchase Agreements. We may at our discretion elect to issue to Lincoln Park up to an additional 4,194,840 shares of our common stock under the 2011 Purchase Agreement and up to 10,000,000 shares of our common stock under the 2013 Purchase Agreement, subject to the terms and provisions of such agreements, respectively, but Lincoln Park does not beneficially own any such shares that may be issued by us at our sole discretion and such shares are not included in determining the percentage of shares beneficially owned before the offering.

(3) Although the 2013 Purchase Agreement provides that we may sell up to $20,000,000 of our common stock to Lincoln Park, we are only registering 10,000,000 shares issuable under the 2013 Purchase Agreement on the registration statement of which this prospectus is made a part. If we elect to issue more than the 10,000,000 shares

offered by this prospectus, which we have the right but not the obligation to do, we must first register under the Securities Act any additional shares we may elect to sell to Lincoln Park before we can sell such additional shares.

DESCRIPTION OF SECURITIES

As of the date of this prospectus, our articles of incorporation authorizes us to issue 100,000,000 shares of common stock, par value $0.001 per share, and 1,000,000 shares of preferred stock, par value $0.001 per share. As of the date of this prospectus, 52,046,797 shares of common stock were outstanding and no shares of preferred stock were outstanding.

As of the date of this prospectus, we also had outstanding (a) options to purchase 5,557,000 shares of our common stock pursuant to our 2007 Employee Stock Plan, of which 4,851,375 have vested as of the date of this prospectus, at a weighted average exercise price of $1.22 per share and (b) warrants to purchase an aggregate of 3,125,250 shares of our common stock, of which 3,010,668 have vested as of the date of this prospectus, at a weighted average exercise price of $1.04 per share.

The following summary description of our capital stock is based on the provisions of our articles of incorporation as well as our bylaws and the applicable provisions of the Nevada Revised Statutes. This information is qualified entirely by reference to the applicable provisions of our articles of incorporation, as amended to date, our bylaws, as amended to date and the Nevada Revised Statutes. For information on how to obtain copies of our articles of incorporation and bylaws, which are exhibits to the registration statement of which this prospectus is a part, see “Where You Can Find Additional Information”.

Common Stock

Each outstanding share of common stock is entitled to one vote on all matters to be submitted to a vote of the shareholders. Holders do not have preemptive rights, so we may issue additional shares that may reduce each holder's voting and financial interest in our Company. Cumulative voting does not apply to the election of directors, so holders of more than 50% of the shares voted for the election of directors can elect all of the directors. All elections for directors shall be decided by a plurality vote; all other questions shall be decided by majority vote except as otherwise provided by Nevada Statutes. Our bylaws permit the holders of the same percentage of all shareholders entitled to vote at a meeting to take action by written consent without a meeting.

Holders of common stock are entitled to receive dividends when, as and if declared by the board of directors out of funds legally available therefor. In the event of liquidation, dissolution or winding up of our Company, holders are entitled to share ratably in all assets remaining available for distribution to them after payment of liabilities and after provision has been made for each class of stock, if any, having preference over the common stock. Holders do not have any conversion, redemption provisions or other subscription rights. All of the outstanding shares of common stock are fully paid and non-assessable.

Preferred Stock

Pursuant to our Company's Articles of Incorporation, our board of directors is empowered, without shareholder approval, to issue series of preferred stock with any designations, rights and preferences as they may from time to time determine. The rights and preferences of this preferred stock may be superior to the rights and preferences of our common stock; consequently, preferred stock, if issued, could have dividend, liquidation, conversion, voting or other rights that could adversely affect the voting power or other rights of the common stock. Additionally, Preferred stock, if issued, could be utilized, under special circumstances, as a method of discouraging, delaying or preventing a change in control of our business or a takeover from a third party.

2007 Employee Stock Plan

The principal terms and provisions of the 2007 Plan are summarized below. As a summary, the description below is not a complete description of all the terms of the 2007 Plan and is qualified in its entirety by reference to the full text of the 2007 Plan.

Types of Awards

Both incentive stock options, or ISOs, and nonqualified stock options, or NSOs, and stock grants and stock purchase rights may be granted under the 2007 Plan. ISOs receive favorable tax treatment on exercise, and may receive favorable tax treatment on a qualifying disposition of the underlying shares. However, ISOs must comply with certain requirements regarding exercise price, maximum term and post termination exercise period, and must be issued under a shareholder-approved plan. NSOs are not subject to these requirements, nor may they receive this favorable tax treatment upon exercise.

Administration

The 2007 Plan will be administered by either the Board of Directors of the Company or a Stock Plan Committee (Committee) appointed by the Board of Directors.

Eligibility

Awards under the 2007 Plan may only be made as follows: ISOs may be granted to any employee of the Company. Officers and directors of the Company who are not employees may not be granted ISOs under the Plan. Non-Qualified Options, stock grants and authorizations to make stock purchases may be granted to any director whether or not an employee), officer, employee or consultant of the Company.

Number of Shares

The aggregate number of shares that may be issued pursuant to the 2007 Plan is 8,000,000, subject to adjustment as described below.

