Lightwave Logic, Inc.
Form 10-K
March 31, 2014

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

FORM 10-K

þ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2013

¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15 (D) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____to_____

Commission file number: 0-52567

Lightwave Logic, Inc.
(Exact name of registrant as specified in its charter)

Nevada	82-049-7368
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1831 Lefthand Circle, Suite C, Longmont, CO	80501
(Address of principal executive offices)	(Zip Code)

(Registrant's Telephone Number, including Area Code): 720-340-4949

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

Title of each class registered	Name of each exchange on which registered

Securities registered pursuant to section 12(g) of the Act:

Common Stock, Par Value $0.001
(Title of class)

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

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes þ No ¨

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act of 1934). Yes ¨ No þ

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant was approximately $38,193,179 as of June 30, 2013.

As of March 31, 2014, there were 53,080,469 shares outstanding of the registrant's common stock, $.001 par value.

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Forward-Looking Statements

This report on Form 10-K contains forward-looking statements. Forward-looking statements involve risks and uncertainties, such as statements about our plans, objectives, expectations, assumptions or future events. In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “estimate,” “plan,” “project,” “continuing,” “ongoing,” “expect,” “we believe,” “we intend,” “may,” “should,” “will,” “could” and similar expressions denoti uncertainty or an action that may, will or is expected to occur in the future. These statements involve estimates, assumptions, known and unknown risks, uncertainties and other factors that could cause actual results to differ materially from any future results, performances or achievements expressed or implied by the forward-looking statements. You should not place undue reliance on these forward-looking statements.

Factors that that are known to us that could cause a different result than projected by the forward-looking statement, include, but are not limited to:

- 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
- those events and factors described by us in Item 1.A “Risk Factors”
- other risks to which our Company is subject
- other factors beyond the Company's control.

Any forward-looking statement made by us in this report on Form 10-K is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

PART I

Item 1. Business.

Our Business Development

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

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

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

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

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

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.

Our principal executive office is located at 1831 Lefthand Circle, Suite C, Longmont, CO 80501, and our telephone number is (720) 340-4949. Our website address is www.lightwavelogic.com. No information found on our website is part of this report. Also, this report 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 report is not intended to and does not imply a relationship with, or endorsement or sponsorship of us by, any of these other parties.

Overview

We are a development stage, electro-optical device and organic nonlinear materials company. Our primary area of expertise is the chemical synthesis of chromophore dyes used in the development of organic Application Specific Electro-Optic Polymers (ASEOP) and Organic Non-Linear All-Optical Polymers (NLAOP) that have high electro-optic and optical activity. Our family of materials 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.

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.

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.

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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.

Our Business

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 photonic 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	Initial tests indicate no requirement for more elaborate, expensive packaging (housings)

gold-plated Kovar, in order to assure operational integrity
over required time 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, diverse corporate interests, including, to our knowledge, IBM, Lockheed Martin, DuPont, AT&T Bell Labs, Honeywell and 3M, 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

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)

Issued Australian Patents:

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

Allowed Japanese Patents:

JP 539187/2007 - Heterocyclical Chromophore Architectures (Granted March 19, 2013)

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.

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 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. 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 our new design partner was started in late 2011. This research and development program continued through 2013, and was completed the end of the third quarter of 2013. The results of this study gave us a guide on how to move forward with the design of our prototype spatial light modulator. The second phase of the program is under review and we expect to start the second phase sometime the second half of 2014.

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 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. This application is presently on hold while Celestech continues to engage its customer on its schedule and budget priorities. Additionally, we worked on three other applications with Celestech, two of which are in white paper design stage. Development of these applications continued through 2013. If these projects 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 rates of 1 THz (terahertz). Additional testing at Lehigh University of the Company’s other PerkinamineTM 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 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. 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 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 PerkinamineTM and Perkinamine NRTM 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 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 were 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. More recent measurements have shown an electro-optical effect closer to 100 picometers per volt in a 500 nm thin films. We continued the development work to better understand these results. In January 2014 we created a new methodology to combine multiple chromophores into a single polymer host that will significantly improve its ability to generate more powerful organic, nonlinear electro-optical (EO) polymer systems. The new synthetic chemistry process can enable multiple chromophores (dyes) to work in concert with each other within a single polymer host. This proprietary process has created two new material systems, which have demonstrated outstanding electro-optic values. In addition, initial thermal stability results exceed any commercially available organic nonlinear polymer material systems.

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 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 were carried out primarily at the university's Guided Wave Optics Laboratory (GWOL). The work was completed in close collaboration with Company personnel. It was determined a new synthetic chemistry and material process methodology was needed for consistent and repeatable results. That methodology was announced in January 2014.

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 R33 measurements from 100-125 picometers per volt, as measured by the University of Colorado 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 August 2013 in a combined effort of the Company's chemists, the University of Colorado, Boulder, and a third party research group, we successfully fabricated Silicon Organic Hybrid (SOH) slot waveguide modulators. The devices utilize an existing modulator structure with one of our proprietary electro-optic polymer material systems as the enabling material layer. In October 2013, we confirmed the functionality of the SOH slot waveguide modulators as operating devices.

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 PerkinamineTM family of chromophores 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.

In August 2013 in a combined effort of the Company's chemists, the University of Colorado, Boulder, and a third party research group we successfully fabricated Silicon Organic Hybrid (SOH) slot waveguide modulators. The devices utilize an existing modulator structure with one of our proprietary electro-optic polymer material systems as the enabling material layer. In October 2013, we confirmed the functionality of the SOH slot waveguide modulators as operating prototype devices. These first-generation devices have achieved greater electro-optical activity and dramatically lower drive voltage than industry standard modulators based on inorganic materials.

In November 2013, preliminary testing and initial data on our SOH slot waveguide modulators demonstrated several promising characteristics. The tested SOH chip had a 1-millimeter square footprint, enabling the possibility of sophisticated integrated optical circuits on a single silicon substrate. In addition, the waveguide structure was approximately 1/20 the length of a typical inorganic-based silicon photonics modulator waveguide. With the combination of our proprietary electro-optic polymer material and the extremely high optical field concentration in the slot waveguide modulator, the test modulators demonstrated less than 2.2 volts to operate. Initial data rates exceeded 30-35 Gb/sec in the telecom, 1550 nanometer frequency band. This is equivalent to four, 10Gb/sec, inorganic, lithium niobate modulators that would require approximately 12-16 volts to move the same amount of information. Our material also operates in the 1310 nanometer frequency band, which is suitable for data communications applications.

In January 2014 we created a new methodology to combined multiple chromophores into a single polymer host that will significantly improve their ability to generate more powerful organic, nonlinear electro-optical (EO) polymer systems. The new synthetic chemistry process can enable multiple chromophores (dyes) to work in concert with each other within a single polymer host. This proprietary process has created two new material systems, which have demonstrated outstanding electro-optic values. In addition, initial thermal stability results exceed any commercially available organic nonlinear polymer material systems.

In February 2014 we received our first purchase order for our advanced organic nonlinear electro-optic (EO) polymer from Boulder Nonlinear Systems (BNS) of Boulder, Colorado in connection with the development of a next generation LADAR system. A LADAR system is a radar system that utilizes a pulse laser to calculate the distance to a target, but is also capable of rendering a 3-D image.

In March 2014 we began the process of manufacturing an advanced design Silicon Organic Hybrid Transceiver prototype and has released the completed chip design to the OpSIS Center at the University of Delaware who will be producing initial silicon chips. Delivery of the chips is expected in early summer 2014, which will be used for qualification and testing. The OpSIS Center at the University of Delaware will be providing us with chips that we will process with various combinations of our electro-optic polymer systems. The initial application will target inter-data center interconnections of more than 10 kilometers. Our next design will utilize a different frequency and address the current bottleneck in the rack-to-server layer.

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

Our Company holds 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 its 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.

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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 dual path strategy that also 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 plan and have engaged a consultant 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:

1. DARPA, the Defense Advance Research Project Agency by sharing the technical data and test results on our aromatic molecular materials.
2. 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.
3. 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.
4. The University of Delaware, an institution well known for excellence in optical engineering.
5. 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 to our Company

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. 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 May 2013 Dr. Glasgow resigned as Chief Technology Officer and now serves as Senior Technical Advisor to the Company, a non-executive position.

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. Starting January 2013, Dr. Leonberger also serves as an advisor to our Board of Directors.

In March 2013 we retained Mr. Lou Bintz as our Manager of Product Development. In June 2013 Mr. Bintz was promoted to Vice President of Product Development, a non-executive position. 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.

In February 2014 we retained Dr. Ashok Shenvi as part of our technology team as Senior Principal Investigator. Dr. Shenvi received his Ph.D. from Stanford University and a M.Sc. from the Indian Institute of Technology in Bombay, India. Dr. Shenvi has over 30 years of experience working in medicinal and organic chemistry at Astra Zeneca Pharmaceuticals and central research at E. I. DuPont Company. Dr. Shenvi has authored 37 scientific publications and presentations, and has been granted 20 patents.

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, 2013 was $2,068,050 for research and development expenses compared to $2,489,747 for the year ended December 31, 2012, for a decrease of $421,697.

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 materials in the PerkinamineTM family. We intend to have a working bench-top prototype sometime during 2014 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.

Datacomm/Telecomm Photonic Transceiver

We along with our partners at the University of Colorado at Boulder (UCB) propose to develop multichannel integrated nanophotonic transceivers (MINTS) for application in data communications. The transceiver consists of a silicon photonic chip fabricated with nonlinear polymer infused modulators (SOH), multiplexers, demultiplexers, detectors and grating fiber couplers to an external light source. The CMOS-compatible optical modulators are key components for future silicon-based photonic transceivers. Our solution, the silicon-organic hybrid (SOH) platform has been proposed and is being prototyped. In the SOH approach, the optical signal is guided by a silicon waveguide while an organic cladding provides the electro-optic effect.

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. 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.

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.

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.

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, 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. GigOptix recently established a joint venture with CPqD.

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.

In January of 2014 we moved our Corporate Headquarters as well as our optical testing facility to Longmont, Colorado in order to be closer to our development partners. In the near future, clean-room capability will also be constructed there to establish prototype development capabilities for the Company.

Item 1A. Risk Factors.

Investing in our common stock is risky. In addition to the other information contained in this annual report, you should consider carefully the following risk factors in evaluating our business and us. If any of the possible negative events described in the following risk factors were to occur, our business, financial condition or results of operations likely would suffer. In that event, the trading price of our common stock could decline, and you could lose all or a part of your investment.

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

Since our inception, we have been engaged primarily in the research and development of our electro-optic polymer materials technologies and potential products. As a result of these activities, we incurred significant losses and experienced negative cash flow since our inception. We incurred a net loss of $3,912,326 for the year ended December 31, 2013 and $4,556,538 for the year ended December 31, 2012. We anticipate that we will continue to incur operating losses through at least 2014.

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.

Our independent auditors have expressed substantial doubt about our ability to continue as a going concern.

Our independent auditors have included an explanatory paragraph in their audit report issued in connection with our financial statements that states that our ability to continue as a going concern is dependent upon our ability to successfully complete our development program and, ultimately, attain profitable operations, which is dependent upon future events, including obtaining adequate financing to fulfill our development activities. Our financial statements do not include any adjustments that might result from the outcome of these uncertainties. We cannot assure you that we will be able to secure the necessary financing and/or equity investment or achieve an adequate sales level.

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

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

- Establish product sales and marketing capabilities;
- Establish and maintain markets for our potential products;
- Identify, attract, retain and motivate qualified personnel;
- Continue to develop and upgrade our technologies to keep pace with changes in technology and the growth of markets using polymer based materials;
- Develop expanded product production facilities and outside contractor relationships;
- Maintain our reputation and build trust with customers;
- Scale up from small pilot or prototype quantities to large quantities of product on a consistent basis;
- Contract for or develop the internal skills needed to master large volume production of our products; and
- Fund the capital expenditures required to develop volume production due to the limits of our available financial resources.

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

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

In order to effectively manage growth, we must:

- Continue to develop an effective planning and management process to implement our business strategy;
- Hire, train and integrate new personnel in all areas of our business; and
- Expand our facilities and increase capital investments

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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.

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

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

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

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

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

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

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

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

Our future growth will suffer if we do not achieve sufficient market acceptance of our electro-optic polymer products.

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.

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:

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Accurately predict the needs of our target customers and develop, in a timely manner, the technology required to support those needs;

- Provide products that are not only technologically sophisticated but are also available at a price acceptable to customers and competitive with comparable products;
- Establish and effectively defend our intellectual property; and
- Enter into relationships with other companies that have developed complementary technology into which our products may be integrated.

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

Two of our significant target markets are the telecommunications and networking markets, which continue to be subject to overcapacity and slow growth or decline.

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.

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

Our business does not presently generate the cash needed to finance our current and anticipated operations. Based on our current operating plan and budgeted cash requirements, we believe that we have sufficient funds to finance our operations through September 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 Capital Fund, LLC ("Lincoln Park") financing transaction (described in the paragraph below), 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 June 2013, we entered into a purchase agreement (the "Purchase Agreement") with Lincoln Park, under which we may direct Lincoln Park to purchase up to $20,000,000 worth of shares of our registered common stock over a 30-month period. If we make sales of our common stock under the Purchase Agreement, we would be able to fund our operations for a longer period of time. However, the extent to which we will rely on the Purchase Agreement with Lincoln Park as a source of funding will depend on a number of factors, including the prevailing market price of our common stock and the extent to which we are able to secure working capital from other sources. Specifically, Lincoln Park does not have the obligation to purchase any shares of our common stock on any business day that the price of our common stock is less than $1.00 per share.

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

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

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

Under the Purchase Agreement, we may direct Lincoln Park to purchase up to $20,000,000 worth of shares of our common stock over a 30-month period. On any trading day selected by us, we may sell shares of common stock to Lincoln Park in amounts up to 100,000 shares per regular sale ("Regular Purchases"), which may be increased to up to 200,000 shares depending on certain conditions as set forth in the Purchase Agreement, up to the aggregate commitment of $20,000,000. If the market price of our common stock is not below $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.

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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 Purchase Agreement will be based on the prevailing market prices of the Company's shares of common stock, which shall be equal to the lesser of the lowest sale price of the common shares during the purchase date and the average of the three (3) lowest closing sale prices of the common shares during the twelve (12) business days prior to the purchase date without any fixed discount. 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 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 Purchase Agreement. In addition, we only registered up to 10,000,000 shares of our common stock in connection with the 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 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 Purchase Agreement may cause substantial dilution to our existing stockholders and could cause the price of our common stock to decline.

Under the Purchase Agreement, we may sell to Lincoln Park, from time to time and under certain circumstances, up to $20,000,000 of our common stock over approximately 30 months commencing in October 2013. Generally, with respect to the Purchase Agreement, we have the right, but no obligation, to direct Lincoln Park to periodically purchase up to $20,000,000 of our common stock in specific amounts under certain conditions, which periodic purchase amounts can be increased under specified circumstances.

We also agreed to issue to Lincoln Park up to an aggregate of 600,000 shares of common stock as a fee for Lincoln Park's commitment to purchase our shares under the Purchase Agreement. Of these commitment shares, we issued 200,000 shares upon entering into the Purchase Agreement. The remaining 400,000 commitment shares are issuable to Lincoln Park on a pro rata basis as additional purchases are made under the Purchase Agreement.

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

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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, 2013, we have outstanding options and warrants to purchase an aggregate of 7,146,000 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 Purchase Agreement with Lincoln Park.

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

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

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

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

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

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

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

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

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

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

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

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

Third parties may claim that our potential products or related technologies infringe their patents. Any patent infringement claims brought against us may cause us to incur significant expenses, divert the attention of our management and key personnel from other business concerns and, if successfully asserted against us, require us to pay substantial damages. In addition, as a result of a patent infringement suit, we may be forced to stop or delay developing, manufacturing or selling potential products that are claimed to infringe a patent covering a third party's intellectual property unless that party grants us rights to use its intellectual property. We may be unable to obtain these rights on terms acceptable to us, if at all. Even if we are able to obtain rights to a third party's patented intellectual property, these rights may be non-exclusive, and therefore our competitors may obtain access to the same intellectual property. Ultimately, we may be unable to commercialize our potential products or may have to cease some of our business operations as a result of patent infringement claims, which could severely harm our business.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

quantities, our financial results will be harmed.