Adjustments

In the event of a subdivision of the outstanding common stock, a declaration of a dividend payable in shares of common stock, a combination or consolidation of the outstanding common stock into a lesser number of shares of common stock, a recapitalization, a reclassification or a similar occurrence, the Committee shall make appropriate adjustments, subject to the limitations set forth in the 2007 Plan.

Transferability

No ISO shall be assignable or transferable by the grantee except by will or by the laws of descent and distribution, and during the lifetime of the grantee each ISO shall be exercisable only by him. All other awards under the 2007 Plan shall be freely transferable subject to certain limitations imposed by the 2007 Plan, when applicable.

Termination of Service

Each option shall set forth the extent to which the optionee shall have the right to exercise their option following termination of the optionee's employment with the Company. Such provisions shall be determined in the sole discretion of the Board of Directors or Committee, and need not be uniform among all options issued pursuant to the Plan. Notwithstanding the foregoing, and to the extent required by applicable law, each option shall provide that the optionee shall have the right to exercise the vested portion of any option held at termination for at least ninety (90) days following termination of employment with the Company for any reason, and that the optionee shall have the right to exercise the option for at least twelve (12) months if the optionee's employment terminates due to death or disability.

Amendment and Termination

The 2007 Plan, as set forth herein, became effective on October 1, 2007, the date of its adoption by the Board of Directors, subject to the approval of the holders of a majority of the outstanding shares of common stock of the Company within 12 months therefrom. Unless sooner terminated pursuant to the terms of the 2007 Plan, the 2007 Plan will terminate on September 30, 2016. The Board of Directors may terminate or amend the 2007 Plan at any time except that, the holders of a majority of the outstanding shares of common stock must approve certain amendments. Except as provided for in the 2007 Plan, the Board of Directors or shareholders cannot alter or impair the rights of an optionee, without his consent, under any award previously granted to him under the 2007 Plan.

Warrants

As of the date of this prospectus there are outstanding warrants to purchase an aggregate of 3,125,250 shares of our common stock, of which 3,010,668 warrants have vested as of the date of this prospectus, at a weighted average exercise price of $1.04 per share.

Nevada Anti-Takeover Law and Charter and Bylaws Provisions

Nevada Revised Statutes sections 78.378 to 78.3793 provide state regulation over the acquisition of a controlling interest in certain Nevada corporations unless the articles of incorporation or bylaws of the corporation provide that the provisions of these sections do not apply. Our articles of incorporation and bylaws do not state that these provisions do not apply. The statute creates a number of restrictions on the ability of a person or entity to acquire control of a Nevada company by setting down certain rules of conduct and voting restrictions in any acquisition attempt, among other things. The statute is limited to corporations that are organized in the state of Nevada and that have 200 or more shareholders, at least 100 of whom are shareholders of record and residents of the State of Nevada; and does business in the State of Nevada directly or through an affiliated corporation. Because of these conditions, the statute does not apply to our Company.

Provisions of our restated articles of incorporation and our bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our restated articles of incorporation and our bylaws (i) provide that the bylaws may be altered, amended or repealed and new bylaws may be adopted only by the board of directors, (ii) provide that the authorized number of directors, which may not be less than one or more than fifteen, may be changed only by resolution of the board of directors, (iii) permit our board of directors to issue up to 1,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in our control and (iv) our restated articles of incorporation provide that the shareholders shall not have pre-emptive rights to acquire unissued shares of the stock of the Company.

Transfer Agent

Our transfer agent is Broadridge Corporate Issuer Solutions, Inc., located at 44 W Lancaster Ave., Ardmore, Pennsylvania 19003, telephone number (610) 649-7300 and facsimile number (610) 649-7302.

OTC Markets (OTCQB) Quotation

Our common stock is quoted on the OTC Markets (OTCQB) under the trading symbol “LWLG”.

PLAN OF DISTRIBUTION

The common stock offered by this prospectus is being offered by the selling stockholder, Lincoln Park. The common stock may be sold or distributed from time to time by the selling stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this prospectus could be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents
- "at the market" into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the state's registration or qualification requirement is available and complied with.

Lincoln Park is an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act.

Lincoln Park has informed us that it intends to use an unaffiliated broker-dealer to effectuate all sales, if any, of the common stock that it may purchase from us pursuant to the 2013 Purchase Agreement. Such sales will be made at prices and at terms then prevailing or at prices related to the then current market price. Each such unaffiliated broker-dealer will be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. Lincoln Park has informed us that each such broker-dealer will receive commissions from Lincoln Park that will not exceed customary brokerage commissions. In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc., or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus.

Brokers, dealers, underwriters or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the selling stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. The compensation paid to a particular broker-dealer may be less than or in excess of customary commissions. Neither we nor Lincoln Park can presently estimate the amount of compensation that any agent will receive.

We know of no existing arrangements between Lincoln Park or any other stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares offered by this prospectus. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters or dealers and any compensation from the selling stockholder, and any other required information.