We conduct significantly all of our research and development activities at a single facility, and circumstances beyond our control may result in considerable interruptions.

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.

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

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

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

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

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

A material weakness in internal controls may remain undetected for a longer period because of our Company's exemption from the auditor attestation requirements under Section 404(b) of Sarbanes-Oxley.

Our 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.

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;

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- 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.

Item 1B. Unresolved Staff Comments.

Not Applicable

Item 2. Properties.

Our executive and business office headquarters are located at 1831 Lefthand Circle, Suite C, Longmont, CO 80501. We coordinate our operations, optical device design, optical laboratory, thin films laboratory and clean room, and market our services from this space. The rent and operating expenses (NNN) for this space during the lease's first 12 months is $41,182, as a result of the abatement of the first three months rent.

We also lease approximately 2,000 square feet of laboratory space at 1 Innovation Way, Newark, Delaware 19711, which we utilize to operate an organic synthesis and thin-films laboratory. Our annual rent for this space is $69,914. We also lease approximately 1,400 square feet of laboratory space at 41A Germay Drive, Wilmington, Delaware 19804-1100. Our annual rent for this space is $9,869.

Item 3. Legal Proceedings.

We are not aware of any litigation or threatened litigation of a material nature.

Item 4. Mine Safety Disclosures.

Not Applicable.

PART II

Item 5. Market For Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases Of Equity Securities.

Market Information

Our common stock is traded on the OTCQB under the symbol "LWLG". The following table set forth below lists the range of high and low bids for our common stock for our two most recent fiscal years. The prices in the table reflect inter-dealer prices, without retail markup, markdown or commission and may not represent actual transactions or a liquid trading market.

		High	Low
2012	1st Quarter	$2.85	$1.61
	2nd Quarter	$1.52	$0.86
	3rd Quarter	$0.96	$0.831
	4th Quarter	$1.21	$0.825
2013	1st Quarter	$1.65	$0.83
	2nd Quarter	$1.55	$0.83
	3rd Quarter	$0.94	$0.74
	4th Quarter	$1.11	$0.69

As of March 31, 2014, we have a total of 53,080,469 shares of common stock outstanding, held by approximately 283 record shareholders. We do not have any shares of preferred stock 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, 2013.

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)	5,599,500	$1.19	1,191,600
Equity compensation plans not approved by security holders (2)	1,546,500	$1.04	0
Total	7,146,000	$1.16	1,191,600

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

During the period covered by this report, our Company has sold the following securities without registering the securities under the Securities Act:

Securities issued for cash

Date	Security
March 2013	Warrant Exercise – 12,500 shares of common stock at $1.25 per share for aggregate proceeds of $15,625.
June 2013	Warrant Exercise – 20,000 shares of common stock at $0.345 per share for aggregate proceeds of $6,900.

Securities issued for services

Date	Security

July 2013	Warrant - 100,000 shares of common stock at $0.90 per share for services.

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Securities issued pursuant to our Employee Stock Plan

Date	Security
March 2013	Stock options - 75,000 shares of common stock at $1.16 per share.
May 2013	Stock options - 10,000 shares of common stock at $1.03 per share.
May 2013	Stock options - 100,000 shares of common stock at $1.00 per share.
August 2013	Stock options – 75,000 shares of common stock at $0.84 per share.
October 2013	Stock options - 200,000 shares of common stock at $0.93 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.

Item 6. Selected Financial Data.

Not Applicable.

Item 7. 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

We are a development stage, electro-optical device and organic nonlinear materials company. Our primary area of expertise is the chemical synthesis of chromophore dyes used in the development of organic Application Specific Electro-Optic Polymers (ASEOP) and Organic Non-Linear All-Optical Polymers (NLAOP) that have high electro-optic and optical activity. Our family of materials 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. In January 2014 we created a new methodology to combine multiple chromophores into a single polymer host that will significantly improve their ability to generate more powerful organic, nonlinear electro-optical (EO) polymer systems. The new synthetic chemistry process can enable multiple chromophores (dyes) to work in concert with each other within a single polymer host. This proprietary process has created two new material systems, which have demonstrated outstanding electro-optic values. In addition, initial thermal stability results exceed any commercially available organic nonlinear polymer material systems.

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 named 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.

Some of our more significant milestones that we achieved during 2013 and the first quarter of 2014 include:

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 at 1550 nm, which as tested by the University of Colorado 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 August 2013 in a combined effort of the Company’s chemists, the University of Colorado, Boulder, and a third party research group we successfully fabricated Silicon Organic Hybrid (SOH) slot waveguide modulators. The devices utilize an existing modulator structure with one of our proprietary electro-optic polymer material systems as the enabling material layer. In October 2013, we confirmed the functionality of the SOH slot waveguide modulators as operating devices.

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 family of chromophores 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.

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. In October 2013 the U.S. Securities and Exchange Commission declared effective our registration statement 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.

In August 2013 in a combined effort of the Company's chemists, the University of Colorado, Boulder, and a third party research group we successfully fabricated Silicon Organic Hybrid (SOH) slot waveguide modulators. The devices utilize an existing modulator structure with one of our proprietary electro-optic polymer material systems as the enabling material layer. In October 2013 we confirmed the functionality of the SOH slot waveguide modulators as operating prototype devices. These first-generation devices have achieved greater electro-optical activity and dramatically lower drive voltage than industry standard modulators based on inorganic materials.

In November 2013 preliminary testing and initial data on our SOH slot waveguide modulators demonstrated several promising characteristics. The tested SOH chip had a 1-millimeter square footprint, enabling the possibility of sophisticated integrated optical circuits on a single silicon substrate. In addition, the waveguide structure was approximately 1/20 the length of a typical inorganic-based silicon photonics modulator waveguide. With the combination of our proprietary electro-optic polymer material and the extremely high optical field concentration in the slot waveguide modulator, the test modulators demonstrated less than 2.2 volts to operate. Initial data rates exceeded 30-35 Gb/sec in the telecom, 1550 nanometer frequency band. This is equivalent to four, 10Gb/sec, inorganic, lithium niobate modulators that would require approximately 12-16 volts to move the same amount of information. Our material also operates in the 1310 nanometer frequency band, which is suitable for data communications applications.

In February 2014 we received our first purchase order for our advanced organic nonlinear electro-optic (EO) polymer from Boulder Nonlinear Systems (BNS) of Boulder, Colorado in connection with the development of a next generation LADAR system. It is a radar system that utilizes a pulse laser to calculate the distance to a target, but is also capable of rendering a 3-D image.

In March 2014 we began the process of manufacturing an advanced design Silicon Organic Hybrid Transceiver prototype and have released the completed chip design to the OpSIS Center at the University of Delaware who will be producing initial silicon chips. Delivery of the chips is expected in early summer 2014, which will be used for qualification and testing. The OpSIS Center at the University of Delaware will be providing us with chips that we will process with various combinations of our electro-optic polymer systems. The initial application will target inter-data center interconnections of more than 10 kilometers. Our next design will utilize a different frequency and address the current bottleneck in the rack-to-server layer.

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
- 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:

- datacomm/telecomm photonic transceiver
- telecommunications modulator
- spatial light modulator
- optical filter
- all-optical switch
- multi-channel optical modem

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.

Capital Requirements

As a development stage company, we do not generate revenues. 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 2013 we received $2,351,008 in cash proceeds from the issuance and sale of our common stock.

Results of Operations

Comparison of fiscal 2013 to fiscal 2012

Revenues

As a development stage company, we had no revenues during the years ended December 31, 2013 and 2012. The Company is in various stages of material development and evaluation, and product development with potential customers and expects the next revenue stream to be in sale of nonlinear optical polymer materials, prototype devices, application and non-recurring engineering charges prior to moving into production.

Operating Expenses

Our operating expenses were $3,700,437 and $4,426,164 for the years ended December 31, 2013 and 2012, respectively, for a decrease of $725,727. This decrease in operating expenses was due primarily to a decrease in non-cash stock option and warrant amortization, offset by increases in research and development salaries and wages, laboratory lease rent, depreciation, laboratory electro-optic device prototype, development and outsourced testing expenses, laboratory materials and supplies, investor relations expenses, insurance expense, legal expenses, accounting, conferences, SEC related filing fees and website design fees.

Included in our operating expenses for the year ended December 31, 2013 was $2,068,050 for research and development expenses compared to $2,489,747 for the year ended December 31, 2012, for a decrease of $421,697. This is primarily due to a decrease in non-cash stock option and warrant amortization offset by increases in salaries and wages, laboratory electro-optic device prototype, development and outsourced testing expenses, laboratory materials and supplies, laboratory rent and depreciation.

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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 $176,401 from $592,976 for the year ended December 31, 2012 to $769,377 for the year ended December 31, 2013 primarily due to additional employees hired to perform in-house material development, testing and device development in the Company's new lab facility. Accordingly laboratory materials and supplies increased $21,534 from $59,219 for the year ended December 31, 2012 to $80,753 for the year ended December 31, 2013. Also, laboratory electro-optic device prototype, development and outsourced testing expenses increased $128,640 from $267,745 for the year ended December 31, 2012 to $396,385 for the year ended December 31, 2013 as the Company expands its prototype development efforts.

During the second half of 2012, the Company leased additional laboratory space and rent expense increased accordingly $24,431 from $53,563 for the year ended December 31, 2012 to $77,994 for the year ended December 31, 2013. Depreciation expense increased $58,834 from $51,790 for the year ended December 31, 2012 to $110,624 for the year ended December 31, 2013 primarily due to the additional equipment purchased for the new lab facility.

Non-cash stock compensation and stock option amortization decreased $823,189 from $1,277,924 for the year ended December 31, 2012 to $454,735 for the year ended December 31, 2013.

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 $304,030 to $1,632,387 for the year ended December 31, 2013 compared to $1,936,417 for the year ended December 31, 2012. The decrease is due primarily to a decrease in non-cash amortization of options and warrants offset by increases in investor relations expenses, insurance expense, legal expenses, accounting expenses, conferences, SEC related filing fees and website design fees.

Non-cash stock compensation and stock option amortization decreased $460,110 from $816,123 for the year ended December 31, 2012 to $356,013 for the year ended December 31, 2013.

Investor relations expenses increased by $35,492 from $1,073 for the year ended December 31, 2012 to $36,565 for the year ended December 31, 2013 in an effort to expand the Company's exposure to a broader base of investors.

Insurance expense increased $49,530 from $147,083 for the year ended December 31, 2012 to $196,613 for the year ended December 31, 2013.

Legal fees increased $19,557 to $193,419 for the year ended December 31, 2013 compared to $173,862 for the year ended December 31, 2012.

Accounting fees increased $9,190 to $89,590 for the year ended December 31, 2013 compared to $80,400 for the year ended December 31, 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 $8,371 to $9,401 for the year ended December 31, 2013 compared to $1,030 for the year ended December 31, 2012.

SEC related filing fees increased $6,887 to $29,348 for the year ended December 31, 2013 compared to $22,461 for the year ended December 31, 2012.

Internet and website expenses increased $5,010 to $15,050 for the year ended December 31, 2013 compared to $10,040 for the year ended December 31, 2012 for the development of the new website.

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 $81,514 to ($211,889) for the year ended December 31, 2013 from ($130,375) for the year ended December 31, 2012, relating primarily to the commitment fee associated with the resale of shares to an institutional investor of an amended agreement for resale during the corresponding twelve-month period.

Net Loss

Net loss was $3,912,326 and $4,556,538 for the years ended December 31, 2013 and 2012, respectively, for a decrease of $644,212, due primarily to a decrease in non-cash stock option and warrant amortization, offset by increases in commitment fee to institutional investor, research and development salaries and wages, laboratory lease rent, depreciation, laboratory electro-optic device prototype, development and outsourced testing expenses, laboratory materials and supplies, investor relations expenses, insurance expense, legal expenses, accounting, conferences, SEC related filing fees and website design fees.

Significant Accounting Policies

Our Company's accounting policies are more fully described in Note 1 of Notes to Financial Statements. As disclosed in Note 1 of Notes to Financial Statements, the preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying disclosures. Although these estimates are based on our management’s best knowledge of current events and actions our Company may undertake in the future, actual results could differ from the estimates.

Stock Based Compensation

The Company uses the Black-Scholes option pricing model to calculate the grant-date fair value of an award, with the following assumptions for 2013 and 2012: no dividend yield in both years, expected volatility, based on the Company's historical volatility, 107% to 113% in 2013 and between 77% and 217% in 2012, risk-free interest rate between 0.94% to 1.86% in 2013 and between 0.13% and 2.26% in 2012 and expected option life of 3 to 10 years in 2013 and 2 to 10 years in 2012.

As of December 31, 2013, there was $384,591 of unrecognized compensation expense related to non-vested market-based share awards that are expected to be recognized through October 2016.

Liquidity and Capital Resources

During the year ended December 31, 2013, net cash used in operating activities was $2,838,030 and net cash used in investing activities was $179,153, 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 year ended December 31, 2013 was $2,351,008. At December 31, 2013, our cash and cash equivalents totaled $2,270,704, our assets totaled $3,244,808, our liabilities totaled $122,176, and we had stockholders' equity of $3,122,632.

During the year ended December 31, 2012, net cash used in operating activities was $2,368,462 and net cash used in investing activities was $348,882, 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 year ended December 31, 2012 was $5,294,399. At December 31, 2012, our cash and cash equivalents totaled $2,936,879, our assets totaled $3,816,374, our liabilities totaled $155,328, and we had stockholders' equity of $3,661,046.

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 $3,240,000 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 2014.

Our business does not presently generate the cash needed to finance our current and anticipated operations. We believe we have raised sufficient capital to finance our operations through September 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.

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 expired 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 registered for resale by Lincoln Park 10,000,000 shares of our common stock in October 2013. Pursuant to the new stock purchase agreement, Lincoln Park is obligated to make purchases as the Company directs in accordance with the purchase agreement, 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 new stock 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 stock 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 stock the purchase agreement.

We expect that our cash used in operations will increase during 2014 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

For the year ended December 31, 2013

Net cash used in operating activities was $2,838,030 for the year ended December 31, 2013, primarily attributable to the net loss of $3,912,326 adjusted by $135,851 in warrants issued for services, $674,897 in options issued for services, $212,156 in common stock issued for services, $126,773 in depreciation expenses and patent amortization expenses, ($42,229) in prepaid expenses and ($33,152) 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 in investing activities was $179,153 for the year ended December 31, 2013, consisting of $69,875 in cost for intangibles and $109,278 in asset additions primarily for the new lab facility.

Net cash provided by financing activities was $2,351,008 for the year ended December 31, 2013 and consisted of $2,278,500 proceeds from resale of common stock to an institutional investor and $72,508 from the exercise of options and warrants.

For the year ended December 31, 2012

Net cash used in operating activities was $2,368,462 for the year ended December 31, 2012, primarily attributable to the net loss of $4,556,538 adjusted by $291,326 in warrants issued for services, $1,816,430 in options issued for services, $132,420 in common stock issued for services, $79,217 in depreciation expenses and patent amortization expenses, ($48,219) in prepaid expenses and ($83,098) 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 in investing activities was $348,882 for the year ended December 31, 2012, consisting of consisting of $83,248 in cost for intangibles and $265,634 in asset additions primarily for the new lab facility.

Net cash provided by financing activities was $5,294,399 for the year ended December 31, 2012 and consisted of $4,849,999 proceeds from resale of common stock to an institutional investor and $444,400 from the exercise of options and warrants.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not Applicable

Item 8. Financial Statements and Supplementary Data

Our Financial Statements of are attached as Appendix A (following Exhibits) and included as part of this Form 10-K Report. A list of our Financial Statements is provided in response to Item 15 of this Form 10-K Report.

Item 9. Changes In And Disagreements With Accountants On Accounting and Financial Disclosure

Not Applicable.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this report, our Company evaluated the effectiveness and design and operation of its disclosure controls and procedures. Our Company’s disclosure controls and procedures are the controls and other procedures that we designed to ensure that our Company records, processes, summarizes, and reports in a timely manner the information that it must disclose in reports that our Company files with or submits to the Securities and Exchange Commission. Our principal executive officer and principal financial officer reviewed and participated in this evaluation. Based on this evaluation, our Company made the determination that its disclosure controls and procedures were effective.

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Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Under the supervision and with the participation of management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our internal controls over financial reporting based on the framework in Internal Control -Integrated Framework (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this evaluation, management has concluded that our internal control over financial reporting was effective as of December 31, 2013.