We will pay the expenses incident to the registration, offering, and sale of the shares to Lincoln Park. We have agreed to indemnify Lincoln Park and certain other persons against certain liabilities in connection with the offering of shares of common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Lincoln Park has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to us

by Lincoln Park specifically for use in this prospectus or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities.

Lincoln Park has represented to us that at no time prior to the 2013 Purchase Agreement has Lincoln Park or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short sale (as such term is defined in Rule 200 of Regulation SHO of the Exchange Act) of our common stock or any hedging transaction, which establishes a net short position with respect to our common stock. Lincoln Park agreed that during the term of the 2013 Purchase Agreement, it, its agents, representatives or affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

We have advised Lincoln Park that it is required to comply with Regulation M promulgated under the Exchange Act. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the securities offered by this prospectus.

This offering will terminate on the date that all shares offered by this prospectus have been sold by Lincoln Park or may be sold by Lincoln Park without restriction under Rule 144(b)(1)(i) under the Securities Act.

Our common stock is quoted on the OTCBB under the symbol “LWLG”.

LEGAL MATTERS

The validity of the securities being offered by this prospectus has been passed upon for us by Burton Bartlett & Glogovac, Reno, Nevada.

EXPERTS

Morison Cogen LLP, our independent registered public accounting firm, has audited our balance sheets as of December 31, 2012 and 2011 and the related statements of operations, stockholders' equity and cash flows for the years then ended and for the period from January 1, 2004 (inception of development stage) through December 31, 2012. We have included our financial statements in this prospectus and elsewhere in the registration statement of which it is a part in reliance on Morison Cogen LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We filed with the Securities and Exchange Commission a registration statement under the Securities Act of 1933 for the shares of common stock in this offering. This prospectus does not contain all of the information in the registration statement and the exhibits and schedule that were filed with the registration statement. For further information with respect to us and our common stock, we refer you to the registration statement and the exhibits and schedule that were filed with the registration statement. Statements contained in this prospectus about the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and we refer you to the full text of the contract or other document filed as an exhibit to the registration statement. A copy of the registration statement and the exhibits and schedules that were filed with the registration statement may be inspected without charge at the Public Reference Room maintained by the Securities and Exchange Commission at 100 F Street, N.E. Washington, DC 20549, and copies of all or any part of the registration statement may be obtained from the Securities and Exchange Commission upon payment of the prescribed fee. Information regarding the operation of the Public Reference Room may be obtained by calling the Securities and Exchange Commission at 1-800-SEC-0330. The Securities and Exchange Commission maintains a website that contains reports, proxy and information statements, and other information regarding registrants that file electronically with the SEC. The address of the website is www.sec.gov.

We file periodic reports under the Securities Exchange Act of 1934, including annual, quarterly and special reports, and other information with the Securities and Exchange Commission. These periodic reports and other information are available for inspection and copying at the regional offices, public reference facilities and website of the Securities and Exchange Commission referred to above.

We make available free of charge on or through our internet website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITY

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the registrant pursuant to the foregoing provisions, the registrant has been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

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LIGHTWAVE LOGIC, INC.
(A Development Stage Company)

FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors

Lightwave Logic, Inc.
Wilmington, Delaware

We have audited the accompanying balance sheets of Lightwave Logic, Inc., as of December 31, 2012 and 2011 and the related statements of operations, stockholders' equity and cash flows for the years then ended and for the period from January 1, 2004 (inception of development stage) through December 31, 2012. Lightwave Logic, Inc.'s management is responsible for these financial statements. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Lightwave Logic, Inc., as of December 31, 2012 and 2011 and results of its operations and its cash flows for the years then ended and for the period from January 1, 2004 (inception of development stage) through December 31, 2012 in conformity with accounting principles generally accepted in the United States of America.

/s/ MORISON COGEN LLP

Bala Cynwyd, Pennsylvania

April 1, 2013

LIGHTWAVE LOGIC, INC.
(A Development Stage Company)
BALANCE SHEETS

	December 31, 2012	December 31, 2011
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 2,936,879	$ 359,824
Prepaid expenses	89,975	41,756
	3,026,854	401,580
PROPERTY AND EQUIPMENT - NET	300,994	88,751
OTHER ASSETS		
Intangible assets - net	488,526	431,104
TOTAL ASSETS	$ 3,816,374	$ 921,435
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$ 96,384	$ 139,833
Accounts payable and accrued expenses- related parties	55,606	70,216
Accrued expenses	3,338	28,377
TOTAL LIABILITIES	155,328	238,426
STOCKHOLDERS' EQUITY		
Preferred stock, $0.001 par value, 1,000,000 authorized		
No shares issued or outstanding	-	-
Common stock $0.001 par value, 100,000,000 authorized		
50,160,758 and 45,337,092 issued and outstanding at		
December 31, 2012 and December 31, 2011	50,161	45,337
Additional paid-in-capital	32,042,751	24,513,000
Accumulated deficit	(15,827)	(15,827)
Deficit accumulated during development stage	(28,416,039)	(23,859,501)
TOTAL STOCKHOLDERS' EQUITY	3,661,046	683,009