The Company's internal control over financial reporting includes policies and procedures that (1) pertain to maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of the assets of the Company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Our management, including our principal executive officer and principal financial officer, does not expect that our disclosure controls or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. In addition, the design of any system of controls is based in part on certain assumptions about the likelihood of future events, and controls may become inadequate if conditions change. There can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

This 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.

Changes in Company Internal Controls

No change in our Company’s internal control over financial reporting occurred during our fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

Not Applicable.

PART III

Item 10. Directors and Executive Officers and Corporate Governance

Identity of directors, executive officers and significant employees

Name	Age	Position	Term as a Director
Thomas E. Zelibor	59	Chair of the Board of Directors; Chief Executive Officer	1 year
James S. Marcelli	66	Director; President; Chief Operating Officer	1 year
Andrew J. Ashton	40	Director; Senior Vice President; Secretary	1 year
Terry Turpin	71	Optical Computing Expert(1)	---
William C. Pickett, III	70	Director	1 year
Joseph A. Miller	72	Director	1 year
Ronald A Bucchi	58	Director	1 year
Siraj Nour El-Ahmadi	49	Director	1 year

(1) Our Optical Computing and signal processing expert 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 of directors, executive officers, and significant employees

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.

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.

Mr. Siraj Nour El-Ahmadi. Mr. El-Ahmadi has served as a director of our Company since October 2, 2013. Since 2004, Mr. El-Ahmadi has served as Founder, President and Chief Executive Officer of Menara Networks, a developer of innovative products and solutions that simplify layered optical transport networks. Mr. El-Ahmadi has over 17 years of experience in optical transmission in particular and the telecom industry in general. Prior to founding Menara, Mr. El-Ahmadi served as Vice President-Marketing & Product Management at Nortel where he was responsible for the OPTera LH 4000 ULR product (acquired from Qtera) that achieved over $200M in revenues in its first two years. Prior to that, Mr. El-Ahmadi was the Product Architect & Vice President of Product Management at Qtera Corporation, a successful technology start-up acquired by Nortel in 2000 for $3.25 billion. Mr. El-Ahmadi also held a Senior Manager position at Bell Northern Research and worked as a Transmission Engineer at WilTel (WorldCom) where he evaluated and deployed the world first bidirectional EDFA and bi-directional WDM transmission. Mr. El-Ahmadi holds a BS and MS in Electrical Engineering from the University of Oklahoma, is a member of Eta Kappa Nu and is the inventor of 11 patents, issued or pending, in the area of optical communications. He has authored a number of publications and is a frequent speaker at telecom and optical networking events and conferences.

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 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 stockholders complied with all Section 16(a) filing requirements.

Code of Ethics

Our Company has adopted a Code of Ethics and Business Conduct 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 Siraj Nour El-Ahmadi. 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.

Item 11. 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, 2013 and 2012.

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	2013	217,128	0	0	229,480	0	446,608
CEO, Chmn. of the Board (1)	2012	140,000	0	1,607	610,922	5,100	757,629
James S. Marcelli	2013	208,290	0	0	60,399	0	268,689
President, COO, Director (2)	2012	200,000	0	0	347,243	0	547,243

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 receives 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. The employment agreement was amended on August 29, 2013, and effective September 1, 2013, his receives 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 receives 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. The options vest quarterly over two years in equal installments of 12,500 shares per quarter beginning August 1, 2010. Effective August 1, 2013, Mr. Marcelli receives a salary of $17,917 per month and an option to purchase up to 100,000 shares of common stock at an exercise price of $1.00 per share. The options vest in equal installments of 25,000 options with the first installment vesting on August 1, 2013 and the remaining installments vesting quarterly commencing on October 1, 2013. 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. Additionally, in the event Mr. Marcelli's employment terminates upon his death and the key man life insurance is in place for Mr. Marcelli, our Company 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 longer. 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.

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.

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, 2013, 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	150,000	0	--	1.42	8/28/15	--	--	--	--
the Board(1)(3)									
	100,000	0		1.00	12/12/15	--	--	--	--
	187,500	62,500		1.01	12/19/16				
	500,000	0		1.69	4/30/22				
James S. Marcelli	100,000	--	--	1.50	7/31/15	--	--	--	--
President, COO,	1,050,000	--	--	1.75	7/31/15	--	--	--	--
Director(2)(3)	50,000	50,000	--	1.00	5/16/23				

(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 company 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 company 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. August 1, 2013, Mr. Marcelli received an option to purchase up to 100,000 shares of common stock. The options vest in equal installments of 25,000 options with the first installment vesting on August 1, 2013 and the remaining installments vesting quarterly commencing on October 1, 2013.

(3) 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, 2013 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 ($)
Thomas E. Zelibor (1)	--	--	--	--	--	--	--
James S. Marcelli (1)	--	--	--	--	--	--	--
Andrew J. Ashton (1)	--	--	--	--	--	--	--
William C. Pickett, III (2)	--	--	--	--	--	--	--
Joseph A. Miller (3)	--	--	--	--	--	--	--
Ronald A. Bucchi, (4)	--		35,704	--	--	--	35,704
Siraj Nour El-Ahmadi (5)	--		174,106	--	--	--	174,106

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

(2) On January 8, 2008, Mr. Pickett received an option to purchase up to 100,000 shares of company stock at an exercise price of $.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. 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.

(3) 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.
(4) On August 29, 2013, Mr. Bucchi received an option to purchase up to 50,000 shares of company stock at an exercise price of $0.84 that vest pursuant to the following schedule: 20,000 shares vested immediately; and the remaining options vest in equal quarterly installments of 10,000 options per year commencing on October 1, 2013.
(5) On November 1, 2013, Mr. Siraj Nour El-Ahmadii received an option to purchase up to 200,000 shares of company stock at an exercise price of $0.93 that vest pursuant to the following schedule: 50,000 shares on November 1, 2013 and the remaining options vest in equal annual installments of 50,000 options per year commencing on November 1, 2014.

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.

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

The following table sets forth, as of March 31, 2014, the names, addresses, amount and nature of beneficial ownership and percent of such ownership of each person or group known to our Company 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 (5)
Frederick J. Goetz, Jr. (2)	2,857,298(4)	5.38%
Jennifer J. Goetz Exec Est. of Frederick J Goetz (2)(3)	3,205,511(4)	6.04%
Mary Goetz (2)	2,977,926(4)	5.61%
Andrew J. Ashton	2,981,667(4)	5.62%

(1) In care of our Company at 1831 Lefthand Circle, Suite C, Longmont, CO 80501.
(2) Frederick J. Goetz (deceased) and Mary Goetz were Husband and wife, and Frederick J. Goetz, Jr. is their son.

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(3) Jennifer J. Goetz Exec Est. of Frederick J Goetz 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) Based on 53,080,469 shares of common stock outstanding on March 31, 2014. Does not include shares underlying: (i) options to purchase shares of our common stock under our 2007 Plan, or (ii) outstanding warrants to purchase shares of our common stock.

The following table sets forth, as of March 31, 2014, 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	1,080,924(5)	2.03%
James S. Marcelli President, Chief Operating Officer, Principal Financial Officer and Director	1,490,000(6)	2.8%
Andrew J. Ashton Senior Vice President, Secretary, and Director	2,981,667	5.62%
William C. Pickett, III Director	501,000(7)	*
Joseph A. Miller, Jr. Director	230,000(8)	*
Ronald A. Bucchi Director	340,600(9)	*
Siraj Nour El-Ahmadi Director	80,000(10)	*
Directors and Officers as a Group (7 Persons):	6,704,191	12.63%

* Less than 1%.

(1) In care of our Company at 1831 Lefthand Circle, Suite C, Longmont, CO 80501.
(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 March 31, 2014.

(3) Based on 53,080,469 shares of common stock outstanding on March 31, 2014. 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 March 31, 2014, 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 1,037,500 shares of common stock exercisable within 60 days from March 31, 2014.
(6) Consists of 240,000 shares of common stock and an option to purchase up to 1,250,000 shares of common stock exercisable within 60 days from March 31, 2014.
(7) Consists of 21,000 shares of common stock and an option to purchase up to 480,000 shares of common stock exercisable within 60 days from March 31, 2014.
(8) Consists of an option to purchase up to 230,000 shares of common stock exercisable within 60 days from March 31, 2014.
(9) Consists of 160,600 shares of common stock and an option to purchase up to 180,000 shares of common stock exercisable within 60 days from March 31, 2014. Mr. Bucchi disclaims beneficial ownership of 53,000 shares held by his spouse.
(10) Consists of an option to purchase up to 80,000 shares of common stock exercisable within 60 days from March 31, 2014.

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

Securities Authorized for Issuance under Equity Compensation Plans

Information regarding our compensation plans under which our equity securities are authorized for issuance can be found in Part II –Item 5 of this report.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

No related party transaction was required to be reported under this Item 13.

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 traded on the Over-the-Counter Markets, our Board has reviewed each of the directors' relationships with the Company in conjunction with Section 121 of the listing standards of the NYSE Alternext US and has affirmatively determined that four of our directors, William C. Pickett, III, Joseph A. Miller, Jr. Ronald A. Bucchi and Siraj Nour El-Ahmadi, 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. Additionally, prior to his resignation, Ross Fasick was determined to be such an independent director. Mr. Bucchi serves as our audit committee financial expert as that term is defined by the rules promulgated by the Securities and Exchange Commission.

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 are independent directors pursuant to the standards described above.

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Item 14. Principal Accounting Fees and Services.

Audit Fees.

The aggregate fees billed for the years ended December 31, 2013 and 2012 for professional services rendered by Morison Cogen, LLP for the audit of the Company's annual financial statements and review of financial statements included in the Company's Form 10-Q or services that are normally provided by Morison Cogen, LLP in connection with statutory and regulatory filings or engagements were $49,000 for the year ended December 31, 2013; and $48,800 for the year ended December 31, 2012.

Audit-Related Fees.

Fees billed for the years ended December 31, 2013 and December 31, 2012 for assurance and related services by Morison Cogen, LLP that are reasonably related to the performance of the audit or review of the Company's financial statements and are not reported under the category Audit Fees described above were $0 for the year ended December 31, 2013 and $0 for the year ended December 31, 2012.

Tax Fees.

Fees billed for the year ended December 31, 2013 for tax compliance by Morison Cogen, LLP was $6,000; and for the year ended December 31, 2012 was $6,000.

All Other Fees.

Fees billed for the years ended December 31, 2013 and December 31, 2012 for products and services provided by Morison Cogen, LLP, other than the services reported in the Audit Fees, Audit-Related Fees, and Tax Fees categories above were $0 for year ended December 31, 2013 and 2012.

Audit Committee Pre-Approval Policies.

The Company's audit committee currently does not have any pre-approval policies or procedures concerning services performed by Morison Cogen, LLP. All the services performed by Morison Cogen, LLP that are described above were pre-approved by the Company's audit committee.

None of the hours expended on Morison Cogen, LLP 's engagement to audit the Company's financial statements for the years ended December 31, 2013 were attributed to work performed by persons other than Morison Cogen, LLP's full-time, permanent employees.

PART IV

Item 15. Exhibits And Financial Statement Schedules

(a) The following Audited Financial Statements are filed as part of this Form 10-K Report:

Report of Independent Registered Public Accounting Firm
Balance Sheets
Statements of Operations
Statement of Stockholders' Equity
Statements of Cash Flows
Notes to Financial Statements

(b) The following exhibits are filed as part of this report.

Exhibit No.	Description	Location
3.1	Articles of Incorporation	Incorporated by reference to Company's Form 10-SB as filed with the SEC on April 13, 2007
3.2	Certificate of Amendment to Articles of Incorporation	Incorporated by reference to Company's Definitive Schedule 14C Information Statement as filed with the SEC on February 19, 2008
3.3	Bylaws of the Company	Incorporated by reference to Company's Form 10-SB as filed with the SEC on April 13, 2007
3.4	Amendments to Bylaws of the Company	Incorporated by reference to Company's Form 8-K as filed with the SEC on July 31, 2013
10.1	2007 Employee Stock Plan	Incorporated by reference to Company's Definitive Schedule 14C Information Statement as filed with the SEC on February 19, 2008
10.2	2007 Employee Stock Plan Amendment	Incorporated by reference to Company's Definitive Schedule 14A Proxy Statement as filed with the SEC on June 16, 2010
10.3	Employment Agreement – James S. Marcelli	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on August 5, 2008
10.4	Employment Agreement Renewal – James S. Marcelli	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on filed June 22, 2010
10.5	Employment Agreement Renewal and Amendment – James S. Marcelli	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on May 3, 2012
10.6		

	Employment Agreement Amendment – James S. Marcelli	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on May 24, 2012
10.7	Employment Agreement Amendment – James Marcelli	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on May 21, 2013
10.8	Employment Agreement – Thomas E. Zelibor	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on May 3, 2012
10.9	Employment Agreement Amendment – Thomas E. Zelibor	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on August 30, 2013
10.10	Director Agreement – Siraj Nour El-Ahmadi	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on October 7, 2013
10.10	Purchase Agreement – Lincoln Park Capital Fund, LLC	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on June 10, 2013
10.11	Registration Rights Agreement – Lincoln Park Capital Funds, LLC	Incorporated by reference to the Company's Current Report on Form 8-K as filed with the SEC on June 10, 2013
14.1	Code of Ethics and Business Conduct	Incorporated by reference to the Company's Annual Report on Form 10-K as filed with the SEC on April 1, 2013
31.1	Certification pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 executed by the Principal Executive Officer of the Company	Filed herewith
31.2	Certification pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 executed by the Principal Financial Officer of the Company	Filed herewith
32.1	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, executed by the Principal Executive Officer of the Company	Filed herewith
32.2	Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, executed by the Principal Financial Officer of the Company	Filed herewith
101*	XBRL data files of Financial Statements and Notes contained in this Annual Report on Form 10-K	

* In accordance with Regulation S-T, the Interactive Data Files in Exhibit 101 to the Annual Report on Form 10-K shall be deemed “furnished” and not “filed.”

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

LIGHTWAVE LOGIC, INC.
Registrant

By: /s/ Thomas E. Zelibor
Thomas E. Zelibor,
Chief Executive Officer
(Principal Executive Officer)

Date: March 31, 2014

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

Signature	Title	Date
/s/ Thomas E. Zelibor Thomas E. Zelibor	Chief Executive Officer, (Principal Executive Officer) Chmn. of the Board of Directors	March 31, 2014
/s/ James S. Marcelli James S. Marcelli	President, Chief Operating Officer, (Principal Financial Officer) Director	March 31, 2014
/s/ Andrew J. Ashton Andrew J. Ashton	Senior Vice President & Secretary, Director	March 31, 2014
/s/ Siraj Nour El-Ahmadi Siraj Nour El-Ahmadi	Director	March 31, 2014
/s/ William C. Pickett, III William C. Pickett, III	Director	March 31, 2014
/s/ Joseph A. Miller Joseph A. Miller	Director	March 31, 2014
/s/ Ronald A. Bucchi Ronald A. Bucchi	Director	March 31, 2014

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LIGHTWAVE LOGIC, INC.
(A Development Stage Company)

FINANCIAL STATEMENTS

DECEMBER 31, 2013 AND 2012

CONTENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors

Lightwave Logic, Inc.
Longmont, Colorado

We have audited the accompanying balance sheets of Lightwave Logic, Inc., as of December 31, 2013 and 2012 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, 2013. 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 audits 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 audits 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, 2013 and 2012 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, 2013 in conformity with accounting principles generally accepted in the United States of America.

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. The Company is in the development stage at December 31, 2013. As discussed in Note 2 to the financial statements, successful completion of the Company's development program and, ultimately, the attainment of profitable operations are dependent upon future events, including obtaining adequate financing to fulfill its development activities. These factors raise substantial doubt about the ability of the Company to continue as a going concern. The financial statements do not include any adjustments that might result from the outcome of these uncertainties.

/s/ MORISON COGEN LLP

Bala Cynwyd, Pennsylvania

March 31, 2014

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

	December 31, 2013	December 31, 2012
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 2,270,704	$ 2,936,879
Prepaid expenses and other current assets	132,204	89,975
	2,402,908	3,026,854
PROPERTY AND EQUIPMENT - NET	298,360	300,994
OTHER ASSETS		
Intangible assets - net	543,540	488,526
TOTAL ASSETS	$ 3,244,808	$ 3,816,374
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$ 65,410	$ 96,384
Accounts payable and accrued expenses- related parties	48,817	55,606
Accrued expenses	7,949	3,338
TOTAL LIABILITIES	122,176	155,328
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 52,617,789 and 50,160,758 issued and outstanding at December 31, 2013 and December 31, 2012	52,618	50,161
Additional paid-in-capital	35,414,206	32,042,751
Accumulated deficit	(15,827)	(15,827)
Deficit accumulated during development stage	(32,328,365)	(28,416,039)
TOTAL STOCKHOLDERS' EQUITY	3,122,632	3,661,046
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 3,244,808	$ 3,816,374

The accompanying notes are an integral part of these financial statements.

LIGHTWAVE LOGIC, INC.
(A Development Stage Company)
STATEMENTS OF OPERATIONS
FOR THE YEARS ENDING DECEMBER 31, 2013 AND 2012 AND FOR THE PERIOD JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2013

	Cumulative Since Inception	For the Year Ending December 31, 2013	For the Year Ending December 31, 2012
NET SALES	$3,200	$ -	$ -
COST AND EXPENSE			
Research and development	15,222,238	2,068,050	2,489,747
General and administrative	16,553,954	1,632,387	1,936,417
	31,776,192	3,700,437	4,426,164
LOSS FROM OPERATIONS	(31,772,992)	(3,700,437)	(4,426,164)
OTHER INCOME (EXPENSE)			
Interest income	31,313	267	548
Dividend income	1,551	-	-
Realized gain on investment	3,911	-	-
Realized gain on disposal of assets	637	-	-
Litigation settlement	(47,500)	-	-
Commitment fee and interest expense	(545,285)	(212,156)	(130,922)
NET LOSS	$(32,328,365)	$ (3,912,326)	$ (4,556,538)
Basic and Diluted Loss per Share		$ (0.08)	$ (0.09)
Basic and Diluted Weighted Average Number of Shares		51,672,177	48,778,783

The accompanying notes are an integral part of these financial statements.

LIGHTWAVE LOGIC, INC.
(A Development Stage Company)
STATEMENT OF STOCKHOLDERS' EQUITY
FOR THE PERIOD JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2013

	Number of Shares	Common Stock	Paid-in Capital	Subscription Receivable/ Receivable for Issuance of Common Stock	Deferred Charges	Unrealized Loss on Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	Total
ENDING BALANCE AT DECEMBER 31, 2003	100	$1	$-	$-	$-	$-	$(15,827)	$-	$(15,826
Retroactive recapitalization upon reverse acquisition	706,973	706	(706)	-	-	-	-	-	-
BALANCE AT JANUARY 1, 2004	707,073	707	(706)	-	-	-	(15,827)	-	(15,826
Common stock issued to founders	13,292,927	13,293	(13,293)	-	-	-	-	-	-
Common stock issued for future services in July 2004 at $0.16/share	1,600,000	1,600	254,400	-	-	-	-	-	256,000
Common stock issued at merger	2,000,000	2,000	(2,000)	-	-	-	-	-	-
Common stock issued for future services in August 2004 at $0.12/share	637,500	638	74,362	-	-	-	-	-	75,000
Conversion of note payable in December 2004 at $0.16/share	187,500	187	29,813	-	-	-	-	-	30,000
	-	-	-	-	-	-	-	(722,146)	(722,146

Net loss for the year ended December 31, 2004									
BALANCE AT DECEMBER 31, 2004	18,425,000	18,425	342,576	-	-	-	(15,827)	(722,146)	(376,972
Common stock issued in private placement in April 2005 at $0.25/share	4,000,000	4,000	996,000	-	-	-	-	-	1,000,000
Conversion of notes payable in May 2005 at $0.16/share	3,118,750	3,119	495,881	-	-	-	-	-	499,000
Subscription receivable	-	-	-	(6,500)	-	-	-	-	(6,500
Common stock issued for future services in August 2005, valued at $2.79/share	210,000	210	585,290	-	-	-	-	-	585,500
Common stock issued for future services in August 2005, valued at $2.92/share	200,000	200	583,800	-	-	-	-	-	584,000
Warrants issued for services in May 2005, vested during 2005, valued at $1.13/share	-	-	37,000	-	-	-	-	-	37,000
Warrants issued for services in September 2005, vested during 2005, valued at $1.45/share	-	-	24,200	-	-	-	-	-	24,200
Warrants issued for services in October 2005, vested during 2005, valued at	-	-	15,900	-	-	-	-	-	15,900

$0.53/share									
Warrants issued for future services in December 2005, vested during 2005, valued at $1.45/share	-	-	435,060	-	-	-	-	-	435,060
Deferred charges for common stock issued for future services in August 2005, valued at $2.92/share	-	-	-	-	(584,000)	-	-	-	(584,000
Amortization of deferred charges	-	-	-	-	265,455	-	-	-	265,455
Exercise of warrants in December 2005 at $0.25/share	300,000	300	74,700	-	-	-	-	-	75,000
Net loss for the year ended December 31, 2005	-	-	-	-	-	-	-	(1,721,765)	(1,721,765
BALANCE AT DECEMBER 31, 2005	26,253,750	26,254	3,590,407	(6,500)	(318,545)	-	(15,827)	(2,443,911)	831,878
Common stock issued in private placement during 2006 at $0.50/share	850,000	850	424,150	-	-	-	-	-	425,000
Common stock issued for future services in February 2006, valued at $0.90/share	300,000	300	269,700	-	-	-	-	-	270,000
Common stock issued for future services in May 2006, valued at $1.55/share	400,000	400	619,600	-	-	-	-	-	620,000

Common stock issued for future services in June 2006, valued at $1.45/share	25,000	25	36,225	-	-	-	-	-	36,250
Common stock issued for future services in November 2006, valued at $0.49/share	60,000	60	29,340	-	-	-	-	-	29,400
Warrants issued for services in September 2005, vested during 2006, valued at $1.45/share	-	-	66,500	-	-	-	-	-	66,500
Warrants issued for future services in June 2006, vested during 2006, valued at $1.55/share	-	-	465,996	-	-	-	-	-	465,996
Options issued for services in February 2006, vested during 2006, valued at $1.01/share	-	-	428,888	-	-	-	-	-	428,888
Contributed capital related to accrued interest	-	-	35,624	-	-	-	-	-	35,624
Subscription receivable	-	-	-	6,500	-	-	-	-	6,500
Amortization of deferred charges	-	-	-	-	318,545	-	-	-	318,545
Unrealzed gain (loss) on securities	-	-	-	-	-	(26,000)	-	-	(26,000
Net loss for the year ending December 31, 2006	-	-	-	-	-		-	(2,933,809)	(2,933,809
BALANCE AT DECEMBER	27,888,750	27,889	$5,966,430	$-	$-	$(26,000)	$(15,827)	$(5,377,720)	$574,772

31, 2006

The accompanying notes are an integral part of these financial statements.

LIGHTWAVE LOGIC, INC.
(A Development Stage Company)
STATEMENT OF STOCKHOLDERS' EQUITY
FOR THE PERIOD JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2013 (CONTINUED)

	Number of Shares	Common Stock	Paid-in Capital	Subscription Receivable/ Receivable for Issuance of Common Stock	Deferred Charges	Unrealized Loss on Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	Total
BALANCE AT DECEMBER 31, 2006	27,888,750	27,889	$5,966,430	$-	$-	$(26,000)	$(15,827)	$(5,377,720)	$574,77
Common stock issued in private placement during 2007 at $0.50/share	2,482,000	2,482	1,238,518	-	-	-	-	-	1,241,0
Common stock issued in private placement during 2007 at $0.60/share	1,767,540	1,768	1,058,756	-	-	-	-	-	1,060,5
Common stock subscription rescinded during 2007 at $0.50/share	(400,000)	(400)	(199,600)	-	-	-	-	-	(200,00
Common stock issued for future services in February 2007, valued at $0.70/share	151,785	152	106,098	-	-	-	-	-	106,25
Common stock issued for future services in March 2007, valued at $0.58/share	1,000,000	1,000	579,000	-	-	-	-	-	580,00
Common stock issued for	100,000	100	34,900	-	-	-	-	-	35,000

services and settlement for accounts payable in April 2007, valued at $0.35/share									
Common stock issued for services in October 2007, valued at $0.68/share	150,000	150	101,850	-	-	-	-	-	102,00
Common stock issued for services in October 2007, valued at $0.90/share	150,000	150	134,850	-	-	-	-	-	135,00
Common stock issued for services in November 2007, valued at $0.72/share	400,000	400	287,600	-	-	-	-	-	288,00
Warrants issued for services in September 2005, vested during 2007, valued at $1.45/share	-	-	36,370	-	-	-	-	-	36,370
Warrants issued for services in March 2007, vested during 2007, valued at $0.63/share	-	-	52,180	-	-	-	-	-	52,180
Warrants issued for services in April 2007, vested during 2007, valued at $0.69/share	-	-	293,476	-	-	-	-	-	293,47
Warrants issued for services in April 2007,	-	-	140,490	-	-	-	-	-	140,49

vested during 2007, valued at $0.63/share									
Warrants issued for services in May 2007, vested during 2007, valued at $0.56/share	-	-	52,946	-	-	-	-	-	52,946
Warrants issued for services in October 2007, vested during 2007, valued at $0.61/share	-	-	61,449	-	-	-	-	-	61,449
Warrants issued for services in October 2007, vested during 2007, valued at $0.78/share	-	-	52,292	-	-	-	-	-	52,292
Warrants issued for services in December 2007, vested during 2007, valued at $0.55/share	-	-	1,159	-	-	-	-	-	1,159
Options issued for services in February 2006, vested during 2007, valued at $1.01/share	-	-	17,589	-	-	-	-	-	17,589
Options issued for services in February 2006, vested during 2007, valued at $1.09/share	-	-	43,757	-	-	-	-	-	43,757
Options issued for services in November 2007, vested during 2007, valued at $0.60/share	-	-	41,653	-	-	-	-	-	41,653

Warrants issued for future services in April 2007, vested during 2007, valued at $0.70/share	-	-	348,000	-	-	-	-	-	348,00
Deferred charges for common stock issued for future services in March 2007, valued at $0.58/share	-	-	-	-	(928,000)	-	-	-	(928,00
Amortization of deferred charges	-	-	-	-	773,333	-	-	-	773,33
Unrealzed gain (loss) on securities	-	-	-	-	-	(32,610)	-	-	(32,61
Net loss for the year ending December 31, 2007	-	-	-	-	-	-	-	(4,223,449)	(4,223,
BALANCE AT DECEMBER 31, 2007	33,690,075	33,690	10,449,763	-	(154,667)	(58,610)	(15,827)	(9,601,169)	653,18
Common stock issued in private placement during 2008 at $0.60/share	690,001	690	413,310	-	-	-	-	-	414,00
Common stock issued for services in March 2008, valued at $0.75/share	100,000	100	74,900	-	-	-	-	-	75,000
Common stock issued for services in August 2008, valued at $1.80/share	200,000	200	359,800	-	-	-	-	-	360,00
Exercise of warrants at $0.25/share	320,000	320	79,680	-	-	-	-	-	80,000

Exercise of warrants at $0.25/share, pursuant to November 2008 adjusted stock offering	641,080	641	159,629	-					160,27
Exercise of warrants at $0.50/share	270,000	270	134,730	-	-	-	-	-	135,00
Warrants issued for services in September 2005, vested during 2008, valued at $1.45/share	-	-	27,014	-	-	-	-	-	27,014
Warrants issued for services in March 2007, vested during 2008, valued at $0.63/share	-	-	10,885	-	-	-	-	-	10,885
Warrants issued for services in April 2007, vested during 2008, valued at $0.69/share	-	-	121,713	-	-	-	-	-	121,71
Warrants issued for services in April 2007, vested during 2008, valued at $0.63/share	-	-	48,738	-	-	-	-	-	48,738
Warrants issued for services in May 2007, vested during 2008, valued at $0.56/share	-	-	31,444	-	-	-	-	-	31,444
Warrants issued for services in December 2007, vested	-	-	12,487	-	-	-	-	-	12,487

during 2008, valued at $0.55/share									
Options issued for services in November 2007, vested during 2008, valued at $0.60/share	-	-	286,803	-	-	-	-	-	286,80
Options issued for services in January 2008, vested during 2008, valued at $0.60/share	-	-	30,750	-	-	-	-	-	30,750
Options issued for services in July 2008, vested during 2008, valued at $1.48/share	-	-	114,519	-	-	-	-	-	114,51
Options issued for services in August 2008, vested during 2008, valued at $1.36/share	-	-	525,263	-	-	-	-	-	525,26
Options issued for services in November 2008, vested during 2008, valued at $0.50/share	-	-	6,439	-	-	-	-	-	6,439
Warrants issued for future services in March 2008, vested through September 2008, valued at $0.83/share	-	-	332,000	-	(332,000)	-	-	-	-
Warrants issued for services in May 2008, vested through September 2008, valued at $1.63/share	-	-	976,193	-	-	-	-	-	976,19

Amortization of deferred charges	-	-	-	-	431,337	-	-	-	431,33
Receivable for the issuance of common stock	-	-	-	(12,500)	-	-	-	-	(12,500
Realized loss reclassification	-	-	-	-	-	58,610	-	-	58,610
Net loss for the year ending December 31, 2008	-	-	-	-	-	-	-	(4,340,607)	(4,340,
BALANCE AT DECEMBER 31, 2008	35,911,156	$35,911	$14,196,060	$(12,500)	$(55,330)	$-	$(15,827)	$(13,941,776)	$206,53

The accompanying notes are an integral part of these financial statements.

LIGHTWAVE LOGIC, INC.
(A Development Stage Company)
STATEMENT OF STOCKHOLDERS' EQUITY
FOR THE PERIOD JANUARY 1, 2004 (INCEPTION OF DEVELOPMENT STAGE) TO DECEMBER 31, 2013 (CONTINUED)

	Number of Shares	Common Stock	Paid-in Capital	Subscription Receivable/ Receivable for Issuance of Common Stock	Deferred Charges	Unrealized Loss on Securities	Accumulated Deficit	Deficit Accumulated During Development Stage	Total
BALANCE AT DECEMBER 31, 2008	35,911,156	$35,911	$14,196,060	$(12,500)	$(55,330)	$-	$(15,827)	$(13,941,776)	$206,538
Rights to purchase shares issued in January 2009, vested during 2009, valued at $0.33/share	-	-	132,058	-	-	-	-	-	132,058
Common stock issued for services in January 2009, valued at $0.58/share	100,000	100	57,900	-	-	-	-	-	58,000
Common stock issued for services & settlement for accounts payable January 2009 valued at $0.25/share	100,000	100	24,900	-	-	-	-	-	25,000
Exercise of purchase right agreement in January 2009 at $0.25/share	180,550	181	44,957	-	-	-	-	-	45,138
Exercise of warrants at	1,279,336	1,279	318,555	-	-	-	-	-	319,834

$0.25/share, pursuant to November 2008 adjusted stock offering									
Exercise of warrants at $0.001/share	400,000	400	-	-	-	-	-	-	400
Exercise of warrants at $1.00/share	355,000	355	354,645	-	-	-	-	-	355,000
Options issued for services in November 2007, vested during 2009, valued at $0.60/share	-	-	199,234	-	-	-	-	-	199,234
Options issued for services in January 2008, vested during 2009, valued at $0.60/share	-	-	13,583	-	-	-	-	-	13,583
Options issued for services in July 2008, vested during 2009, valued at $1.48/share	-	-	67,838	-	-	-	-	-	67,838
Options issued for services in August 2008, vested during 2009, valued at $1.36/share	-	-	623,246	-	-	-	-	-	623,246
Options issued for services in November 2008, vested during 2009, valued at $0.50/share	-	-	61,346	-	-	-	-	-	61,346
Options issued for services in	-	-	13,136	-	-	-	-	-	13,136

January 2009, vested during 2009, valued at $0.53/share									
Options issued for services in February 2009, vested during 2009, valued at $0.38/share	-	-	9,583	-	-	-	-	-	9,583
Options issued for services in June 2009, vested during 2009, valued at $0.85/share	-	-	21,085	-	-	-	-	-	21,085
Warrants issued for services in June 2009, vested during 2009, valued at $0.85/share	-	-	177,881	-	-	-	-	-	177,881
Contribution of accrued payroll in February 2009									